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(54) Container for agricultural food products

(57) An agricultural food products container (10) comprises a body (11) and a cover (12) hinged to the body (11), said body (11) and cover (12) having apertured sides, and said cover (12) being displaceable from an open position, permitting to fill the container (10) with food products, to a closed position, wherein the container (10) completely encloses the food products and protects them from mechanical damage.

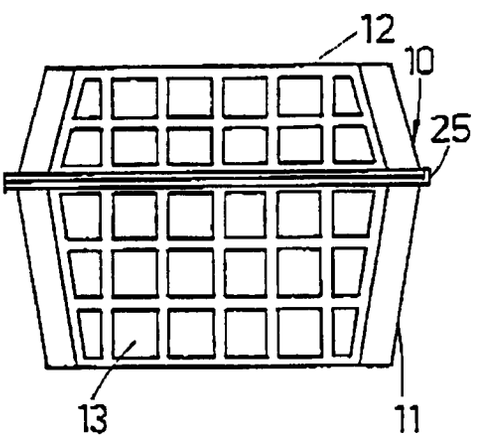

Fig. 1

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Description

Field of the Invention

This invention relates to a container for agricultural food products constituted by individual items of small size, such as strawberries, grapes, cherries, miniature tomatoes, mushrooms, garlic, and the like, which are sensitive to impact and pressure and will be damaged if not protected from them. It particularly relates to such containers that are space saving and may be stacked upon one another without damage to their contents and are adapted for storing the food products on shelves, as well as for permitting the consumer conveniently to select any desired ones and carry them away.

Background of the Invention

Many agricultural food products, constituted by individual items of small size, such as strawberries, grapes, cherries, miniature tomatoes, mushrooms, garlic, and the like, are sensitive to impact and pressure and are damaged if not protected against them, suffering what will be called hereinafter "mechanical damage". Therefore, they are not sold ordinarily in bulk, or in paper bags or the like, but are placed in containers, generally made of plastic matter, which can be placed on shelves and carried away by the purchaser. However, in order to prevent the products from spilling from the container, and yet to make it possible completely to fill it and even to tolerate a certain projection of the products from the upper rim of the container, each filled container is wrapped in a flexible plastic sheet, Such wrapping, however, while preventing the products from spilling from the containers, cannot protect them against pressure, and therefore it is practically impossible to stack the containers on the shelves, one upon the other, without causing mechanical damage to the products Further, the products may not be piled too high above the rim of the container, to avoid their being damaged in spite of the presence of the overlying plastic sheet and their spilling out when the consumer removes the sheet.

It is a purpose of this invention to provide a container for agricultural food products of the kind described, that are sensitive to impact and pressure, which container provides optimum protection of the products and assures that they will be undamaged when the purchaser removes them from the container.

It is another purpose of this invention to provide such a container which affords optimum exploitation of the space available in the container and on the shelves.

It is a further purpose of this invention to provide such containers which can be stacked one above the other without damaging their contents and forming stable and secure stacks.

It is a still further purpose of this invention to provide such a container the inside of which may be completely filled with the products, while assuring that they will not spill out when the container is opened by the purchaser in order to use the products.

It is a still further purpose of this invention to provide such a container which is economical to make, easy to use, and of attractive appearance.

It is a still further purpose of this invention to provide such a container which can be dimensionally adapted to the standard dimensions of the holders currently used for the transportation of food containers, whereby to afford maximal space saving in transportation.

It is yet another object of the invention to provide such a container which can be used to treat the food product contained therein, e.g., by washing or sterilizing, without removing it from the container.

Other purposes and advantages of the invention will appear, as the description proceeds.

Summary of the Invention

The agricultural food products container, according to the invention, is characterized in that it comprises a body and a cover hinged to the body, said body and cover having apertured sides, and having preferably a net-like structure, and said cover being displaceable from an open position, permitting to fill the container with food products, to a closed position, wherein the container completely encloses the food products and protects them from mechanical damage. Body and cover are preferably hingedly connected with one another on one side thereof.

Preferably, closure means are provided to secure cover and body together when the container is in its closed position. Said means preferably comprise cooperating elements located on the rim of the cover and on the rim of the body, which elements may conveniently create a snap closure.

Preferably, the body of the container according to the invention is tapered outwards from its bottom up and its cover is tapered inwards from its bottom up. Also preferably, the maximum cross-sectional areas of the body and cover are substantially equal and, the top area of the cover is substantially equal to the bottom area of the body.

According to a preferred aspect of the invention, the cover sides are slanted inwards, from the bottom up, to provide a tapered cover, by an angle that is approximately the cleavage angle, as hereinafter defined, of the products which the container is intended to house. The body sides are slanted outwards by an angle which is determined by the requirement that the top area of the cover be substantially equal to the bottom area of the body and by the ratio of the heights of body and cover.

In an embodiment of the invention, the body and cover sides may comprise at least one non-apertured portion to permit applying labels or other indications to them.

The container according to the invention is preferably made of molded plastic matter, preferably of a poly-

olefin, more preferably of polypropylene. The body and the cover may be separately molded and hingedly connected together, or they may be molded together in a single operation, the hinge connection being formed by an intermediate or web portion between the rims of the body and of the cover.

Brief Description of the Drawings

In the drawings:

- Fig 1 is a vertical view of a side of a container according to an embodiment of the invention, in the closed position;
- Fig. 2 is a vertical view of another side of the same container, in the closed position;
- Fig. 3 is a plan view from the top of the same container, in the closed position;
- Fig. 4 is a plan view from the bottom of the same container, in the closed position
- Fig. 5 is a vertical view of the same container in an open position, showing, in broken lines, the cover in an intermediate position during the closing motion indicated by the arrow;
- Fig 6 is a fragmentary cross-section, illustrating the closing means provided in the peripheral portions of the cover and body of the container of the preceding figures;
- Fig. 7 is a plan view of a plurality of containers, according to an embodiment of the invention, packed inside a holder for transportation; and
- Fig. 8 illustrates the stacking of containers, according to an embodiment of the invention, on a shelf.

Detailed Description of Preferred Embodiments

In the embodiment illustrated in Figs. 1 to 6, a container 10 comprises a body 11 and a cover 12. Both body and cover have sides which are provided with apertures 13, so that they have a net-like structure. The top of the cover is likewise provided with apertures 13, as seen in Fig. 3, while the bottom of the body, shown in Fig. 4, is a full plate 19, not provided with apertures. In said embodiment, one side, and specifically that indicated by 15 in Fig. 3, has unapertured areas 16 in the cover and 17 in the body, to which areas labels, or other matter for display purposes, may be applied. The application of suitable labels is of considerable importance, not only because it provides information to the buyer which is a promoting factor in sales, but also because the label can be so applied that its being intact guarantees that the container has not been opened and that the buyer obtains a fresh produce. Also, in said preferred embodiments, the body and the cover have been provided with unapertured corners 18, so that the container's horizontal cross-sections are not rectangular, but octagonal, with four long and four short sides, these latter obtained by cutting them off, so to speak, the ends of the long sides - all as clearly seen, in particular, in the plan views.

As is seen in Figs. 1 and 2, the sides of the body are tapered, as indicated at 20. More precisely, they are slanted outwards from the bottom up. The sides of the cover are also tapered, but are slanted inwards from the bottom up, as seen at 21. How the angles, by which the cover and body sides are slanted, are preferably determined, will be explained later on.

Cover 12 is hinged to body 11 by hinge 25, and rotates about said hinge in the direction of the arrow of Fig. 5, when being closed. 12' indicates in broken lines an intermediate position of the cover during to its closure. The hinge 25 can be made in any convenient way, but can be constituted merely by a web 26 connecting the rims of body and cover, as shown in cross-section in the details of Fig. 5a. However, the cover and body could also be two separate pieces, connected by a different type of hinge. Suitable hinges can easily be provided by persons skilled in the art. In its preferred embodiment, the container constitutes a unit consisting of two components connected by an integral hinge.

Fig. 6 illustrates one embodiment of closure means, connecting body and cover in the closed position of the container. Fig. 6 is a partial cross-section showing the engagement of the rims of the cover and body on the side of the container opposite to the hinge. In this embodiment of closure means, the cover is provided with a vertical, downwardly extending rim 30, having an inwardly directed, generally horizontal projection 31; and the body edge 33 is provided with a short, downwardly extending rim 35. In the closing of the container, projection 31 will engage, with its slanted underside, the edge 33 of the body, rim 30 will bend outwards permitting said projection 31 to ride over said rim 35, and when the closed position, shown in Fig. 6, is reached, said projection 31 will snap under said rim 35 and lock the cover to the body. The elasticity of rim 30 will of course permit easily to bend it outwards to permit the disengagement of projection 31 from rim 35 and therefore the opening of the container.

It should be noted that, when the containers - new or used - are empty, they can be inserted one into the other, whereby considerable space is saved.

In the food industry and commerce, it is customary to transport a number of containers of food products in cardboard holders, which have standard measurements according to various national standards. The dimensions of the container according to the invention can easily be determined so that a maximum number of containers may be inserted in such a holder for transportation. Fig. 7 shows such a holder at 40. In the example illustrated, the holder has lateral dimension of 380 x

275 mm, and the dimensions of the containers 10 are calculated so that six of them will fit in that particular holder, but of course different dimensions, according to different standards, may be adopted in each particular case.

In general, the dimensions of the container according to the invention can be varied as desired to accomodate the requirements of the market, starting e.g. from 250 and 500 gr. and 1 kg of inner space. The container is generally produced and supplied to the customers in a series of sizes, to constitute what may be called a family of containers. In determining its dimensions, it is desirable - and possible, in view of the container's structure - to take into account the dimensions of the cardboard containers which are conventionally used for selling and distributing the agricultural produce. Thus the containers according to the invention, no matter what their size, can be packed into the cardboard containers in such a way as to exploit their inner volume to the full.

Fig. 8 shows containers stacked on stacks which are three high on a shelf 41. The containers of Fig. 8, while being embodiments of the invention, are shown, for purposes of illustration, as being different, and specifically shorter, than those of Figs. 1-6, but it should be understood that any containers according to any embodiment of the invention can be stacked in the same way. Stacked containers can be kept on shelves and taken therefrom by their purchaser. As is seen in Fig. 8, according to a preferred aspect of the invention, the area of the bottom of the body of the container is equal to the area of the top of the cover, so that the containers, when stacked, may have an optimum stability.

According to an embodiment of the invention, the angle by which the sides of the covers slant is such that a maximum amount of food product may be packed into the container, viz. the inner space of the cover may be used to house food products, and yet, when the container is opened by the purchaser, the food product will not spill out. It is well known to persons skilled in the art that when a granular material is heaped in a heap, it will arrange itself so that the sides of the heap be at a certain angle to the horizontal, and, if it is attempted to make a heap with sides at a larger angle to the horizontal, the material at the periphery of the heap will slide down until a certain angle of the sides, which depends on the particular material, is reached. This angle can be called "cleavage angle".

Of course, the food products, with which this invention deals, are not granular, but consist of individual items of the size, e.g., of a cherry, or slightly larger or smaller, and therefore no definite cleavage angle can be defined. However, heaps of these food products will spill if their sides are too close to the vertical, so that, in general, persons skilled in the art may, for each of those products, identify what may be called a "cleavage angle" Therefore, it may be said that the sides of the cover are slanted by a cleavage angle, by which is meant that they are so slanted that food products may be stacked above the upper rim of the body and may be retained by the cover, when this is closed, and yet not spill off when the cover is opened. Since the upper cross-section of the body and the lower cross-section of the cover are preferably equal, and it is preferred that the bottom of the body and the top of the cover have the same area, and since, further, the body, which is intended to house the greatest part of the food product, is normally higher than the cover, generally the sides of the body will be less sharply slanted than those of the cover, as clearly seen in the drawings.

In preferred embodiments of the invention, it has been found to be desirable that the container conform to certain dimensional parameters. The ratio of the height of the body to the height of the cover is preferably comprised between 3:1 and 2:1.

As has been said, the containers are made of plastic matter that can be injection molded, in particular a polyolefin and more particularly, polypropylene. Preferably, though not necessarily, body and cover are injection molded together. The injection molding technique is very well known to persons skilled in the art, and no particular teaching is required by them to be able to manufacture the container according to the invention.

The container according to the invention has many advantages over the prior art, in addition to those mentioned. It provides protection against mechanical damage. It prevents their scattering, which may occur when using prior art containers. It prevents the damage caused to many products by their being stored in closed containers. It allows passage of the ambient air. It is particularly adapted for storing agricultural products in refrigerated spaces, a type of storage that is often required in general, it considerably increases the shelf life of the agricultural products. Furthermore, the apertures provided therein make it possible, if desired, to wash or sterilize the products contained therein, after packaging, without the need to take out the food products and handle them separately.

While an embodiment of the invention has been described by way of illustration, it will be apparent that the invention may be carried out by persons skilled in the art with many modifications, variations and adaptations, without departing from the spirit of the invention or exceeding the scope of the claims.

Claims

1. Agricultural food products container, characterized in that it comprises a body (11) and a cover (12) hinged to the body (11), said body (11) and cover (12) having apertured sides, and said cover (12) being displaceable from an open position, permitting to fill the container (10) with food products, to a closed position, wherein the container (10) completely encloses the food products and protects them from mechanical damage.

2. Container according to claim 1, wherein body (11) and cover (12) are hingedly connected with one another on one side (15) thereof.

3. Container according to claim 1, further comprising closure means (30, 31, 33, 35) for securing cover (12) and body (11) together when the container (10) is in its closed position.

4. Container according to claim 3, wherein the closure means (30, 31, 33, 35) comprise cooperating elements (31, 35) located on the rim (30) of the cover (12) and on the rim (33) of the body (11).

5. Container according to claim 4, wherein the cooperating elements (31, 35) create a snap closure.

6. Container according to claim 1, wherein the body (11) of the container (10) is tapered outwards from its bottom up.

7. Container according to claim 1, wherein the cover (12) of the container (10) is tapered inwards from its bottom up.

8. Container according to claim 1, wherein the maximum cross-sectional areas of the body (11) and cover (12) are substantially equal.

9. Container according to claim 1, wherein the top area of the cover (12) is substantially equal to the bottom area of the body (11).

10. Container according to claim 1, wherein the cover sides (21) are slanted inwards, from the bottom up, to provide a tapered cover (12), by an angle that is approximately the cleavage angle, as hereinbefore defined, of the products which the container (10) is intended to house.

11. Container according to claim 1, wherein the body sides (20) are slanted outwards by an angle which is determined by the requirement that the top area of the cover (12) be substantially equal to the bottom area of the body (11) and by the ratio of the heights of body (11) and cover (12).

12. Container according to claim 1, wherein the body and cover sides (15) may comprise at least one non-apertured portion (16, 17) to permit applying labels or other indications to them.

13. Container according to claim 1, made of molded plastic matter.

14. Container according to claim 1, made of polypropylene.

15. Container according to claim 1, wherein the hinge connection of body (11) to cover (12) is formed by an intermediate portion (26) between the rims of the body (11) and of the cover (12).

16. Container according to claim 1, wherein the ratio of the height of the body (11) to the height of the cover (12) is comprised between 3:1 and 2:1.

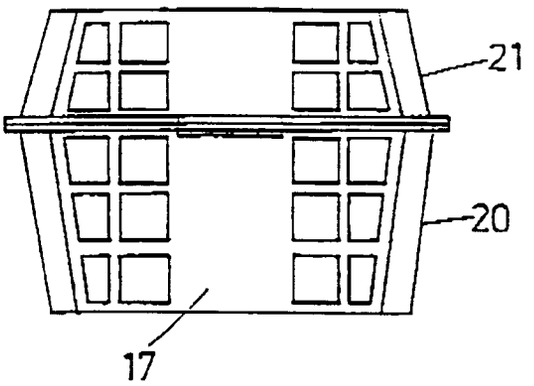

Fig. 2

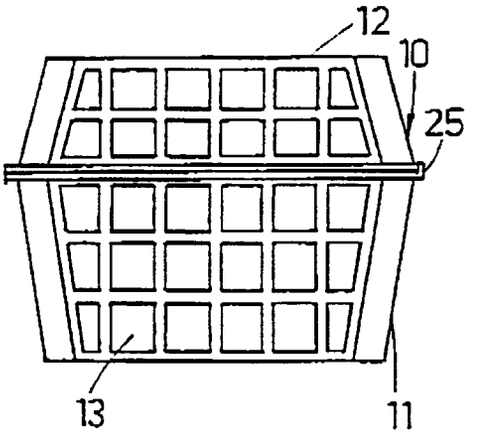

Fig. 1

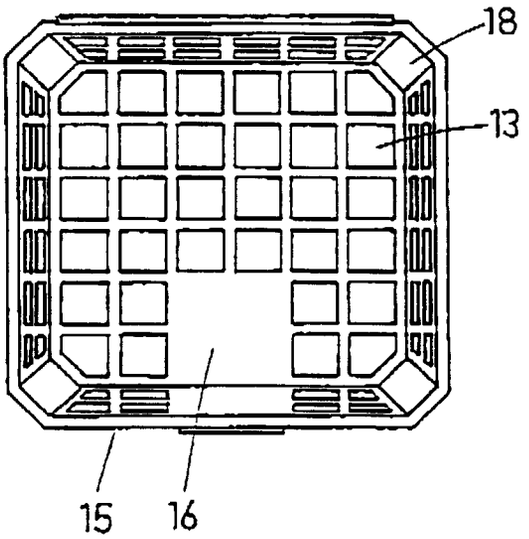

Fig. 3

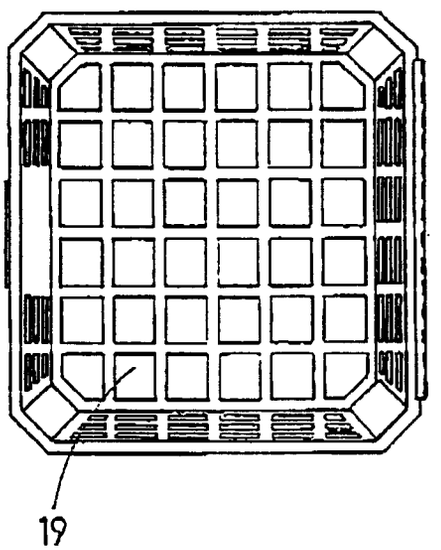

Fig. 4

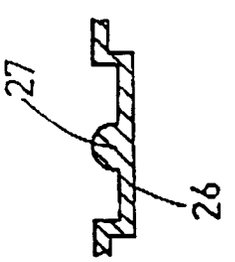

Fig. 5a

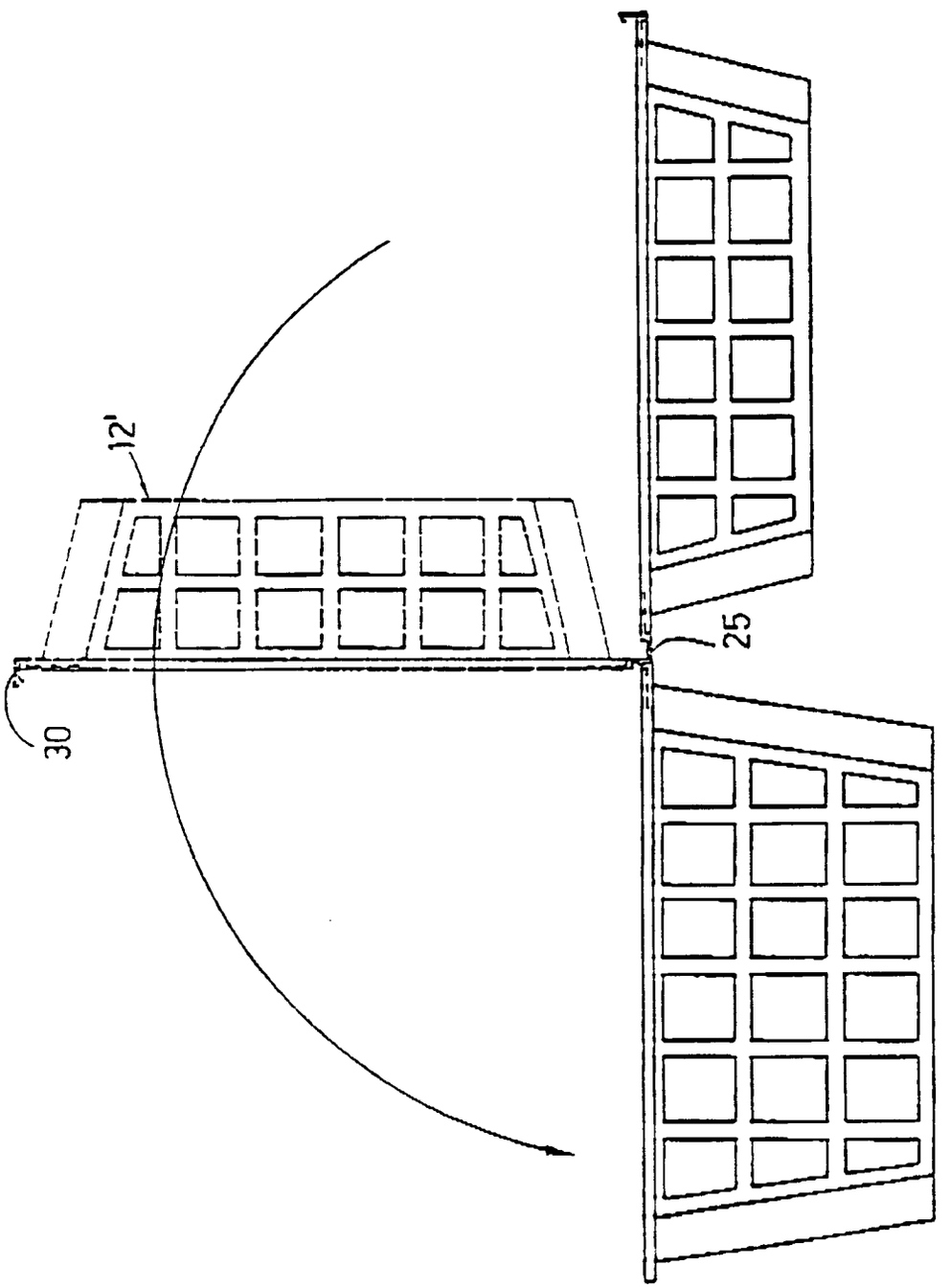

Fig. 5

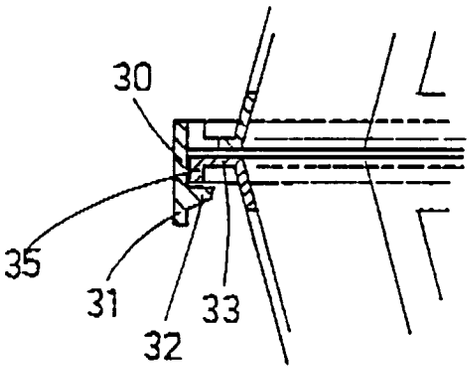

Fig. 6

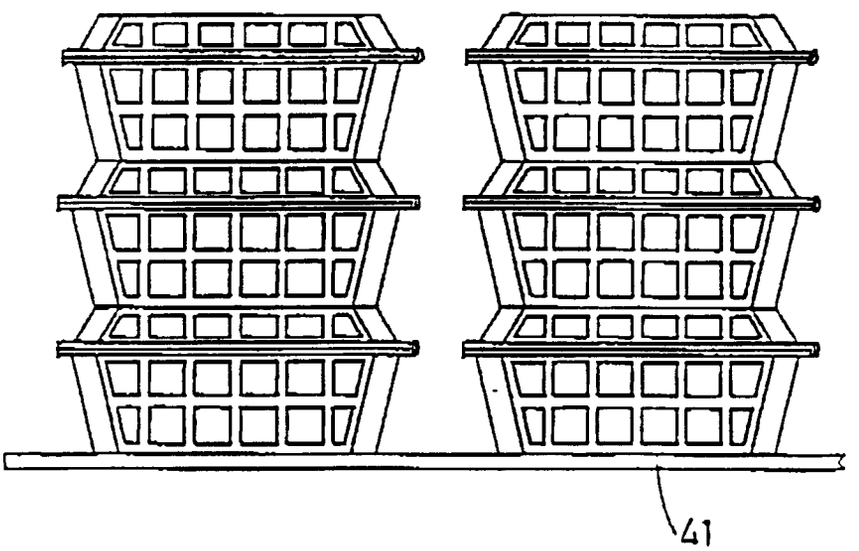

Fig. 8

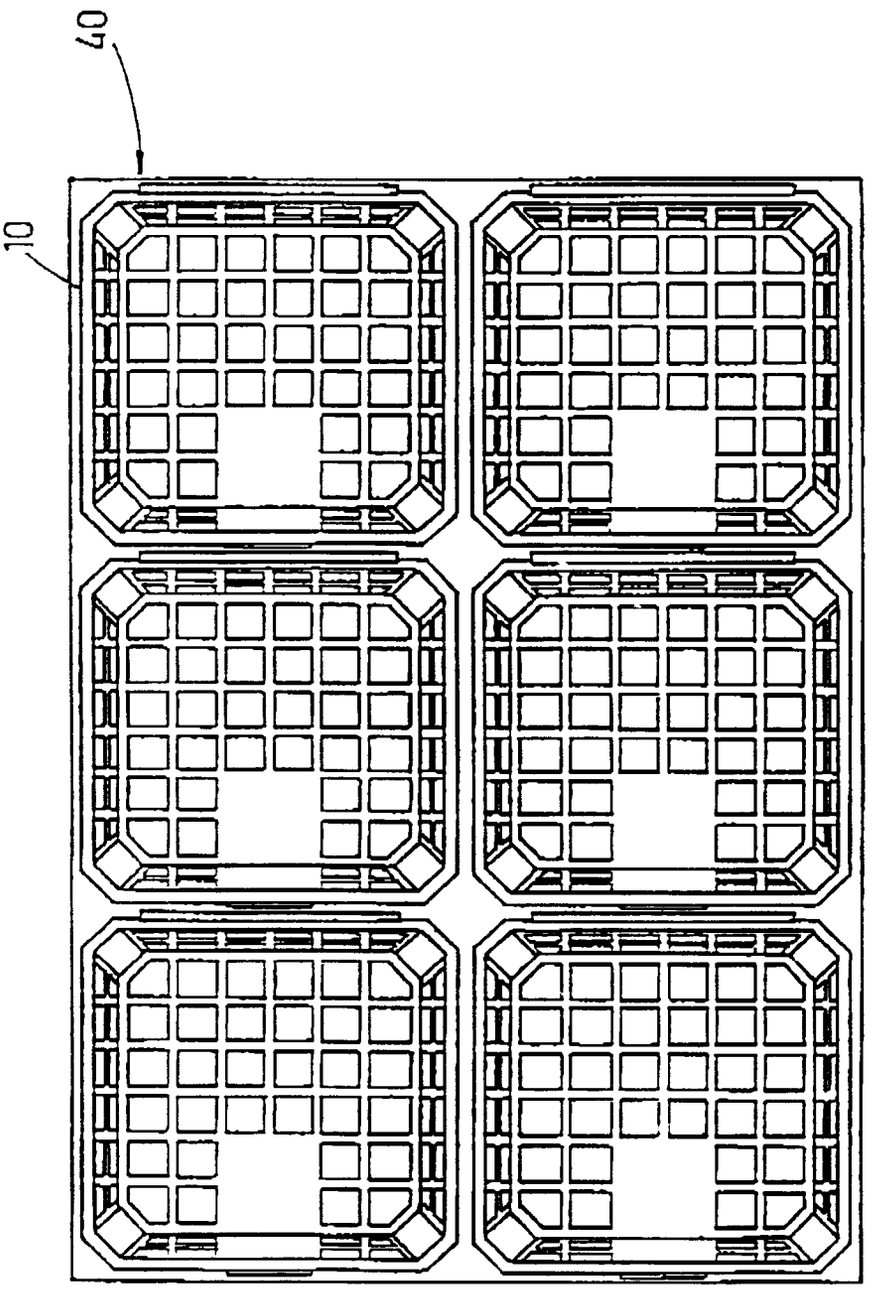

Fig. 7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 10 5992

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y	US-A-4 606 471 (A. QUERCETTI) * the whole document *	1-5,8,13 6,7, 9-12, 14-16	B65D1/38 B65D43/16 B65D85/34
Y	US-A-2 649 991 (W. WOOCK) * the whole document *	6,7,12	
Y	DE-U-92 13 085 (F. MUSCATI) * the whole document *	9-11,16	
Y	US-A-5 016 777 (M. MARVIN) * column 1, paragraph 3; figure 2 * * column 2, line 26 - column 3, line 6 *	14,15	
X,P	US-A-5 465 901 (D. PAINE) * the whole document *	1-7,10, 13,15,16	
A	US-A-4 989 744 (K. TOMINAGA) * the whole document *	1-5	
A	US-A-3 900 129 (W. SCHOLZ) * the whole document *	1-5	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 July 1996	Pernice, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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