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(54) **A lid and a storage system**

(57) The present disclosure relates to a lid (1) for a container. The lid is adapted to be fitted on the top of a container and has a generally rectangular shape with two pairs of opposing and parallel edges, defining four corners and extending at least partly in a main plane in between the edges. In the vicinity of each of the four corners, the lid comprises at least a first (7) and a second (9) corner support, wherein the first corner support comprises two support surfaces (11,13) rising a first step from the main plane, and where the second corner support comprises two support surfaces (17,19) rising an additional second step from the main plane. The distance (d1) between the second corner supports of two diagonally opposing corners is greater than the distance (d2) between the first corner supports of said diagonally opposing corners. Thereby the lid can prevent containers with different bottom surface sizes from slipping sideways when stacked on top of the lid.

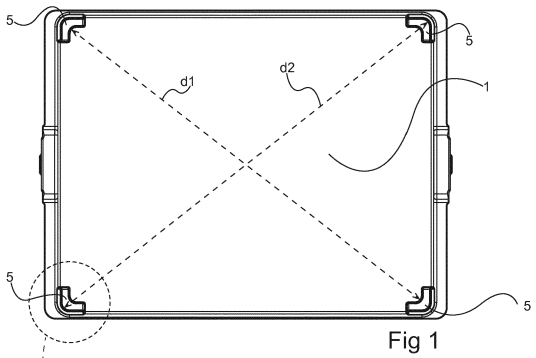


Fig 1

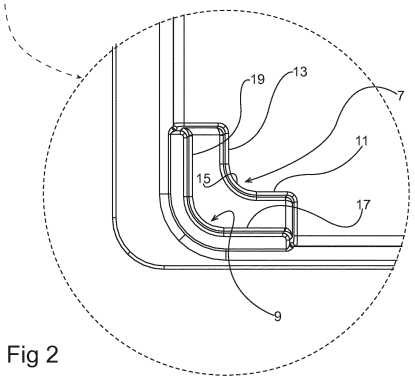


Fig 2

EP 2 944 581 A1

Description

Technical field

[0001] The present disclosure relates to a lid for a container, the lid being adapted to be fitted on the top of a container e.g. to form a closed space. The lid has a generally rectangular shape with two pairs of opposing and parallel edges, such that four corners are defined, and extends at least partly in a main plane in between the edges. The present disclosure further relates to a storage system comprising such a lid and a first and a second container.

Background

[0002] Such lids and containers may be produced by injection moulding in a plastic material and are well known for the use of storing various objects. The container may be suspended in a drawer frame. Containers with fitted lids may also be stacked as a storage system to store more items for a given floor surface area. One general problem with such storage systems is to improve the stacking functionality.

Summary

[0003] One object of the present disclosure is therefore to obtain a lid or a storage system of the initially mentioned kind with improved stacking properties.

[0004] This object is achieved by a lid as defined in claim 1 and a storage system as defined in claim 6. More specifically, a lid of the initially mentioned kind comprises, in the vicinity of each of said four corners, at least a first and a second corner support. The first corner support comprises two support surfaces rising a first step from the main plane, and the second corner support comprises two support surfaces rising an additional second step from the main plane. The distance between the second corner supports of two diagonally opposing corners is greater than the distance between the first corner supports of said diagonally opposing corners.

[0005] This means that containers with two different bottom surface sizes can be placed on top of the lid and can be prevented from slipping in the direction of the main plane. Thereby the stacking functionality is improved.

[0006] When used in a system with at least two containers having different bottom surface sizes, the distance between the first corner supports of two diagonally opposing corners of the lid corresponds to the diagonal distance between two corners in the bottom surface of a first container, and the distance between the second corner supports of two diagonally opposing corners corresponds to the diagonal distance between two corners in the bottom surface of a second container.

[0007] The lid and/or the container may be made by injection moulding a plastic material such as polypropylene, PP.

[0008] It is possible to provide each corner of the lid with a third corner support, which includes two support surfaces rising an additional third step from the main surface of the lid. This allows a container with a third bottom surface size to be stacked on the lid in the same way.

[0009] Each corner support's surfaces may be joined into a corner.

[0010] A surface, elevated from the main plane, may be defined between the support surfaces of the first and second corner supports. This surface may carry a stacked container of a type with a larger bottom surface.

Brief description of the drawings

[0011]

Fig 1 shows a top view of a lid.
Fig 2 shows an enlarged portion of the lid in fig 1, at a corner thereof.
Fig 3 shows a stack of three containers.
Figs 4-7 show enlarged portions of the stack in fig 3.

Detailed description

[0012] The present disclosure is related to modular storage systems including drawer frames and containers. Such systems have the benefit, e.g. as compared with a traditional chests of drawers, of being configurable in various ways to address the needs of an end user. Drawer frames with metal wire and mesh baskets have been widely appreciated by users that have been able to select wire and mesh baskets with different sizes according to their needs.

[0013] From a producer point of view, the components involved have allowed for efficient distribution as empty containers can be nested inside other empty containers and since drawer frames can easily be assembled by the end user. This of course reduces the cost of the final system.

[0014] It is suggested to include plastic containers with lids in storage systems of this kind as a complement to wire and mesh containers. This would make storage systems of this kind even more versatile.

[0015] Plastic containers are relatively inexpensive to produce in large series by injection moulding. Unlike a mesh or wire container, a plastic container may be made diffusion tight, and when lids are attached to the containers, the they become stackable, such that a number of containers, with items stored inside, can be stored on a small floor surface. If the storage system is used for instance in a closet, this allows the user e.g. to switch the contents of the closet from season to season.

[0016] For instance, during off-season, winter clothes may be stored at another location and, thanks to the more or less diffusion tight properties of the containers, are protected from moisture, etc. When the clothes are needed again, these containers may replace others in the

drawer frame. Such a procedure is much more efficient than moving clothes from a drawer to another box, back and forth. The present disclosure provides solutions that make a plastic container more suitable for a storage system of this kind, thereby contributing to accomplishing the goal of obtaining a more efficient and versatile storage system.

[0017] Fig 1 shows a top view of a lid 1, which may be attached to a container. The container as well as the lid may be produced by injection moulding a plastic material such as polypropylene, PP. As is seen in fig 1, the lid has a rectangular shape with two pairs of opposing edges, and defines four corners. The lid extends at least approximately in a main plane in between the edges, i.e. its top surface may be more or less flat, usually with the exception that features are provided at the edges for attaching the lid to a container. The lid 1 comprises sets 5 of corner supports as will now be described in greater detail. A set of corner supports is shown in greater detail in fig 2 illustrating an enlarged portion of the lid in fig 1 as well as in figs 4 and 5 illustrating perspective views of a set of corner supports.

[0018] The set includes two corner supports 7, 9 where each support has two support surfaces that rise from the main plane of the lid. Thus, the first corner 7 support comprises a first 11 and a second 13 support surface that rise a first step, e.g. about 7 mm, from the main plane of the lid. As shown, they may be mutually perpendicular to be able to support a container stacked on the lid on either side of a corner. The first surface 11 is about parallel with the adjacent long edge of the lid and the second surface 13 is about parallel with the adjacent short edge of the lid.

[0019] The surfaces may as illustrated adjoin each other and form a corner 15. However, this is by no means necessary. The corner support may present two surfaces that are capable of abutting against the side walls and/or bottom surface edges of a container at either side of the container's bottom surface corner, when that container is stacked on the lid, and as the skilled person realises this can be achieved in other ways than the one illustrated. For instance, it would be possible to let two cylindrical portions rise from the main plane of the lid, one at each side of the container corner. The side walls on each side of the corner could then abut against the periphery of each cylinder.

[0020] As illustrated, the lid is further provided with a second corner support 9 including two support surfaces 17, 19 which rise an additional second step, e.g. about 7 mm, from the main plane. This corner support 9 is located closer to the corner of the lid as compared to the first corner support. The support surfaces 17, 19 of the second corner support 9 may otherwise be arranged in a similar way as the corresponding surfaces 11, 13 of the first corner support 7. As shown, by the first corner support 7 rising a first step from the main plane of the lid and the second corner support 9 rising an additional second step a stair-shaped form may be achieved, and a box supported laterally by the second corner support 9 may rest on a surface 18, a step, elevated from the main plane, between the support surfaces of the first and second corner supports 7, 9. This surface 18 may be substantially parallel with the main plane of the lid.

[0021] As is shown in fig 1, the distance d2 between the second corner supports of two diagonally opposing corners is greater than the distance d1 between the first corner supports of said diagonally opposing corners. This means that the lid is adapted to allow containers with different bottom surface sizes to be stacked on top of the lid and may prevent these containers from slipping.

[0022] The bottom surface of a container is conveniently made smaller than the open top of the container and with inclined walls to allow containers to be nested. Stacking of containers with lids enabled more intems to be stored for e.g. a given floor area.

[0023] Fig 3 shows a stack of three containers, each having a lid. The identical top and bottom containers 21, 23 are larger, more specifically taller, than the container 25 in the middle of the stack. The walls rising from the bottom of each container have about the same outward inclination, and the containers have about the same dimensions at the open top, such that identical lids can be fitted on each container. Consequently, the middle container 25 will have a larger bottom area than the other containers. In an enlarged view, fig 6 shows a first corner support which prevents a taller container with a smaller bottom surface from slipping sideways. Fig 7 illustrates a second corner support which prevents a shorter container with a larger bottom surface from slipping sideways. As shown, that container rests on a surface that interconnects the first and second corner support.

[0024] The present disclosure is not restricted to the above illustrated embodiment and may be varied and altered in different ways within the scope of the appended claims. For instance, equally tall containers with mutually different wall inclinations will have different bottom portion dimensions. Also, the side walls may be curved or may have step-wise increasing dimensions from the bottom portion towards the upper opening. Further, even if the main plane of the lid is illustrated as flat this is not necessary. The main plane may have surface structures of differen kinds and may e.g. be dented inwards in various ways that does not affect a container being stacked thereon.

Claims

1. A lid (1) for a container, the lid being adapted to be fitted on the top of a container to form a closed space, the lid having a generally rectangular shape with two pairs of opposing and parallel edges, such that four corners are defined, and the lid extending ar least partly in a main plane in between the edges, **characterised by** the lid comprising, in the vicinity of each of said four corners, at least a first (7) and a second

(9) corner support, wherein the first corner support comprises two support surfaces (11, 13) rising a first step from the main plane, and the second corner support (9) comprises two support surfaces (15, 17) rising an additional second step from the main plane, and wherein the distance (d2) between the second corner supports of two diagonally opposing corners is greater than the distance (d1) between the first corner supports of said diagonally opposing corners.

2. A lid according to claim 1, wherein the lid is made by injection moulding a plastic material.

3. A lid according to claim 1 or 2, wherein each corner of the lid comprises a third corner support, which includes two support surfaces rising an additional third step from the main surface of the lid.

4. A lid according to any of the preceding claims, wherein for each corner support the two support surfaces are joined in a corner (15).

5. A lid according to any of the preceding claims, wherein a surface (18), elevated from the main plane is defined between the support surfaces of the first and second corner supports (7, 9).

6. A storage system comprising a first and a second container and a lid adapted to be attached to either of those containers and having a generally rectangular shape with two pairs of opposing and parallel edges, such that four corners are defined, and the lid extending ar least partly in a main plane in between the edges, **characterised by**

- the first container having a substantially rectangular bottom surface defining four corners,
- the second container having a substantially rectangular bottom surface, being greater than the bottom surface of the first container, and defining four corners, and
- the lid comprising, at each of said four corners of the lid, at least a first and a second corner support, wherein the first corner support comprises two support surfaces rising a first step from the main plane, and where the second corner support comprises two support surfaces rising an additional second step from the main plane, and wherein the distance between the first corner supports of two diagonally opposing corners of the lid corresponds to the diagonal distance between two corners in the bottom surface of the first container, and the distance between the second corner supports of two diagonally opposing corners corresponds to the diagonal distance between two corners in the bottom surface of the second container.

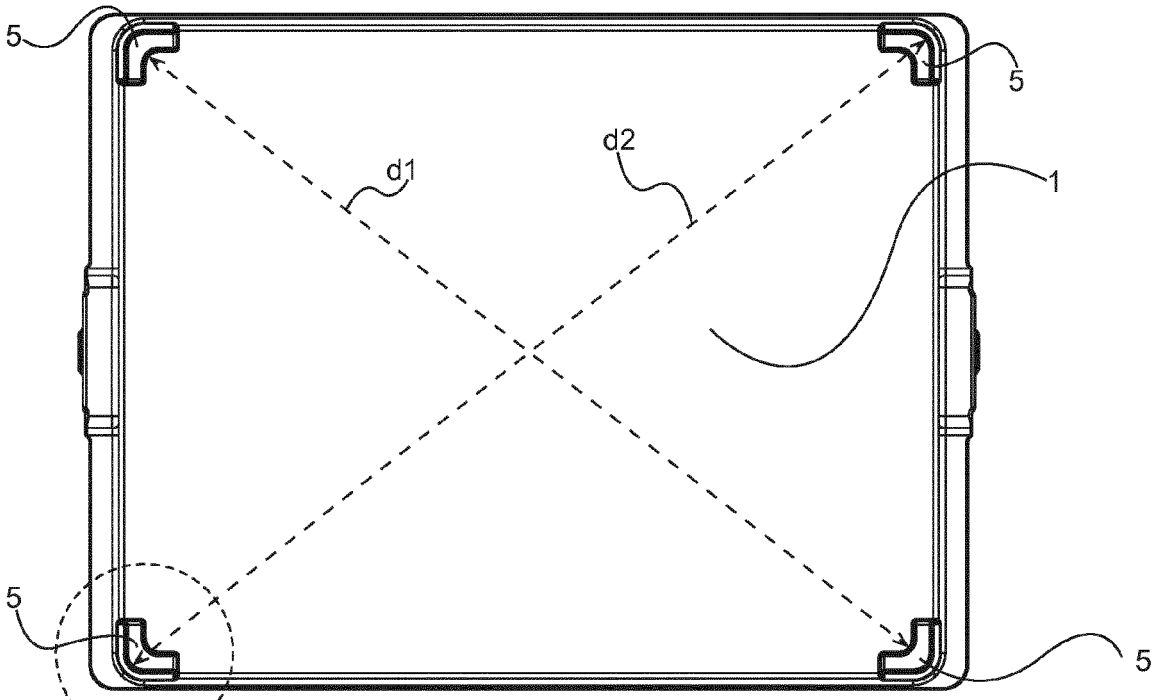


Fig 1

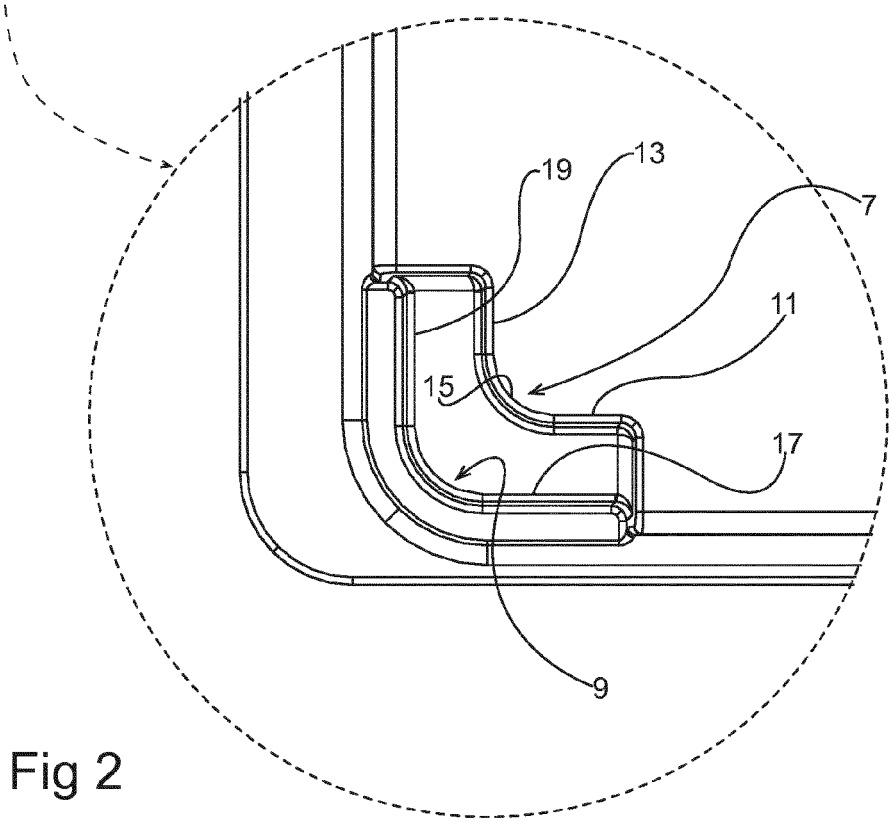
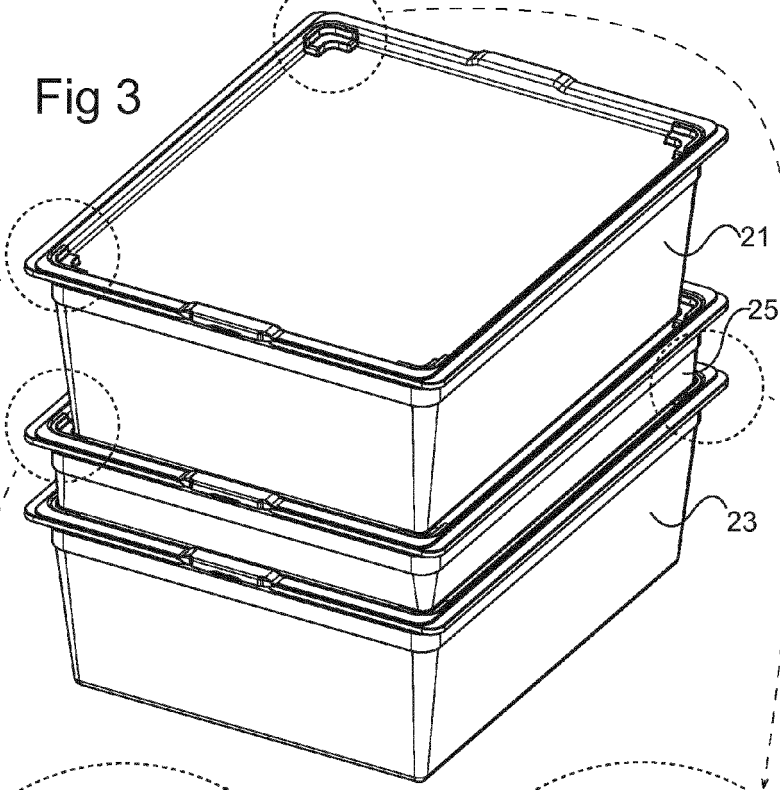


Fig 2

Fig 3



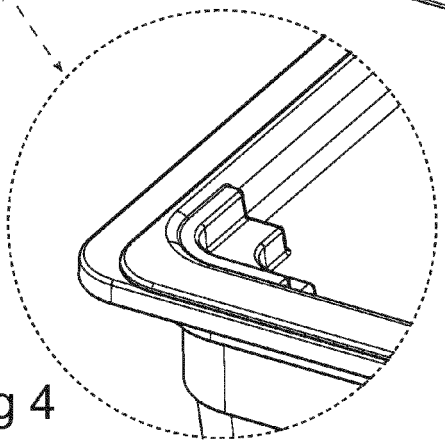


Fig 4

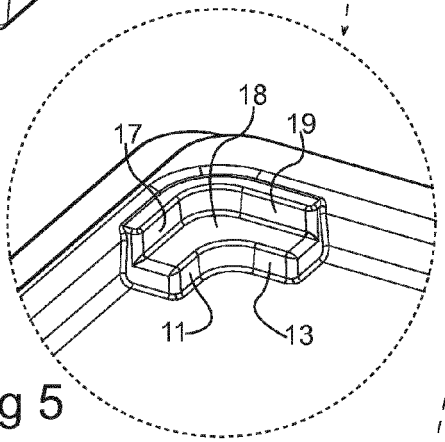


Fig 5

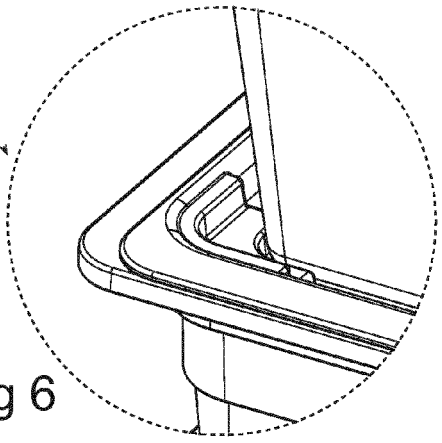


Fig 6

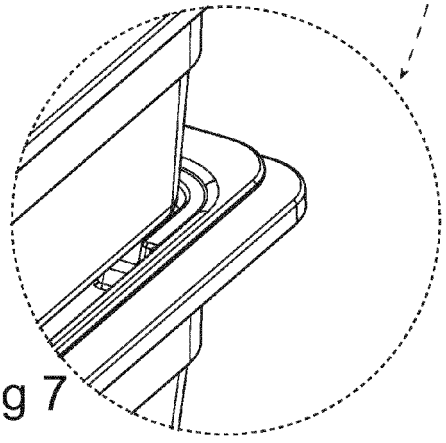


Fig 7

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EUROPEAN SEARCH REPORT

Application Number
EP 14 16 8246

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	GB 948 898 A (BRADLEY & COMPANY LTD) 5 February 1964 (1964-02-05) * page 1, line 53 - line 74; figures * -----	1,4,5 6	INV. B65D21/02
X	EP 0 176 904 A2 (ACHTERBERG WILLEM JAN [NL]; COSBURGH PIETER [NL]; HAFNER WALTER [DE];) 9 April 1986 (1986-04-09) * page 4, line 4 - page 5, line 4; figures 1-3 * -----	1,2,4-6	
			TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 September 2014	Newell, Philip

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11-09-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 948898 A	05-02-1964	NONE	
EP 0176904 A2	09-04-1986	DE 3436399 A1	10-04-1986
		EP 0176904 A2	09-04-1986