

Description

[0001] The present invention relates to a pallet, and in particular to an innovative pallet which is very light and strong. The present invention further relates to a container having a base comprising such a pallet.

[0002] Common pallets are known to be formed of a rectangular or square platform, generally made of wood, resting on a plurality of parallelepiped-shaped feet, as well generally made of wood. Such feet raise the platform from the ground in order to introduce underneath the horizontal arms of the lifting trucks which perform the uplifting and the shifting of the pallets. The feet have fasteners underneath, when needed, some resting bars which provide the pallet with a greater stability in the stacking phase.

[0003] In order to reduce the manufacturing costs of the known pallets, it has been proposed to make them with plastic material, and in particular with recycled plastic. However, in order to bear the great weights of the goods to be transported, a known pallet made of plastic would require a great amount of material, resulting in an unadvantageous increase of the weight and costs.

[0004] The object of the present invention is thus to provide a pallet free from such drawbacks, ie. a pallet which, when made of a plastic material, is nonetheless light and strong. Such an object is achieved by a pallet having its main features specified in the first claim.

[0005] Thanks to the special alveolar structure of the platform on which the goods to be loaded are arranged, the pallet according to the present invention is enough light and strong for all the required uses, and moreover the amount of material is such that its cost is particularly competitive, especially when it is made of recycled plastic.

[0006] The alveolar structure of the platform further allows to produce the pallet by a single piece molding, without this latter having to be subjected to further manufacturing steps. In particular, by slightly slanting the side walls of the alveoli, it is possible on the one hand to obtain a rake for an easy extraction of the pallet from the mold, and on the other hand to directly provide a through-hole through said walls without further processing.

[0007] Another advantage of the pallet according to the present invention consists in the fact that the feet may be provided integral with the platform. Such feet have preferably a downwardly tapered shape with the larger base being open and turned towards the top of the platform. Thanks to this arrangement, it is possible to insert the feet of a pallet into the feet of another underlying pallet and thus to store several pallets stacked on one another, resulting in a smaller bulk and in a greater stability with respect to a stack of known pallets.

[0008] A further advantage of the pallet according to the present invention consists in the fact that it is provided with mechanical members, such as e.g. seats for the insertion of risers, vertical walls and wheels, which

allow to superimpose and transform the pallet into a trolley, an open, half-closed or closed container.

[0009] Further advantages and features of the pallet according to the present invention will be evident to those skilled in the art from the following detailed description of an embodiment thereof, with reference to the attached drawings, wherein:

- Figure 1 shows an exploded perspective view of a container comprising two pallets according to the present invention;
- Figure 2 shows a partial top view of the platform of a pallet of Figure 1;
- Figure 3 shows a partial cross-sectional view along line III-III of Figure 2; and
- Figure 4 shows a container comprising two covers for the pallet according to the present invention.

[0010] Referring to Figure 1, the pallet according to the present invention comprises in a known way a platform 1 substantially parallelepiped-shaped, on which the goods to be loaded (not shown in the drawing) may be arranged. Such a platform rests on a plurality of feet 2 which in the present embodiment are nine, but in other embodiments may be in a smaller or greater number.

[0011] Feet 2 are suitably hollow and have a downwardly tapered shape with the larger base being open and turned towards the top of the platform. In the present embodiment feet 2 are substantially frustopyramidal-shaped, but in other embodiments according to the present invention the feet may obviously have another downwardly tapered shape, e.g. frustoconical. Thus it is possible to stack, in a stable and not bulky way, two or more pallets according to the present invention. The base of the four feet 2 arranged at the corners of the lower base is preferably provided with a through-hole (not visible in the drawing), wherein a pivot 3, perpendicularly fastened to the axis of an idler wheel 4, may be removably inserted. By mounting at least four wheels 4 underneath the pallet according to the present invention, it may be easily turned into a trolley with pivoting wheels.

[0012] The four feet 2 arranged at the corners of the lower platform, are innerly provided with a frustopyramidal seat (not visible in the drawing), wherein the corresponding tapered end 5 of a riser 6, consisting of a L-shaped section, may be inserted. The base of such an end 5 is provided with fastening means (not visible in the drawing), in order to prevent the riser from accidentally coming out from its seat, as well as with a hole 7 which is aligned with the hole of foot 2 having the riser inserted therein. By inserting four risers 6 at the four corners of platform 1, it is possible to arrange a second pallet 8 over the first one and thus to obtain a two-level pallet. For this purpose, the upper end of risers 6 is provided with a pivot 9 which can be inserted in the corresponding hole of the foot of pallet 8 and in hole 7 of the riser, if any, inserted in such a foot. As a matter of fact,

a third pallet, as well as other pallets, may be obviously arranged over pallet 8 in the aforementioned way, so as to obtain a multilevel structure.

[0013] The two pallets superimposed and spaced apart by risers 6 may have inserted therebetween side walls 10 (partially shown), which act so as to transform these pallets into a container closed on one or more sides. For this purpose, the edges of platform 1 are provided on the top and on the bottom with grooves 11 and 12, wherein the lower and upper edges of a side wall may be respectively inserted. The side edges of such a side wall are instead rested against risers 6 so as to frame the wall and provide it with stability, as well as to form a closed container.

[0014] The pallet according to the present invention may further comprise a cover 13 provided of at least a hole 14 at each corner. In the present embodiment, the most part of the surface of such a cover is perforated, but it is obvious that in other embodiments of the present invention cover 13 may be closed and provided with holes 14 only at the level of the four corners. Cover 13, besides covering the goods arranged on platform 1, further acts so as to precisely align the four risers 6 before the superimposition of a possible upper platform 8. Thanks to cover 13, the coupling between pivots 9 of risers 6 and the holes at the base of the feet of such platform 8 is thus made easier. Also cover 13 is provided with perimetral grooves for obtaining a closed container comprising side walls 10, cover 13 and platform 1 as its base.

[0015] Under feet 2 of platform 1 may be fastened one or more resting bases, in particular three bars 15, through a plurality of teeth 16 which are fitted in corresponding seats provided at the base of the feet.

[0016] Referring now also to Figures 2 and 3, platform 1 of the pallet according to the present invention is suitably formed of a layer of adjacent alveoli 17 being substantially frustopyramidal-shaped with a square base, wherein larger base 18 is open and smaller base 19 is closed, but preferably provided with a round-shaped through-hole 20. In Figure 1, such an alveolar structure is only partially shown, but it obviously extends to the whole platform 1, except for feet 2. Alveoli 17 are suitably arranged in several rows and columns so that the open base 18' of alveoli 17' adjacent to an alveolus 17 is turned towards the opposite side with respect to open base 18 of the latter, thus resulting in a tridimensional chequered structure, with an alternation, total or partial, of open and closed bases. Side walls 21 of alveoli 17, shared with adjacent alveoli 17', are preferably slanted of about 2°30' and are as well preferably provided with a round-shaped through-hole 22. Holes 20 and 22 act so as to lighten platform 1 without compromising its strength and may obviously have any shape, size and number, in so far as the structural features of the pallet allow. Holes 20 and 22 may even be so large as to turn smaller bases 19 and/or side walls 21 into simple frames, obviously provided that platform 1 is not ex-

ceedingly weakened.

[0017] In order to obtain holes 22 by a single molding step and without subsequent perforations, two tangs are provided in the mold at the level of each side wall 21 of alveoli 17, so that, when the pallet is molded, such tangs remove from the side walls two opposite semicircular portions 23 having their ends extending along two slightly diverging straight lines. By this arrangement, the two adjacent half-circles, complementary to each portion 23, form the round hole 22.

[0018] Referring now to Figure 4, two covers 13 for the pallet according to the present invention may be used for obtaining a container having its lower and upper bases consisting of such covers. The set of covers 13 and side walls 10 (partially shown) inserted in the corresponding perimetral grooves is preferably bound by one or more bands 24 and may be rested on platform 1 of the pallet according to the present invention (shown in broken line).

[0019] It is obvious that, in other embodiments of the pallet according to the present invention, the base of the frustopyramidal alveoli may be not only square, but also triangular, quadrangular, hexagonal, octagonal or otherwise shaped.

[0020] It is likewise obvious that, in other embodiments of the pallet according to the present invention, the alveoli may not only be frustopyramidal, but also prismatic with a triangular, quadrangular, hexagonal, octagonal or otherwise shaped base, even curvilinear, provided that there is anyway an alternation, even partial, of open and closed bases.

[0021] It is finally obvious that other embodiments of the pallet according to the present invention may be provided with further mechanical members capable of improving their versatility and/or their working. For example, risers 6 may be provided with side holes for the bolting with the adjacent risers of another pallet, so as to fasten to each other two multilevel-pallets arranged side by side. Another embodiment of the pallet according to the present invention may further comprise some supporting tie rods diagonally arranged between two superimposed platforms in order to improve the strength of the combination, or a closing plate to be arranged on platform 1 in order to prevent the goods to be loaded from getting into the alveoli or into the feet thereof.

Claims

1. A pallet comprising a platform (1) for the goods to be loaded, characterized in that said platform comprises at least one layer of adjacent alveoli (17, 17'), wherein one (18) of the two bases (18, 19) of an alveolus (17) is open and the opposite base (18') of at least an adjacent alveolus (17') is also open.
2. A pallet according to the previous claim, characterized in that the platform (1) comprises one layer of

alveoli (17, 17') arranged in several rows and columns, wherein the open base (18') of the alveoli (17') adjacent to a single alveolus (17) is turned towards the opposite side of the platform (1) with respect to the open base (18) of the single alveolus (17), thus resulting in a tridimensional chequered structure with an alternation of open (18, 18') and closed (19) bases.

3. A pallet according to the previous claim, characterized in that the alveoli (17, 17') are substantially frustopyramidal-shaped, wherein the larger bases (18, 18') of the alveoli are open.

4. A pallet according to the previous claim, characterized in that the side walls (21) of the alveoli are slanted of about 2°30'.

5. A pallet according to any of the previous claims, characterized in that at least a side wall (21) of the alveoli is perforated.

6. A pallet according to the previous claim, characterized in that said side wall (21) is provided with a round hole (22) obtained by removing from each side of the wall (21) two opposite semicircular portions (23) having their ends extending along two slightly diverging straight lines.

7. A pallet according to any of the previous claims, characterized in that at least a closed base (19) of the alveoli is perforated.

8. A pallet according to any of the previous claims, characterized in that a plurality of hollow feet (2) having a downwardly tapered shape is arranged under the platform (1), wherein the feet (2) have their larger base open and turned towards the top of the platform (1).

9. A pallet according to any of the previous claims, characterized in that it is monolithic.

10. A pallet according to any of the previous claims, characterized in that the corners of the platform (1) are provided with seats in which the ends (5) of risers (6) capable of supporting another platform (8) arranged over the first one (1) are removably inserted.

11. A pallet according to the previous claim, characterized in that the bases of the feet (2) arranged at the corners of the platform (8) are provided with a hole in which a pivot (9) provided at an end of such risers (6) is removably inserted.

12. A pallet according to the previous claim, characterized in that the other end of such risers (6) is provided with an axial hole (7) wherein the pivot (9) of another riser may be inserted.

vided with an axial hole (7) wherein the pivot (9) of another riser may be inserted.

13. A pallet according to any of claims 10 to 12, characterized in that the risers (6) comprise a L-shaped section.

14. A pallet according to any of claims 11 to 13, characterized in that it is provided with a cover (13) which is removably mounted on the risers (6) and has, at the each corner, a hole (14) wherein a pivot (9) of the risers (6) may be inserted.

15. A pallet according to the previous claim, characterized in that the cover (13) is provided with perimetral grooves.

16. A pallet according to claim 11, characterized in that the hole at the base of the foot (2) has removably inserted therein a pivot (3) perpendicularly fastened to the axis of a wheel (4).

17. A pallet according to any of the previous claims, characterized in that at least one of the edges of the platform (1) is provided at the top and/or at the bottom with seats (11, 12) for a vertical wall (10).

18. A pallet according to any of the previous claims, characterized in that the feet (2) have fastened underneath at least a resting base (15).

19. A container having its base comprising a pallet according to any of the previous claims.

20. A container comprising two covers (13) according to claim 15, spaced apart by four side walls (10) and bound by at least a band (24).

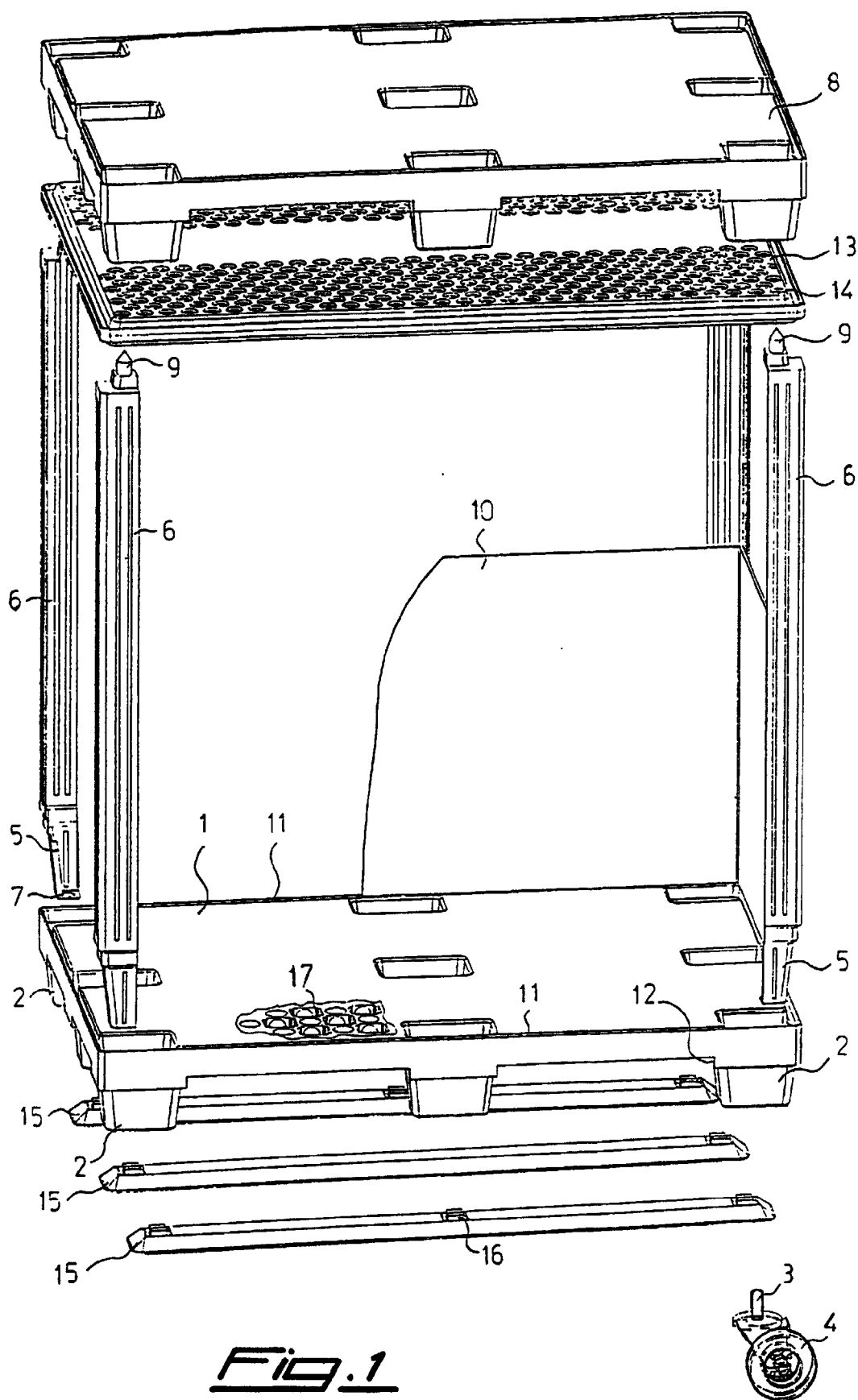


Fig. 1

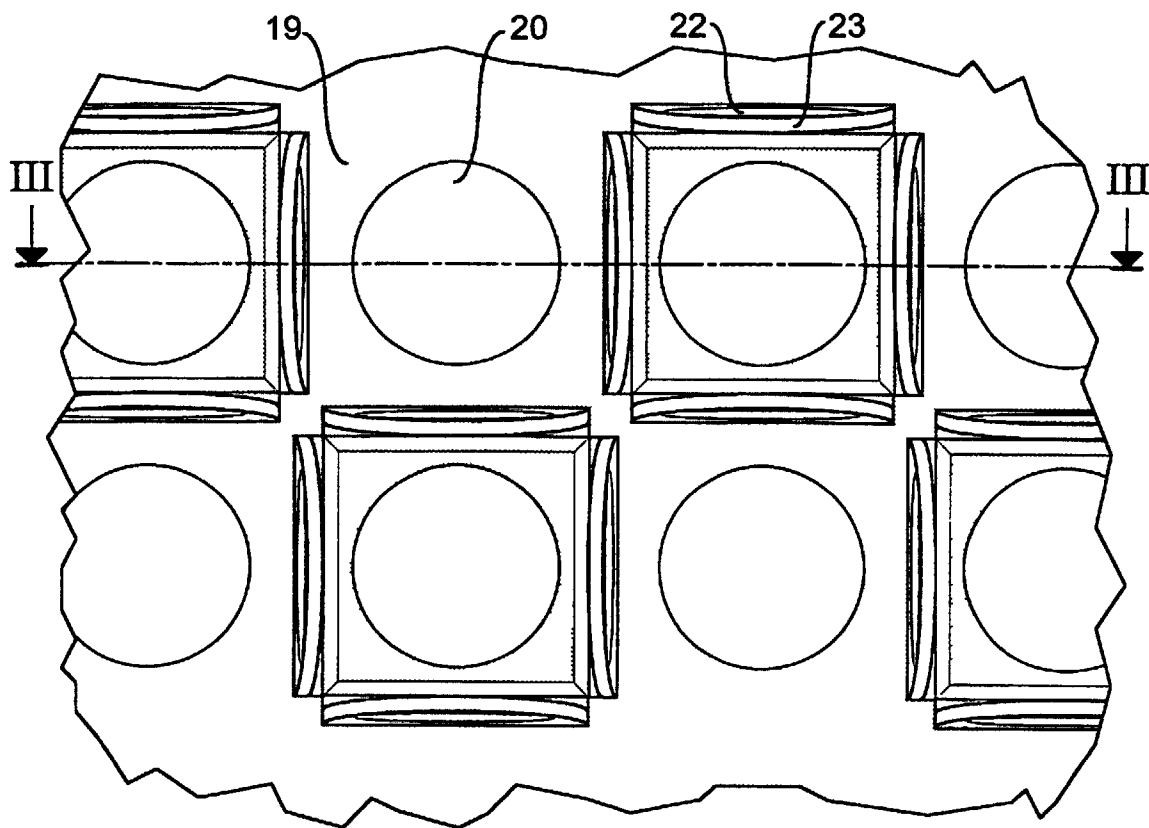


Fig. 2

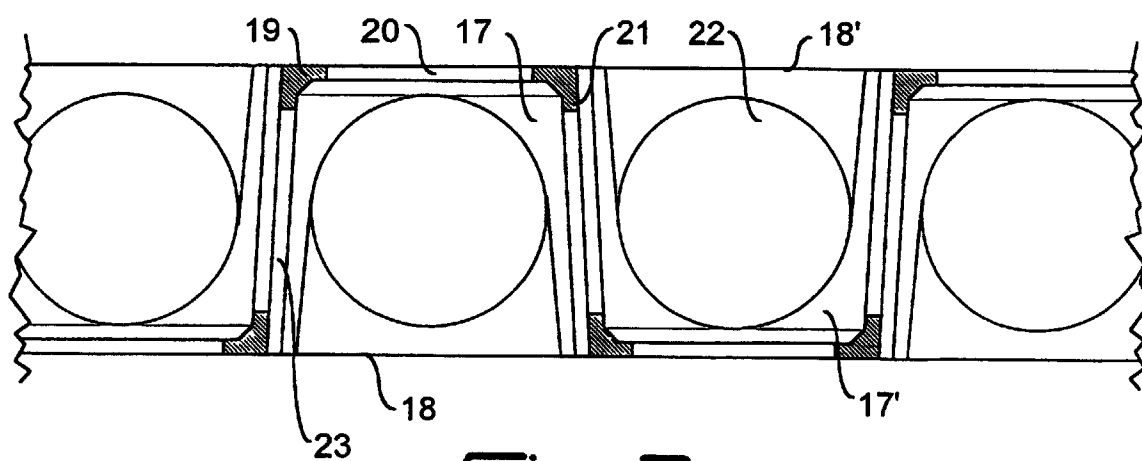


Fig. 3

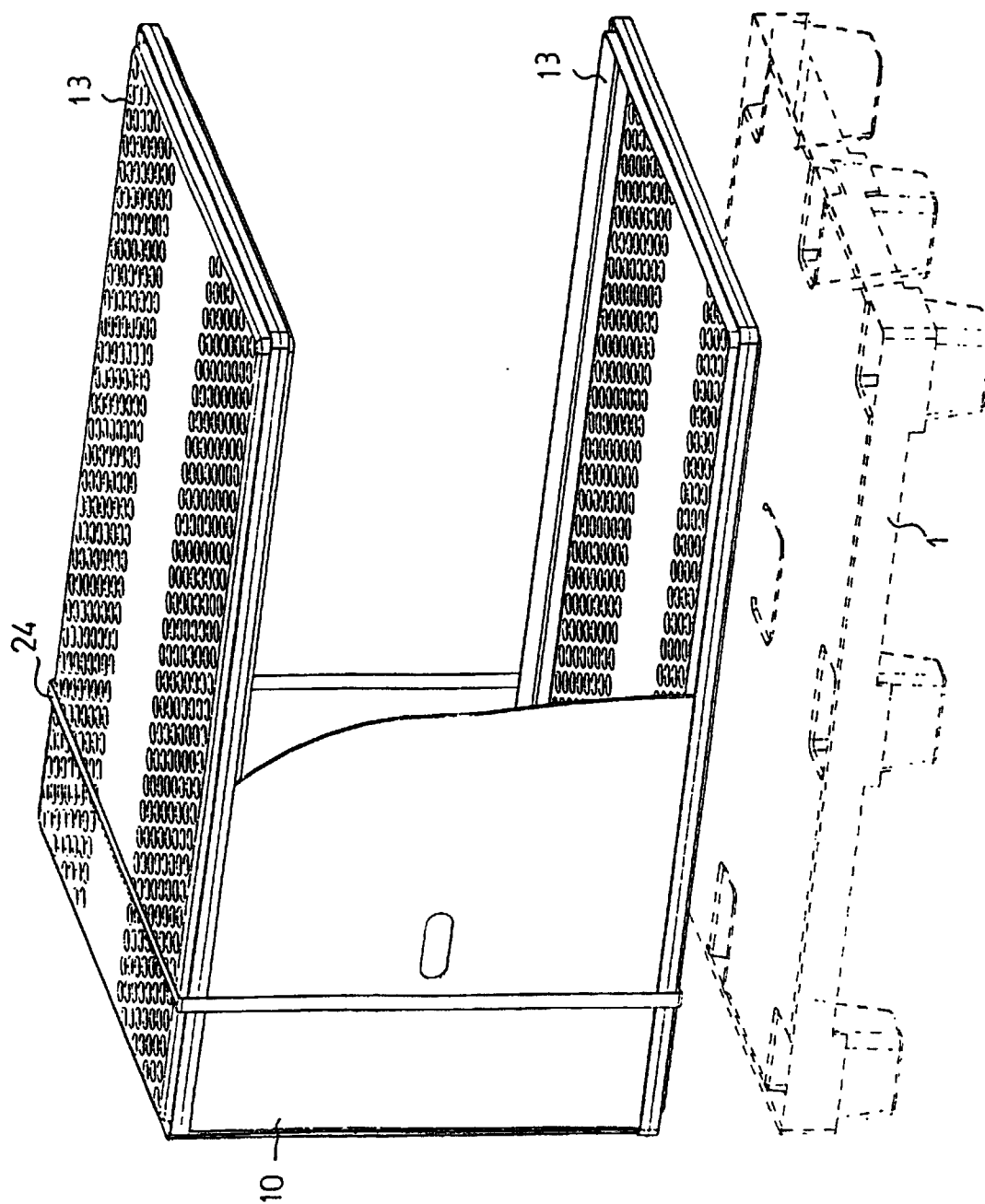


Fig. 4