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(54) Container system

(57) The invention relates to a container system (1) comprising a base (3) with a container unit (2) mountable on said base (3). To the opposite side walls (13;26) of the container unit (2) are adapted clamping projections (10), each one of the projections including a clamping surface (12) displaced at a distance from the lower edge of the side wall (13;26). The container unit further comprises a locking means (16) for securing the container unit (2) to the base (3), whereby the locking means (16) comprises two hingedly (18) to each other connected rigid locking elements (17) having at each end thereof distal in regard to the hinge line (18) thereof adapted at least one claw-like projection adapted insertable under the top surface of the base (3) through the space remaining between the clamping surface of the clamping projections and that side wall (13;26) of the container unit (2) on which said clamping projection (10) is adapted.

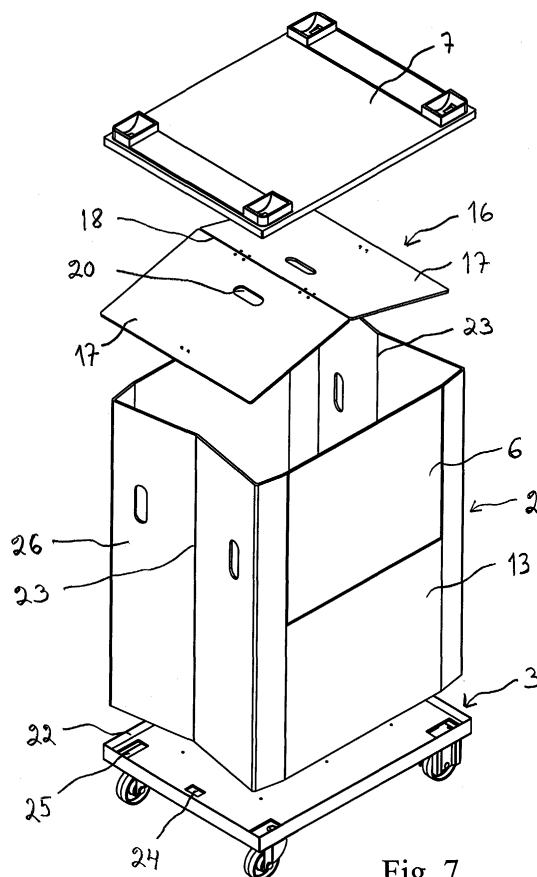


Fig. 7

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Description

[0001] The invention relates to a container system according to the preamble of claim 1 comprising a base and a container unit mountable on the base.

[0002] Containers comprising a base with a crate/bin-type container unit mountable thereon are used for storage of goods in shops, warehouses, loading stations and for shipping of goods. The base may be, e.g., a pallet or a wheeled base whereon a container unit mountable having a rectangular or square bottom, whereby a box-shaped space is formed. Generally, the side walls of the container unit are connected to each other by hinges that make the container unit foldable for minimized storage space when it is empty.

[0003] To the lower edges of the hinged side walls of the container unit are mounted brackets adapted to fit against the edges of the base so as to support the container unit and keep the same in place when seated on the base. Since the mounting brackets are not fixed to the base, they may jump up onto the base when the container is being moved, whereby the container unit is not any more capable of containing the goods placed on the base.

[0004] It is an object of the present invention to provide a novel type of container system, wherein the container unit proper can be secured to the base.

[0005] The goal of the invention is achieved by having the container unit proper of the container system affixable to the base with locking means comprising two rigid locking elements hingedly connected to each other. To each of two opposite side walls of the container unit is adapted at least one mounting bracket providing a clamping surface displaced at a distance from the edge of the side wall. Either one of the locking elements, at the end thereof opposite to its hinged end, is provided with at least one locking claw projection adapted insertable under the top surface of the base through the space remaining between the clamping surface of the mounting bracket and that side wall on which the mounting bracket is adapted.

[0006] More specifically, the container system according to the invention is characterized by what is stated in the characterizing part of claim 1.

[0007] The invention offers significant benefits.

[0008] The container system according to the invention has an uncomplicated construction. The container unit can be affixed to the base and dismounted therefrom rapidly and easily. In a preferred embodiment of the invention, the locking means covers the top surface of the base floor for the portion remaining in the interior of the container unit substantially entirely, whereby the locking means also serves as the bottom of the container.

[0009] In the following, the invention is examined in detail by making reference to the attached drawings wherein

Figure 1 shows an embodiment of the container system according to the invention.

Figure 2 shows the container unit of the container system of figure 1.

Figure 3 shows the base of the container system of figure 1.

Figure 4 shows a locking means of the container system of figure 1.

Figure 5 shows a longitudinally sectional view of the container system of figure 1 without its cover when the locking means is being seated in place.

Figure 6 shows a longitudinally sectional view of the container system of figure 1 without its cover when the locking means is already seated in place.

Figure 7 shows an alternative embodiment of the container system according to the invention.

[0010] Referring to figure 1, a container system 1 shown therein comprises a container unit 2 mounted on a base 3. In the embodiment illustrated in the drawings, the base is a dolly base 3 equipped with caster wheels 5. The caster wheels 5 are mounted in caster wheel housings 9 adapted to the corners of dolly base 3. The container unit 2 has an openable gate door 6 for placing goods into container 1 and removing the same therefrom. Gate door 6 is hingedly connected by its lower edge to the side wall of container unit 2 so that the top edge of the gate door becomes flush with the top edge of container unit 2. Additionally, onto the top of container unit 2 is placed a cover 7. In a close vicinity of the corners of cover 7 are made projections 8 extending into the interior of container 1 so as to prevent cover 7 from slipping away from above container unit 2. Container unit 2 is secured to dolly base 3 by a locking element whose structure and function are shown in more detail in figures 4-6.

[0011] Figure 2 shows the container unit 2 of figure 1. The container unit 2 comprises four side walls hingedly connected to each other so as to form a rectangular frame affixable onto the dolly base. By virtue of its hinged construction, the container unit 2 is foldable when not being in use. To the lower portions of the inner sides of long side walls 13 of container unit 2 are fixed mounting brackets such as clamping eyelets 10 by means of which the container unit 2 is secured to the dolly base. Clamping eyelet 10 is made from an L-angled plate having its first web 11 fixed to the lower portion the inner side of long side wall 13 of container unit 2 in a position having the bent edge of the bracket located at the lower portion of side wall 11. To the second web 12 of clamping eyelet 10 is made a rectangular opening. The second web 12 aligned substantially at right angles in regard to the plane of the long side wall 13 of container unit 2 and substantially parallel to the lower edge of the long side wall 13. The underside of the second web 12 is situated slightly higher than the lower edge of the long side wall 13 of container unit 2. In the embodiment of figure 2, to the lower portion of both long side wall 13

are attached two clamping eyelets 10 displaced at a distance from each other. Typically, one side wall has 1-4 pieces of clamping eyelets 10.

[0012] Figure 3 shows forked caster wheel housings 9 mounted with screws in a close vicinity of the corners of the bottom of dolly base 3. Caster wheels 5 are mounted between the forked ends of the wheel housings 9. The top surface of dolly base 3, in a close vicinity of its outer edges and displaced inwardly at a distance from its outer edges, are made elongated projections 14 aligned parallel to the long sides of the dolly base that support from the inner sides the container unit 2 mounted on dolly base 3. The top side of dolly base 3 is equipped with rectangular openings 15.

[0013] Figure 4 shows a locking means 16 suitable for use in a preferred embodiment of the invention and comprising two rigid locking elements 17 hingedly connected to each other. The ends of locking elements 17 projecting distally in regard to hinge line 18 are adapted insertable under the top surface of the dolly base 3 through the locking eyelets 10 of the container unit 2. Furthermore, the ends of locking elements 17 distal in regard to hinge line 18 are advantageously displaced at the same distance relative to hinge line 18. When the locking means 16 is inserted in place, the hinge line 18 remains aligned parallel to the long side walls 13 of container unit 2.

[0014] In the embodiment of figure 4, the locking elements 17 of locking means 16 are planar plates that in their flattened position form the container bottom, whereby the locking elements cover the top surface of dolly base 3 for essentially the entire portion thereof remaining in the interior of container unit 2. To the ends of locking elements 17 distal in regard to hinge line 18 are adapted claw-like projections 19 bent at right angles so as to be insertable via openings 15 made on the top surface of dolly base 3 through the clamping eyelets 10 fixed to the inner surfaces of the side walls of container unit 2 into a position facing the underside surface of dolly base 3 thus locking container unit 2 to dolly base 3. The projections 19 are adapted to the ends of locking elements 17 distal in regard to hinge line 18 so that the projections in the inserted position of locking means 16 first extend at substantially right angles downward from the distal portions of locking elements 17 and then are angled by about 90° so as to again be parallel to the plane of locking elements 17, whereby the tips of the projections 19 point outward relative to hinge line 18. The embodiment of figure 4 has in each one of locking elements 17 two projections 19 adapted insertable through the clamping eyelets 10 fixed on the inner sides of the long walls 13 of container unit 2. In the direction of the long side wall 13 of container unit 2, the width of clamping eyelet 10 is slightly larger than the width of projection 19. The number of projections 19 of clamping means 16 is equal to the number of clamping eyelets 10 in container unit 2.

[0015] Each one of the locking elements 17 has in a

close vicinity of hinge line 18 a grab hole 20 that helps placing the locking means 16 into container 1 and removing the same from container 1. Additionally, the ends of locking elements 17 are provided with support projections 21 resting against the top surface of dolly base 3 when the locking means 16 is seated in its place.

[0016] Figures 5 and 6 show the insertion of locking means 16 in place. Container unit 2 is seated on dolly base 3. Clamping eyelets 10 of container unit 2 are herein resting against the upward projections 14 of dolly base 3. In figure 5, the locking means 16 is shown folded about hinge line 18 into the shape of an inverted V wherein hinge line 18 is uppermost and locking elements 17 are slanted downward from hinge line 18. After placing locking means 16 into the interior space of container unit 2, claw projections 19 at the distal ends of locking elements 17 can be inserted through the clamping eyelets 10 of container unit 2. Next, the locking means 16 is pushed straight about its hinge line 18 into the position shown in figure 6, whereby locking claw projections 19 of clamping elements 17 are inserted below the top surface of dolly base 3. Thus mounted, clamping means 16 keeps container unit 2 locked in place on dolly base 3. By the same token, the locking means 16 forms the bottom of container 1 by way of covering the top area of dolly base 3 remaining in the interior of container unit 2 substantially entirely.

[0017] To remove the clamping means 16 away from the container unit 2, the clamping means is first elevated by the grab holes 20 upward, whereby the clamping elements 17 fold about the hinge line 18. Simultaneously, the locking claw projections 19 are withdrawn from under the top surface of dolly base 3 and out from the clamping eyelets 10. Subsequently, the locking means 16 is elevated out from the interior of the container unit 2. Finally, the container unit 2 can be lifted away from above the dolly base 3 and folded down.

[0018] The invention may also have embodiments different from those described above.

[0019] For instance, the clamping eyelet 10 may comprise two angled hooks opposed to each other so that the locking claw projection 19 of locking element 17 can be threaded between the hooks. It may be further contemplated that the clamping eyelet is replaced by a single hook angled as letter L, but in this case the free end of the hook is unsupported and can therefore readily become bent in use, which means that this kind of hook must be dimensioned much stronger than an eyelet-type clamping element. The eyelet opening itself may be shaped in a desired fashion. An essential requirement is that clamping eyelet or hook or other like clamping projection forms at least one clamping surface displaced at a distance from the lower edge of the side wall of container unit 2 such that a claw-like locking projection 19 of locking element 17 is insertable under the top surface of the base leaving the about hinge 18 foldable locking means resting at least partially on the clamping surface thus locking the container unit 2 onto the top

surface of the dolly base.

[0020] The hinged locking means 16 may comprise two plates as in the above-described exemplary embodiment or, alternatively, two bars with claw-like ends or any intermediate kind of structure between these. The hinge point of locking means 16 need not necessarily be located at the center of the locking means. If the elements are selected to be planar plates, the material may be, e.g., perforated plate or mesh plate with the provision that the material stiffness is sufficiently good. While not generally necessary, it may also be contemplated that the locking means 16 is provided with a securing mechanism.

[0021] If so desired, the end of one locking element 17 of locking means 16 distal in regard to the hinge line may be hingedly connected to one side wall of container unit 2 thus making it possible to turn the locking means 16 about this hinge point against the same side wall when the locking means is removed from its locking position. As to the other parts of the locking means 16 and the container unit 2, the structures are similar to those of the above-described embodiment.

[0022] Figure 7 shows an alternative embodiment having the outer edges of the top surface of the dolly base 3 encircled by an upward rising collar 22 serving to help the mounting of container unit 2 onto dolly base 3. The container unit 2 is seated to inside the interior perimeter of the collar 22 so that the outside lower edges of the walls 13, 26 of container unit 2 become facing the interior perimeter of the collar 22. The collar 22 may surround the outer edges of the top surface of dolly base 3 either partially or wholly. The container unit 2 is collapsible along hinge lines 23 of end walls 26. The hinge line 18 running parallel to the end walls 26, that is, the short walls of container 1, is adapted at the center line of the locking means 16 serving as the bottom of container 1. Similarly with the embodiment of figure 1, also herein the locking means 16 comprises two rigid locking elements 17 that advantageously cover the top surface of the base floor for the portion remaining in the interior of container unit 2 substantially entirely. The ends of locking means 16 are equipped with similar kind of locking projections (not shown) as those used in the embodiment of figure 1. Also the end walls of container unit 2 incorporate similar kind of clamping eyelets (not shown) as those used in the embodiment of figure 1. The locking projections are inserted through the clamping eyelets and via openings 24 of the top surface of dolly base 3 so as to reach to the underside of dolly base 3. The dolly base openings are located in a close vicinity of the edges of the top surface of dolly base 3. Either end of locking means 16 has at least one locking projection, whereby respectively either end side wall of container unit 2 has an equal number of clamping eyelets. The top surface corners of dolly base 3 are provided with wheel slots 25 such that the dolly base 3 can accommodate the wheels of another dolly base placed on an underlying base when a number of dolly bases are stacked on one an-

other for storage. The long side wall 13 of container unit 2 is equipped with an openable gate door 6. Except for the differences described herein, the embodiment of figure 7 is similar to the embodiment of figure 1 as to its function and construction.

[0023] Advantageously, the cover 7 of container 1 is made of plastic or board. The locking means 16 is advantageously made of plywood, plastic or board. The dolly base 3 is advantageously fabricated from plastic or metal, while the container unit 2 is of board or plastic.

Claims

1. A container system (1) comprising a base (3) with a container unit (2) mountable on said base (3), **characterized by**
 - clamping projections (10) adapted to opposite side walls (13; 26) of said container unit (2), each one of said projections including a clamping surface displaced at a distance from the lower edge of said side wall (13; 26), and
 - a locking means (16) for securing said container unit (2) to said base (3), said locking means (16) comprising two hingedly (18) to each other connected rigid locking elements (17) having at each end thereof distal in regard to the hinge line (18) thereof adapted at least one claw-like projection (19) adapted insertable under the top surface of the base (3) through the space remaining between said clamping surface of said clamping projection (10) and that side wall (13; 26) of container unit (2) on which said clamping projection (10) is adapted.
2. The container system of claim 1, **characterized in that**, in one locking element (17) of said locking means (16), the end distal in regard to said hinge line (18) is hingedly connected to said side wall (13; 26) of said container unit (2).
3. The container system of claim 1 or 2, **characterized in that** said locking elements are planar plates (17) adapted to cover the top surface of said base floor (3) for the portion remaining in the interior of said container unit (2) substantially entirely.
4. The container system of claim 3, **characterized in that** said planar locking elements (17) have grab holes (20) in a close vicinity of said hinge line (18).
5. The container system of any one of foregoing claims, **characterized in that** the outer edges of the top surface of said dolly base (3) are encircled by an upward rising collar (22) against the inner side of which the lower edges of the outer surfaces of said side walls (13; 26) of said container unit (2) can be fitted.

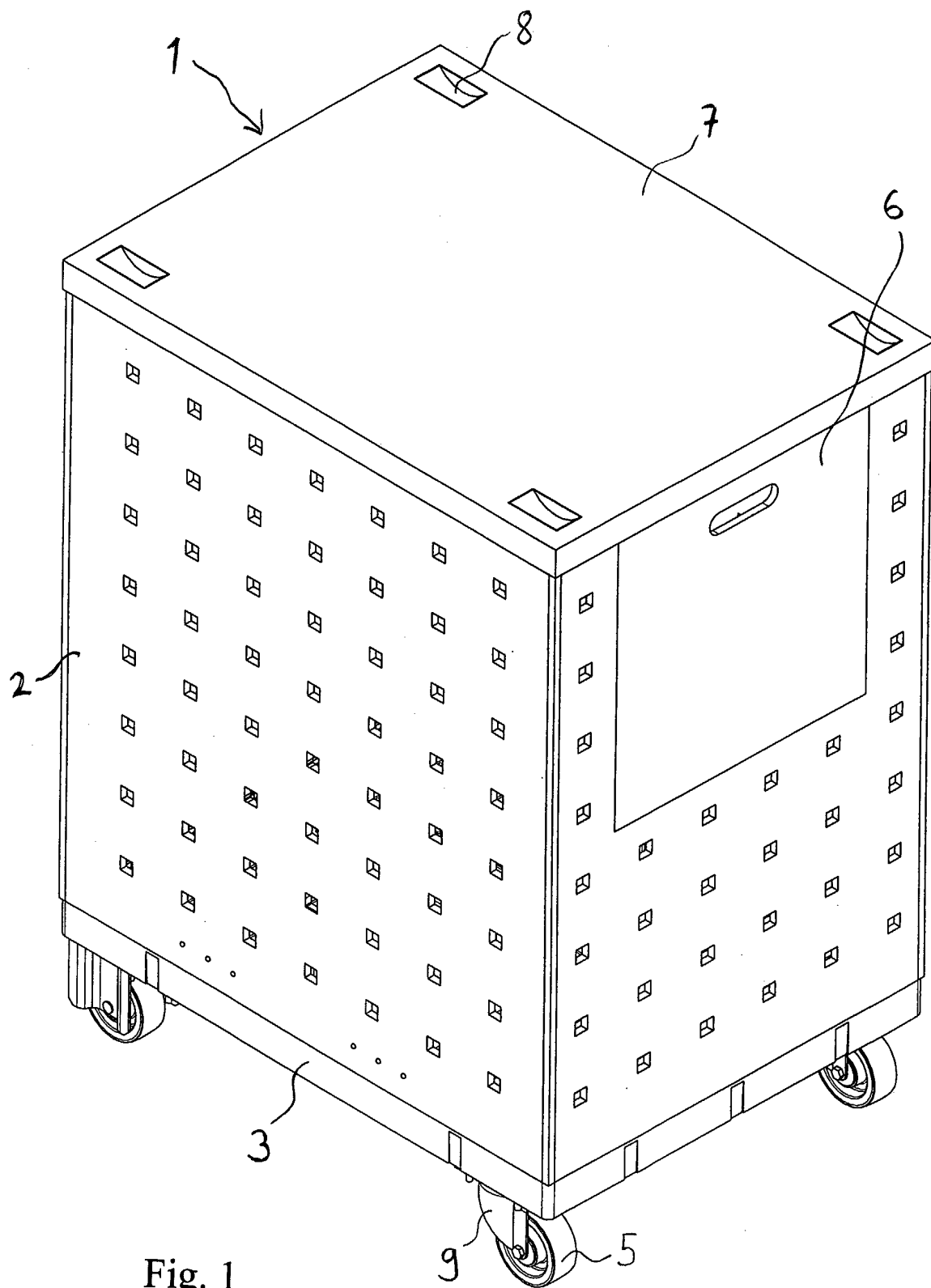
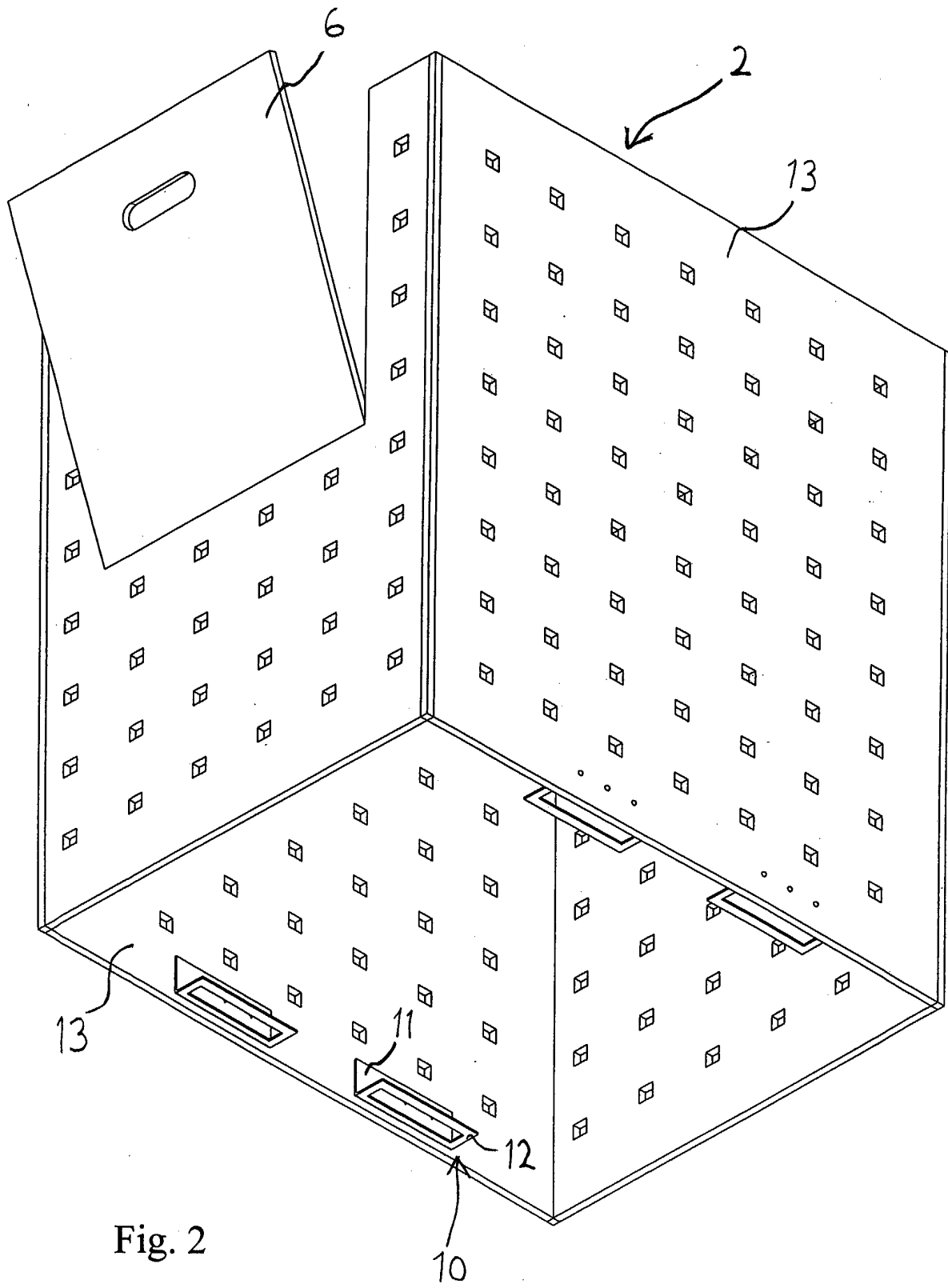


Fig. 1



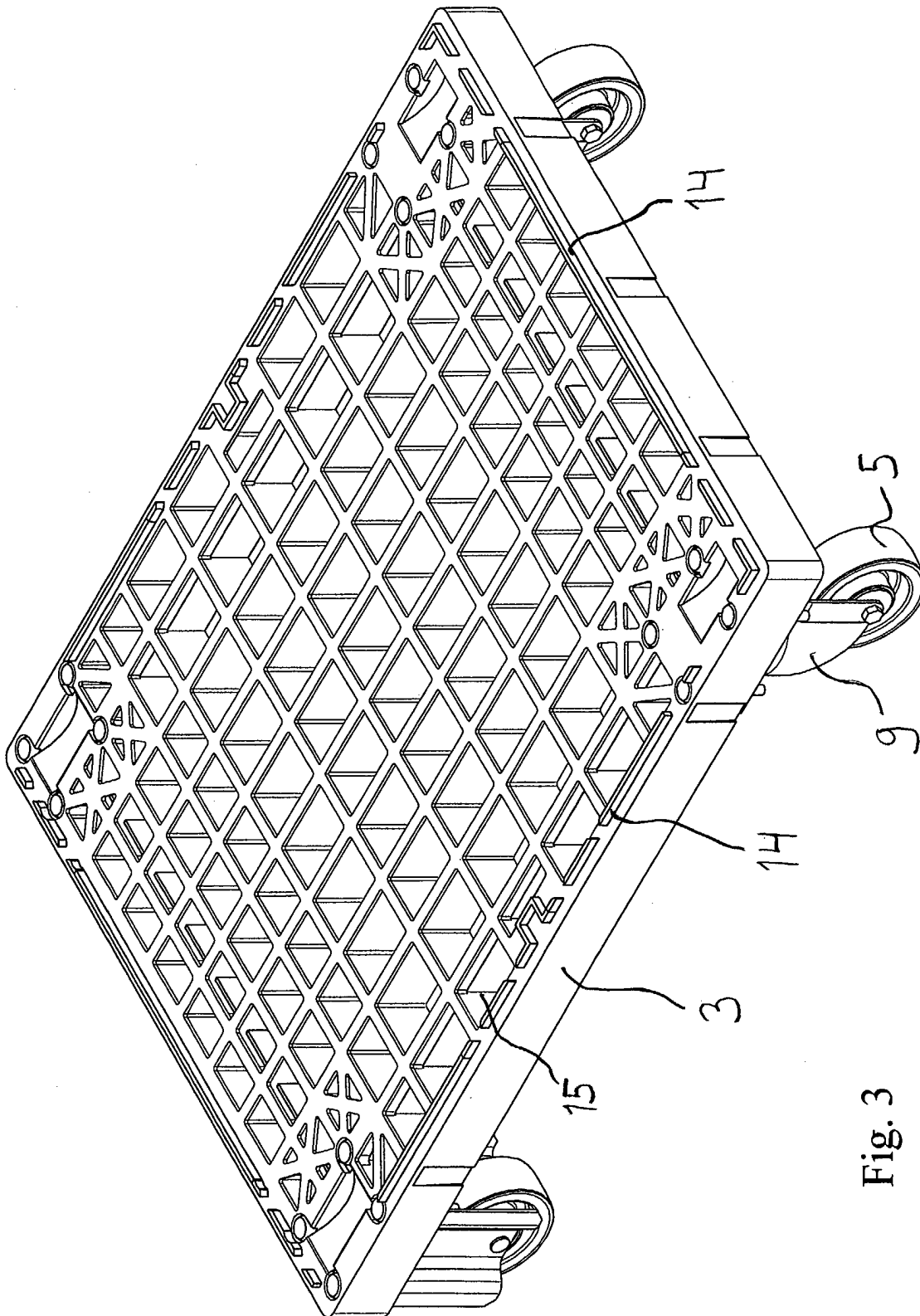


Fig. 3

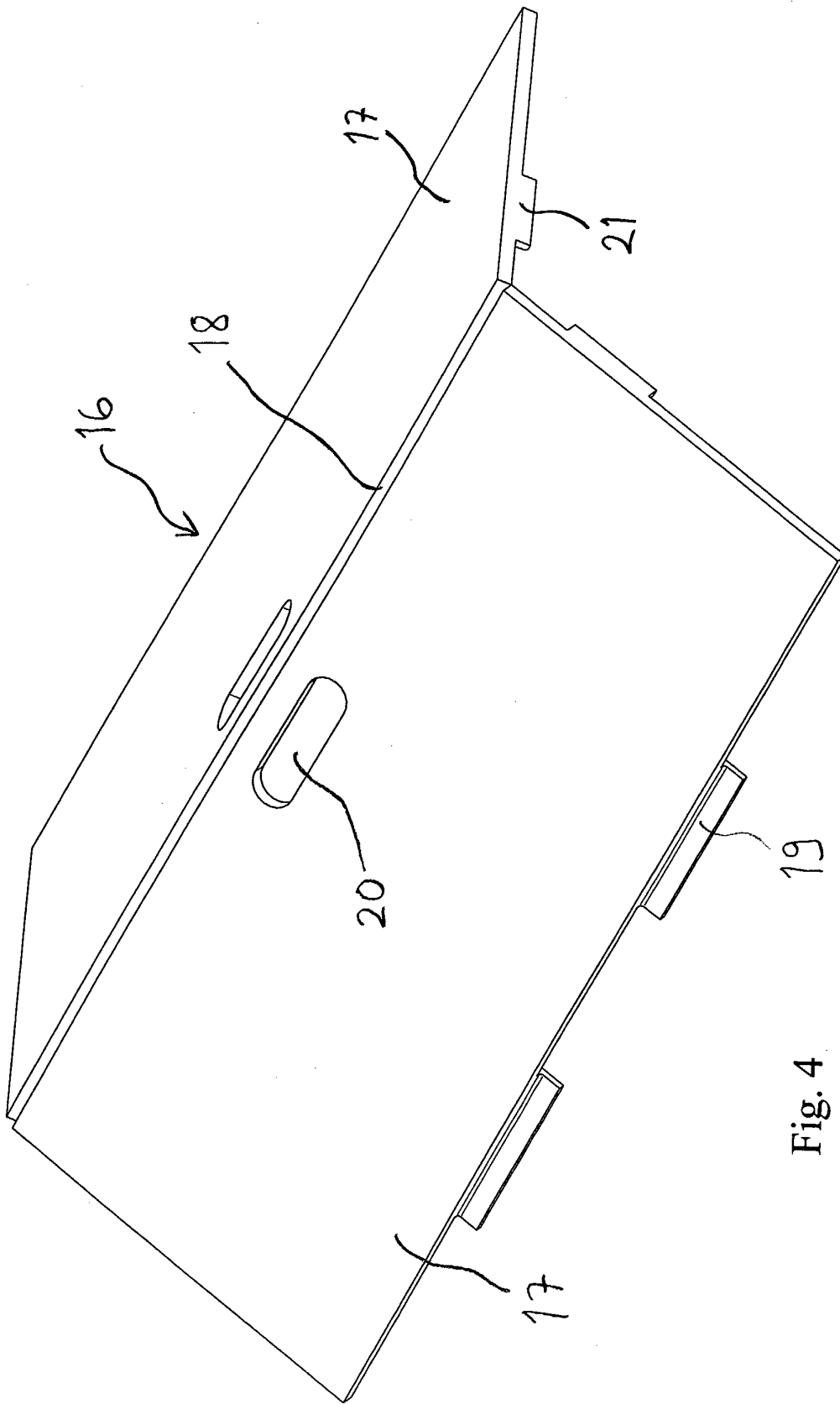


Fig. 4

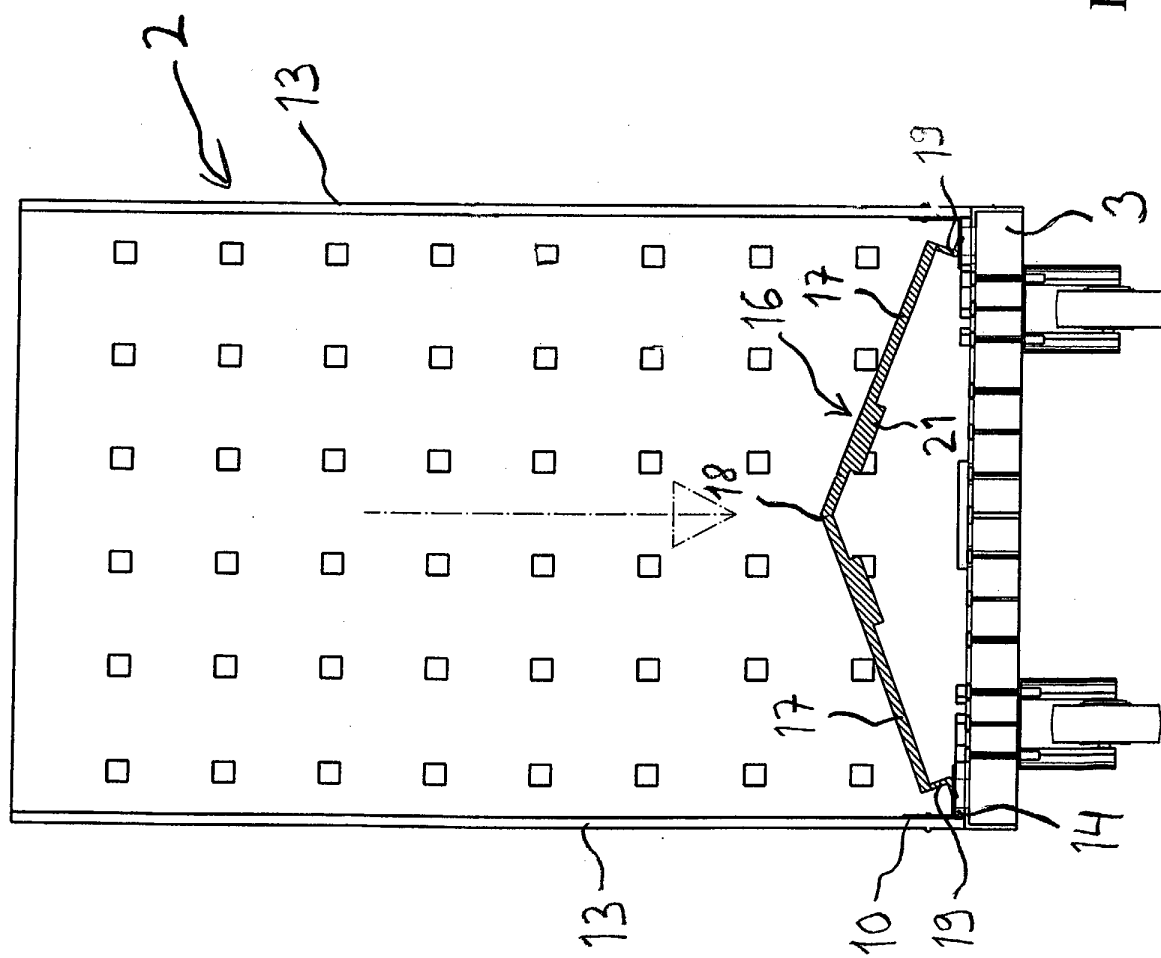


Fig. 5

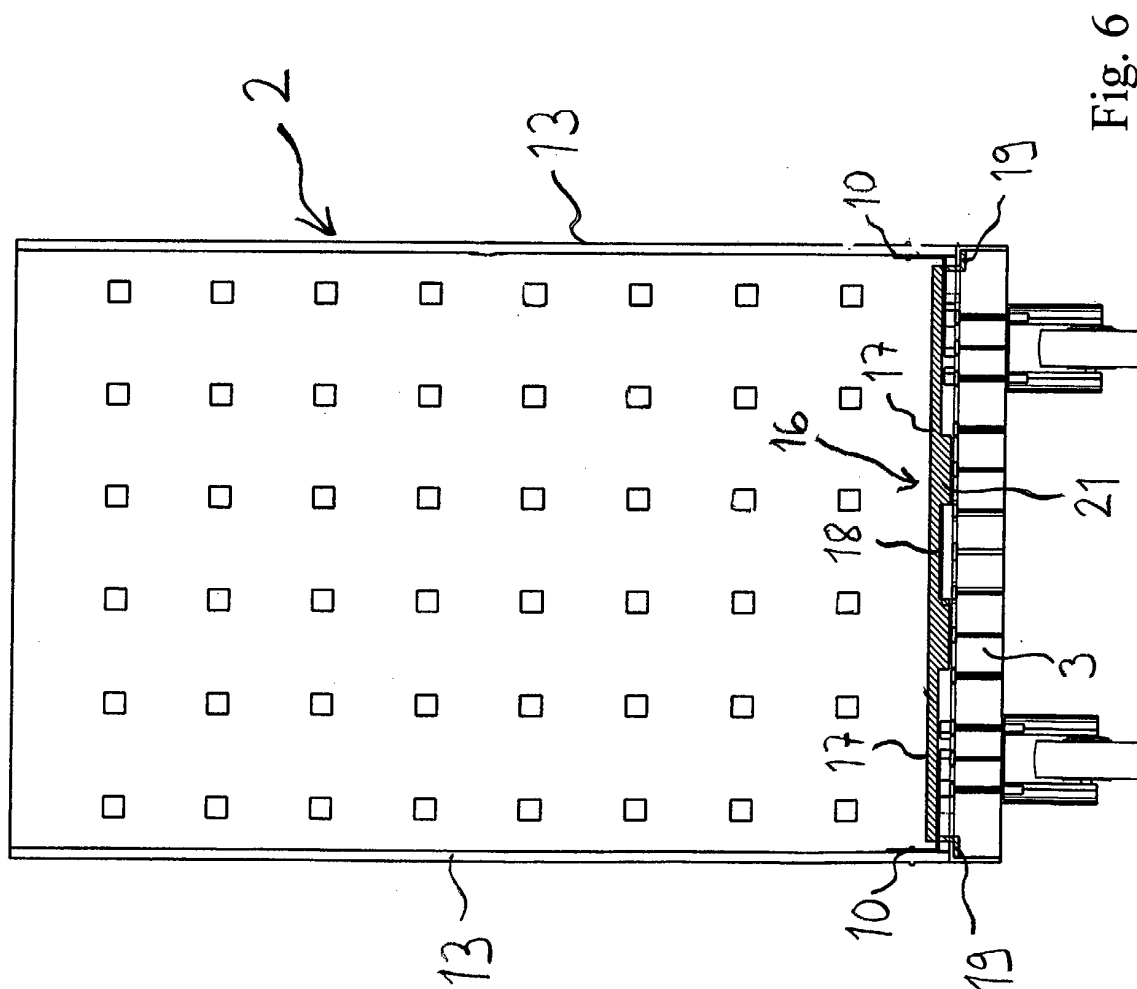


Fig. 6

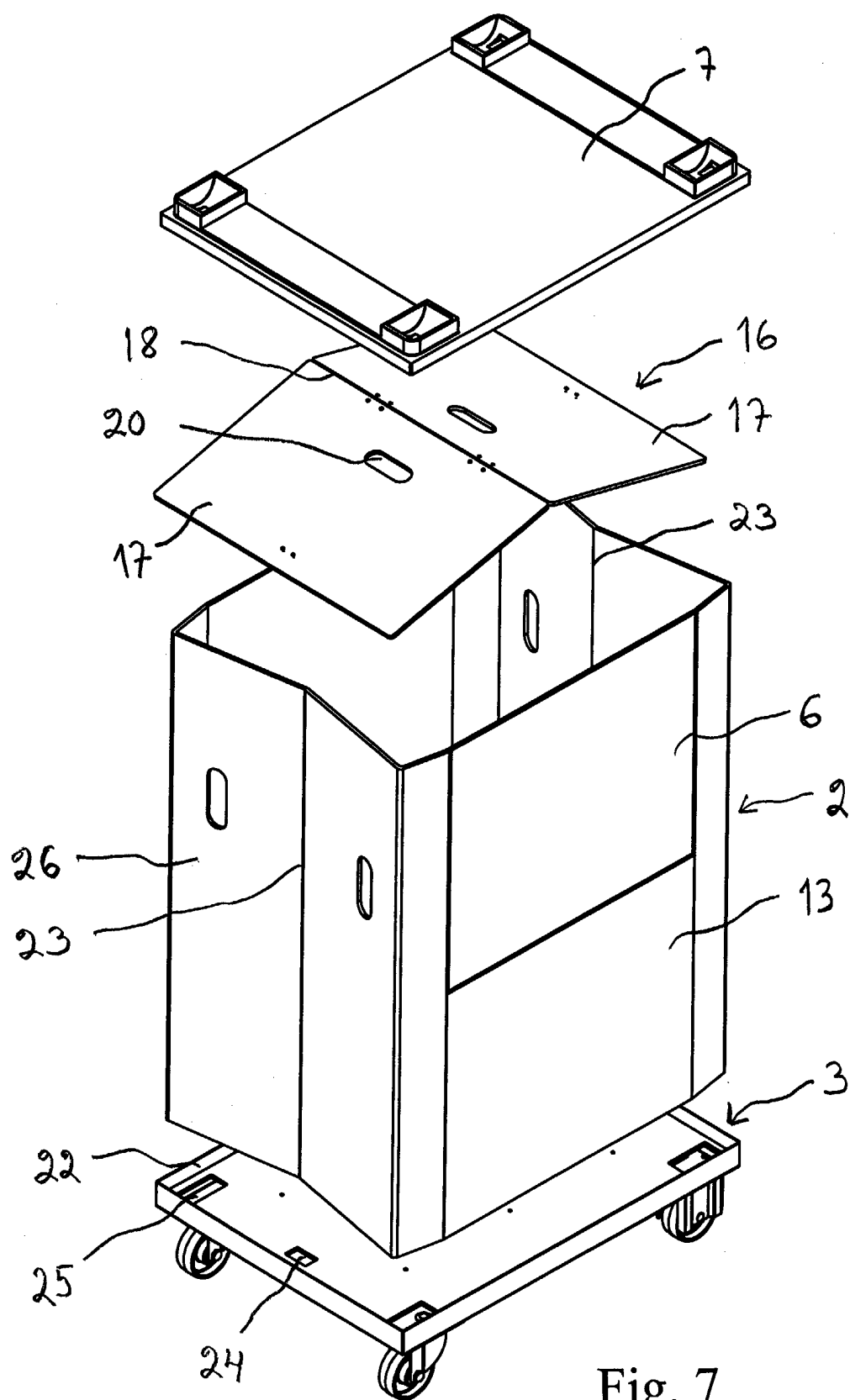


Fig. 7