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Piacenza et al.(10) **Pub. No.: US 2009/0236255 A1**(43) **Pub. Date: Sep. 24, 2009**(54) **STACKABLE INDEPENDENT CONTAINER
SYSTEM**(30) **Foreign Application Priority Data**

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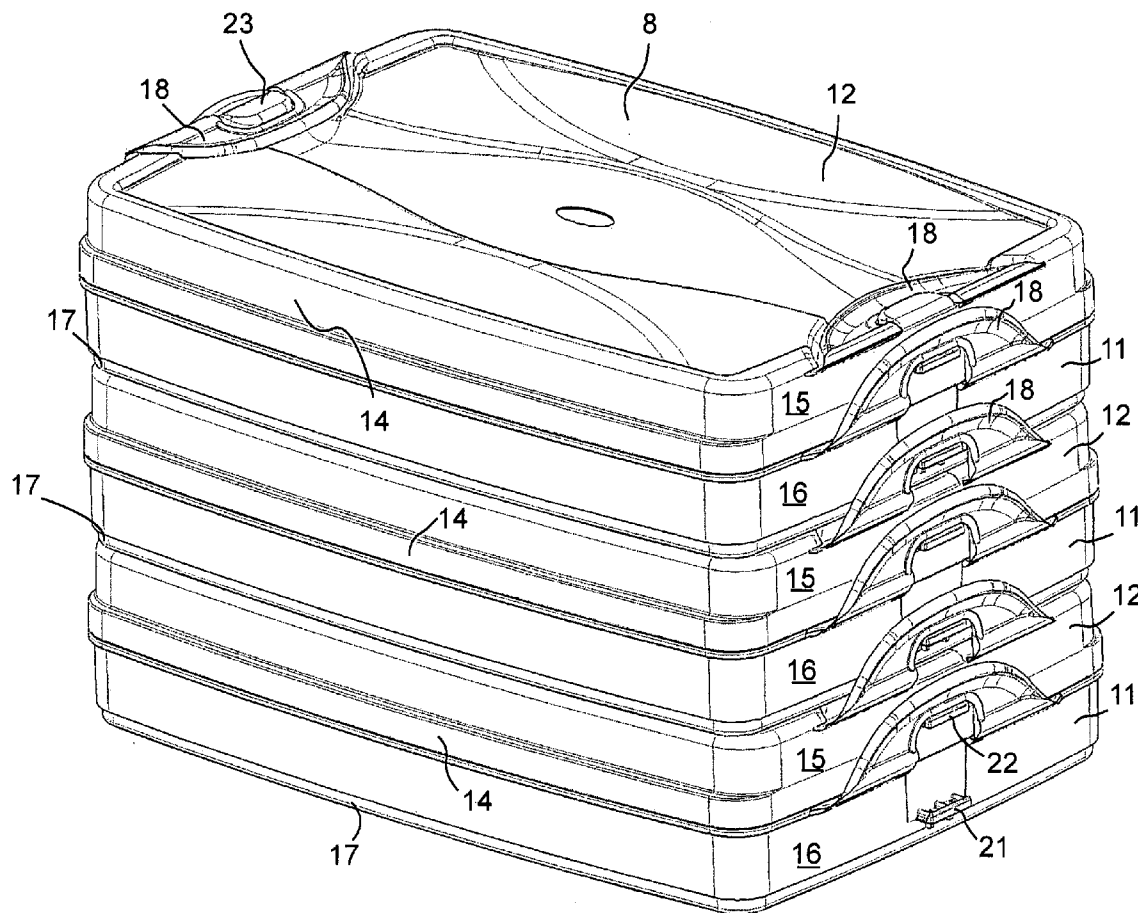
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(IT)****Publication Classification**(51) **Int. Cl.**
B65D 21/036 (2006.01)(52) **U.S. Cl.** **206/508**(57) **ABSTRACT**

Stackable container system (10), comprising a plurality of stackable elements (11,12), mutual releasable clamping means being provided between one element and the next, made up of hooking means (18,20) present near the top periphery of each stackable element (11, 12) and retaining means (21,22) of an upper element extending from at least one side of said upper stackable element (11,12) near a lower portion thereof, characterised in that said stackable elements are made up of container elements (11) and closing elements (12) of at least part of said containers (11).

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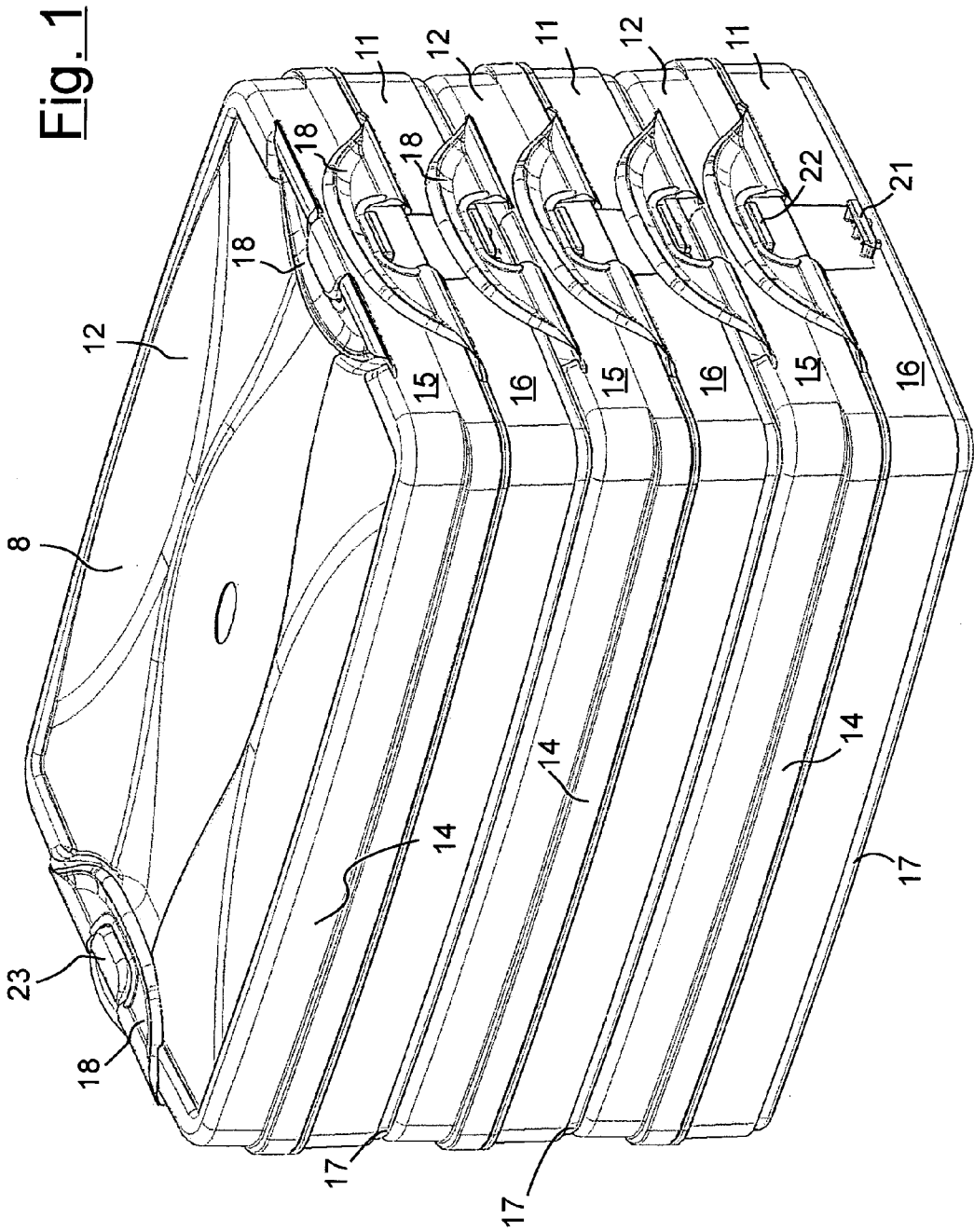
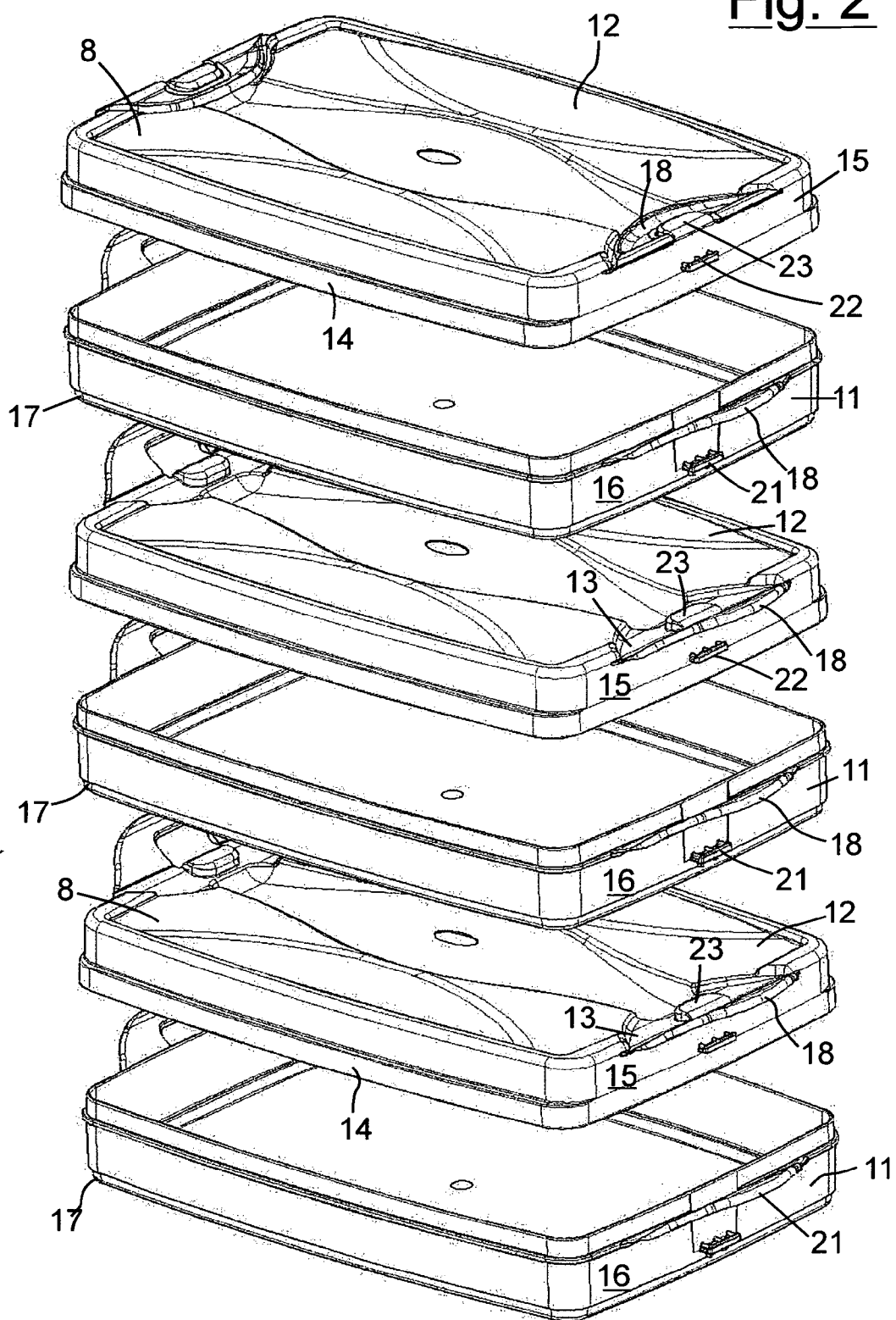


Fig. 2



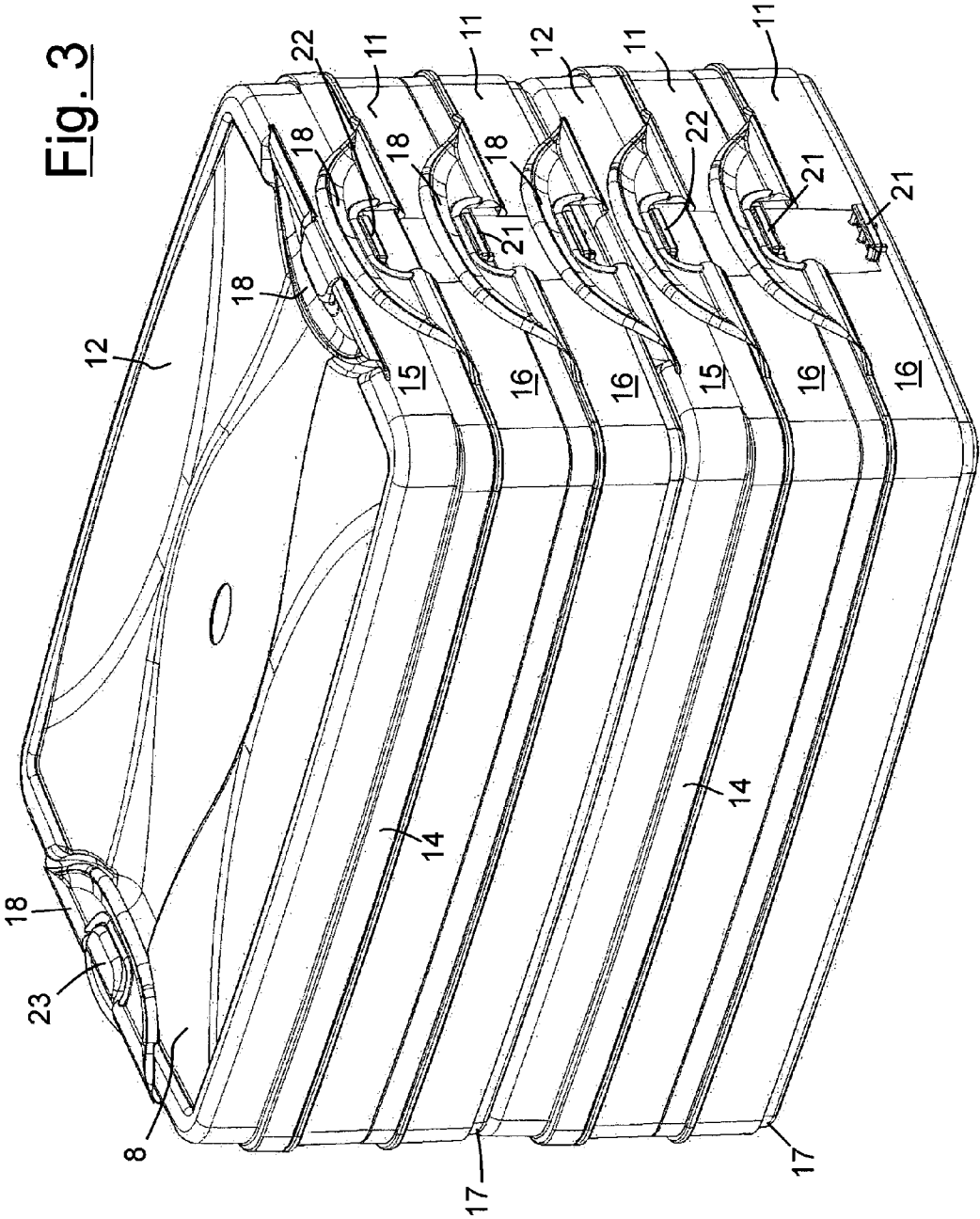


Fig. 4

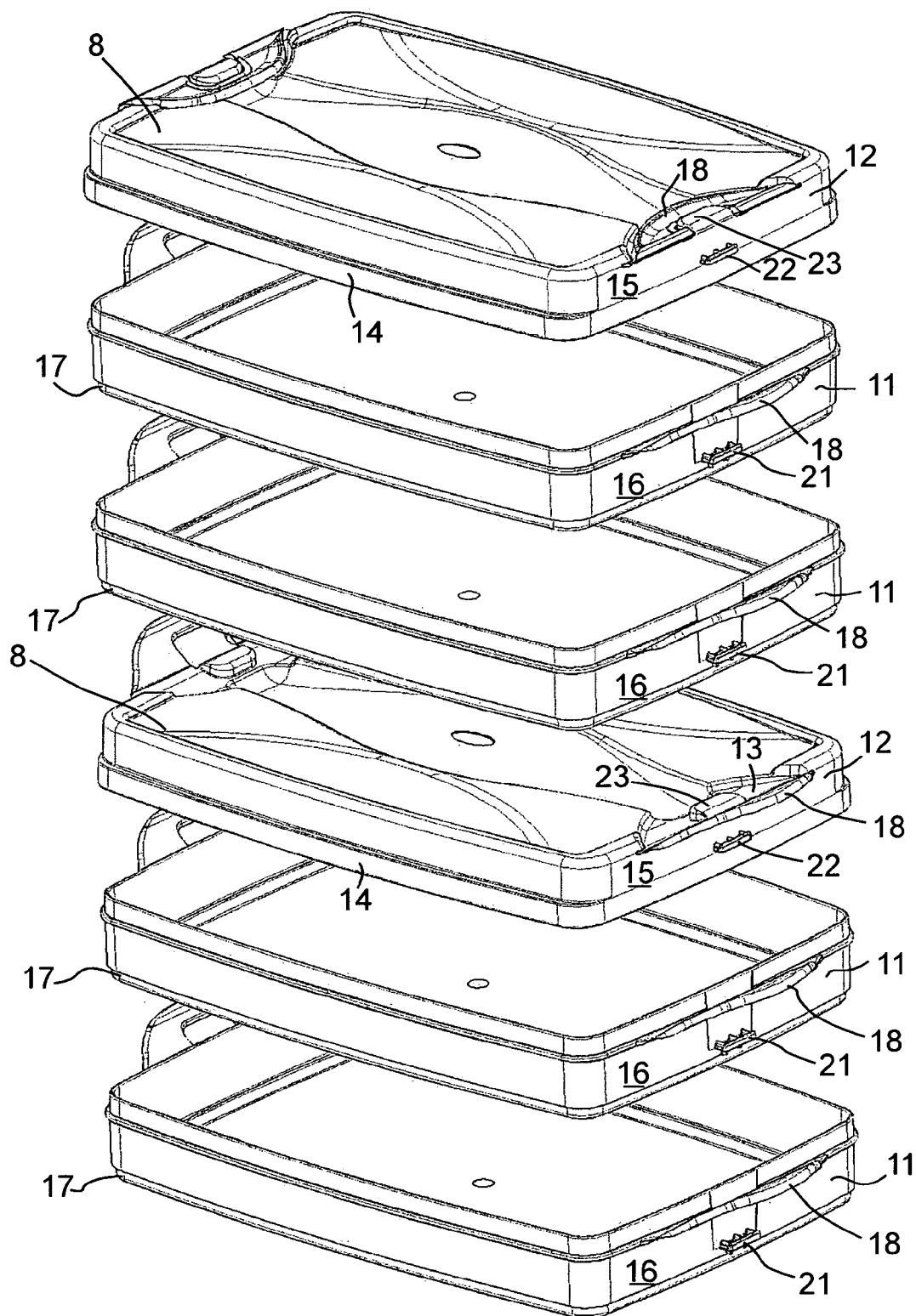
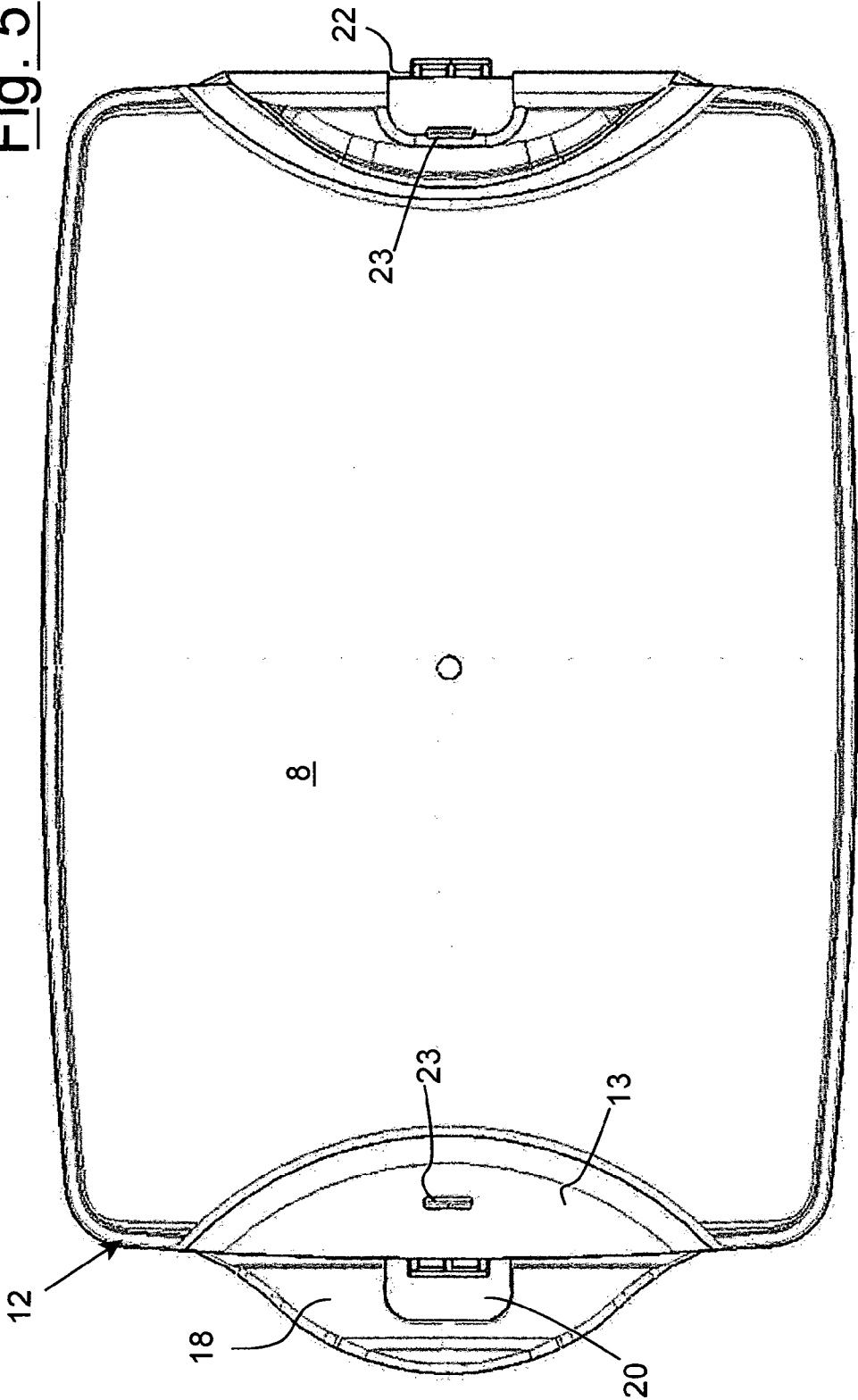


Fig. 5



STACKABLE INDEPENDENT CONTAINER SYSTEM

[0001] The present invention refers to a system of stackable modular containers specifically but not exclusively intended for the conservation and transport of foodstuffs.

[0002] Plastic material food containers used for the conservation and transport of food of various types are known in the field of what are known as "household objects".

[0003] For example, the necessity to put fresh and/or cooked food back into the refrigerator or freezer (or into another cold environment), for the purpose of conservation for use within relatively short periods of time, is well known.

[0004] Plastic material food containers are also used to transport the above-mentioned food from one place to another, for example on the occasion of transfers from house to house, trips, excursions and so forth.

[0005] To meet the above-mentioned requirements, other stackable containers have already been proposed, with or without positive sealed closure between one container and the next, positive sealing being preferred as it ensures a properly sealed closure, avoiding both the leaking of the contents and inadequate conservation with consequent loss of flavours and unwanted contamination of the refrigerator.

[0006] Furthermore, extraction and transport of the stack of stacked containers without a positive closure is not easy and safe, as clumsy handling may easily cause the sudden and unexpected separation of the stacked containers, with the resultant leaking of the contents. The stackable container systems provided with a positive closure known to date generally present the disadvantage of being made in such a way as to only provide for a top lid. The closing of a lower container therefore takes place through the base of the container above it.

[0007] As a result of this, not only is the parallel and independent use of multiple containers impossible, but also various different inconveniences arise during usage. For example, the base of a container used as the lid of a lower container, as well as the lid itself, are usually in contact with the material contained in such lower container.

[0008] In the case of use with food, the base of the container used as the lid or the lid may therefore become dirty and oily, and may no longer be used to cover another container without causing the contamination of the material contained in the latter.

[0009] Furthermore, the dirty base of a container may not be placed on a surface without making the surface dirty in its turn, making the handling of the stack of containers difficult.

[0010] Thus, for example, the system of modular containers described in European patent EP 1 026 090 comprises a plurality of equal and stackable containers, and only one top lid.

[0011] The containers of such a system are provided with a means of positive hooking between one container and the next in vertical alignment, so that an upper container may serve as the lid for a lower container.

[0012] The containers in such a system however present the disadvantage of not being able to be used separately as the system is made in such a way as to provide only one top lid. They also present the disadvantages of use described previously.

[0013] The general object of the present invention is to resolve the above-mentioned drawbacks of the known art in an extremely simple, economical and particularly functional manner.

[0014] A further object is to devise a stackable container system in which the individual containers are usable separately.

[0015] A further and final object is to devise a stackable container system which is particularly useful and practical to use.

[0016] In view of the above-mentioned objects, according to the present invention, a stackable container system has been designed, having the characteristics described in the appended claims.

[0017] The structural and functional characteristics of the present invention and its advantages in relation to the known art will be made clearer and more evident from a review of the following description, which refers to the appended drawings, which show a practical embodiment of the invention itself. In the drawings:

[0018] FIG. 1 shows a perspective view of the container system according to the invention in a first stacked use configuration;

[0019] FIG. 2 is an exploded view of the configuration of FIG. 1;

[0020] FIG. 3 shows a perspective view of the container system according to the invention in a second stacked use configuration;

[0021] FIG. 4 is an exploded view of the configuration of FIG. 2;

[0022] FIG. 5 is a top plan view of a lid used in the container system according to the invention.

[0023] When referring to the drawings, the stackable container system being discussed is indicated overall by **10** and comprises a plurality of containers **11** and at least one closing element or lid **12** adapted to the closing of the container **11** arranged on top of the stack **10**.

[0024] The containers **11** and lids **12** described in the exemplary, and not limiting, embodiment have a rectangular plan with rounded corners, but they may also have any other geometric form adapted to the object. The height of the containers may also be different.

[0025] The stackable container system **10** may also provide for more lids **12** shaped in such a way as to be interposed between one container **11** and the next in the stack **10**. As such, each lid **12** presents on its top a central depression **8** formed in a complementary manner in relation to the narrow bottom section **17** of the containers **11**, so as to house it.

[0026] The narrow bottom section **17** of the containers **11** ensures that these may also be stacked one onto the other, in any succession, as shown in FIGS. 3 and 4, by inserting (with light effort) the bottom section **17** of a container into the top of the container below. To this end, the external dimensions of the bottom section **17** and the internal dimensions at the top of each container are complementary, and therefore such as to ensure hooking with light effort between the surfaces in contact.

[0027] Similarly, the external dimensions at the top of each container **11** and the internal dimensions of the free ends **14** of the walls of each lid **12** are complementary and therefore are such as to ensure hooking with light effort between the surfaces in contact. As such, the lid **12** may advantageously present a widened-section, free terminal portion **14**.

[0028] According to the present invention, a positive hooking system is provided on the sides of each container 11 and of each lid 12 (transversal sides 15,16). Such a hooking system allows both the connection between a container 11 and another container above it and the connection between a container 11 and a lid 12, to achieve the positive sealed closure of the container below. Furthermore, the same hooking system is usable for the connection of a lid 12 and a container 11 above, a connection necessary for the fast and safe hooking to the stack 10 of a container 11 closed by means of lid 12.

[0029] More precisely, said hooking system is made up of winglets 18 which are hinged, for example by means of a line of lesser resistance, near the top edge of the container 11 or respectively at the perimeter of the top surface of the lid 12.

[0030] Each winglet 18 presents, in the middle, an opening 20 suitable for being hooked to, as shown in FIG. 1 and in FIG. 3, a projecting tooth 21, in vertical alignment, from the container 11 above, near the bottom section 17, or a projecting tooth 22, in vertical alignment, from the lid 12 above.

[0031] In this way, it is clear how a plurality of stacked containers, such as, for example, that shown in FIG. 1, may be positively sealed by means of the respective lids 12 by simply hooking the opening 20 of a winglet 18 present on a lower container 11 to the tooth 22 of a lid 12 above, and successively stacked and hooked to each other by means of the hooking of the opening 20 of the winglet 18 present on a lid 12 below, to the tooth 21 of a container 11 above.

[0032] Similarly, it is clear how a plurality of stacked containers 11, such as, for example, that shown in FIG. 3, may be positively sealed, one to the other, by simply hooking the opening 20 of a winglet 18 of a lower container 11 to the tooth 21 of an upper container 11. The positive closing of a lid 12 onto a container 11 below takes place in a perfectly corresponding manner in this case as well.

[0033] The stacking operation is therefore implemented with the winglets 18 lowered or open in the position shown in FIGS. 2 and 4, after having put the contents back into the respective containers, while the positive closing of a container 11 by means of the lid 12 or by means of an upper container 11 is implemented by rotating the winglets 18 upwards and engaging, as mentioned above, the opening 20 with the tooth 22 or respectively 21. The hooking between a lid 12 and a container above 11 takes place in a similar fashion. Lastly, the lid 12 presents on its top, at each winglet 18, a recessed seat 13 in the centre of which a retaining tooth 23 is provided. Such seats 13 are substantially formed in a manner complementary to the winglets 18 in such a way as to house them, the retaining teeth 23 being arranged at the opening 20, when the winglet 18 is housed in said seats 13.

[0034] In the case of the top lid 12, where the winglet 18 is not used to hook to an upper container 11, it is therefore possible to house the winglet in the seat 13 by linking it to the retaining tooth 23 so that it does not project from the stack of containers 10.

[0035] Lastly, a grip handle is made on each winglet 18, through an arched configuration of the winglet itself, which leaves space for the insertion of the fingers of a hand in the intrados arch.

[0036] From what has been described above in reference to the figures, it has therefore been shown how the stackable container system according to the present invention is particularly useful and advantageous.

[0037] The object mentioned in the preamble of the description to make a system of modular, equal and stackable containers with a sealed closure has been achieved, in which the containers of the stack are positively interconnected by means of a chain closure system, in which, in order to be able to use the individual containers independently of the others, the lids may be interposed between one container and the next in the stack.

[0038] The system of the invention also offers the advantage of being able to increase the overall containment space of the containers, by simply using lids which also define a containment space. If such increase of the containment space could be previously exploited only for the top container, it is now possible to exploit it for one or more of any container in the stack with the system according to the invention.

[0039] In addition to this, a further advantage of the container system of the present invention may be appreciated in the case of using the containers for food, when one normally wishes to avoid the mutual contamination of the materials contained in the individual containers. The possibility of interposing lids ensures the interchangeability of the positions of the individual containers, the opening of the same and/or the removal of only one container from the stack, without the risk of contamination of the materials contained in them.

[0040] Of course, the embodiments of the stackable container system according to the invention may be different from that shown only by way of example and not limitation in the drawings, as may the materials.

[0041] For example, not necessarily all the containers must be closed by a lid, but at least one of them may be closed by the bottom of the container above.

[0042] The protection scope of the invention is therefore defined by the appended claims.

1. Stackable container system (10), comprising a plurality of stackable elements (11,12), mutual clamping releasable means being provided between one element and the next, made up of hooking means (18,20) present near the top periphery of each stackable element (11, 12) and retaining means (21,22) of an element above extending from at least one side of said stackable element (11,12) above near a lower portion thereof, characterised in that said stackable elements are made up of container elements (11) and closing elements (12) of at least part of said containers (11).

2. System according to claim 1, characterised in that the hooking means (18,20) of a lower element (11,12) hook to the retaining means (21,22) of an upper element.

3. System according to claim 1, characterised in that said mutual releasable clamping means are provided on the transversal sides (15,16) of each element (11,12).

4. System according to claim 1, characterised in that said hooking means (18,20) comprise at least one folding winglet (18), presenting in the middle an opening (20), and said retaining means (21,22) comprise a retaining tooth (21,22) hookable to said opening (20).

5. System according to claim 1, characterised in that said winglet (18) is arranged near the top edge of each container element (11).

6. System according to claim 1, characterised in that said winglet (18) is located at the perimeter of the top surface of each closing element (12).

7. System according to claim 5, characterised in that said winglet (18) is made of flexible material and is hinged to said

container elements (11), and respectively to said closing elements (12), by means of a line of lesser resistance.

8. System according to claim 1, characterised in that said covering element (12) presents a central depression (8) formed in a complementary manner in relation to a bottom portion (17) of said container element (11).

9. System according to claim 1, characterised in that said covering element (12) presents a recessed seat (13) provided with a retaining tooth (23) for the housing of said hooking means (18,20).

10. System according to claim 1, characterised in that each container element (11) presents external dimensions of its top which are complementary to the internal dimensions of the

free end (14) of the walls of each covering element (12), in such a way as to ensure hooking with light effort between the two elements (11,12).

11. System according to claim 1, characterised in that each container element (11) presents external dimensions of its bottom section (17) which are complementary to the internal dimensions of its top in such a way as to ensure hooking with light effort between the two elements (11,12). 12. System according to any one of the previous claims, characterised in that the edges of said containers (11,12) have a variable height.

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