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(54) PLASTIC CONTAINER WITH FOLDABLE SIDE WALL, AND USE OF A CONTAINER

KUNSTSTOFFBEHÄLTER MIT KLAPPBARER SEITENWAND, UND VERWENDUNG EINES SOLCHEN BEHÄLTERS

RECEPTACLE EN PLASTIQUE A PAROI LATÉRALE REPLIABLE, ET UTILISATION D'UN RECEPTACLE

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Description

Field of the Invention

[0001] The present invention relates to an outwardly foldable container for carrying items, such as goods or foods, which container comprises a base member and at least one side wall which is hingedly connected to the base member, wherein the side wall is pivotally movable between an upright position and an outwardly folded position in relation to the base member.

[0002] Furthermore, the present invention relates to the use of such a container, e.g. in a continuous line-packaging system comprising a packing machine. A method for manufacturing a container for carrying items, e.g. for stowing goods, foods, or equipment for transportation or storage purposes, is also disclosed.

Background Art

[0003] For the purpose of carrying and stowing goods, foods, or equipment for transportation and storage, it is known to provide stackable and upwardly open containers, or trays, typically having a rectangular bottom and four side walls which define a storage space. The containers may be fixed or foldable and are commonly made from plastic, wood, or cardboard.

[0004] In order to provide efficient distribution and handling of goods, it is further known to provide packaging and handling system comprising packing machines which are configured to automatically, e.g. in a continuous line process, arrange finished goods or foods in a container in order to facilitate further handling and transportation of the items to e.g. retailers and/or warehouses. In those systems, a cardboard container comprising a patterned cardboard sheet is folded and assembled into its intended container shape, wherein the side walls are raised and folded to an intended upright position, by actuators and guide members of the packing machine system during the packing process. Hence, the cardboard containers may be provided to the packing machine system in a bundle, or stack, of unfolded flat container cardboard sheets. In other words, prior to being assembled, or folded, into and used as containers in an automated packing machine system, the cardboard containers are arranged in a flat configuration which provides simple and efficient storing, handling and transportation of the cardboard containers as such.

[0005] Cardboard containers, however, are disadvantageous in that they generate much waste material since the cardboard containers are not suitable for reuse. Hence, cardboard containers and systems utilizing foldable cardboard containers imply a substantial impact on the environment, high energy consumption during manufacturing as well as a high purchase cost for the user.

[0006] In order to reduce the amount of generated waste material and to improve the environmental impact of utilizing single-use cardboard containers, packing ma-

chine systems may be loaded with reusable containers which are durable enough to be cleaned and reused a large number of times. For example, plastic containers are known which may be cleaned and resent to the packing site and reused in the automated packing machine.

[0007] For example US5398834 describes a container made from plastic material. The prior art is also disclosed in US 5918743, WO 03/033365, US 60982827, US 6 405 888 and US 2003/006232.

[0008] Known plastic containers, however, are disadvantageous in that they contain many interacting parts such as plastic or metallic rods and components which act as e.g. hinges, which results in high manufacturing costs and which shortens the working life of the containers.

[0009] Furthermore, known plastic containers are not suitable to be used in combination with an automated packing machine. Instead, known designs of plastic containers are cumbersome to handle and do not allow for efficient packing of goods or foods using continuous packing processes and continuous packing machines. In particular, the design and complex construction of known plastic containers impede, or block, automated assembling of the container and/or automated loading of items onto or into the container. In addition, the design of known plastic containers which are foldable are cumbersome to store and transport when they are not used for transportation of goods.

[0010] Therefore, it is desirable to achieve a more compact, reliable and more efficient foldable container with improved load carrying and packaging properties for e.g. continuous or automatic packaging processes.

Summary of the Invention

[0011] In view of the above-mentioned and other drawbacks of the prior art, a general object of the present invention is to provide an improved container for carrying items suitable for automated packing and transportation processes,

[0012] According to a first aspect of the present invention, these and other objects are achieved through a plastic container for carrying items, comprising a base member having a top side support surface and at least one edge, the topside surface defining a geometrical plane, and at least one side wall comprising an inner side surface and a bottom edge which is hingedly connected to the at least one edge of the base member, wherein the at least one side wall is pivotally movable between an upright position and an outwardly folded position in relation to the base member. Furthermore, the inner side surface of the at least one side wall essentially coincides with the geometrical plane of the support surface of the base member, when the side wall is arranged in the outwardly folded position. The container further comprises a locking device arranged to prevent the side wall from unintentional raising, when the side wall is arranged in the outwardly folded position.

[0013] Accordingly, a more compact and improved foldable container is provided which advantageously enables automated and improved packing of goods or foods in the container using continuous packing processes and continuous packing machines. The container may be arranged in a flat, or unassembled, configuration which allows for efficient storing, transportation and loading of a bundle of stacked containers in a packing machine system. After use, the container may be cleaned and efficiently stacked with a plurality of similar, or corresponding, containers for return transportation to the packing site while requiring reduced transportation space.

[0014] The container is further advantageous in that it comprises a raise resisting locking device which considerably facilitates assembling of the container. In more detail, the side wall of the container is arranged with a locking device which enables improved control of the movement of the side wall in relation to the base member, such that the side wall may be maintained in the outwardly folded position during handling of the container when it is arranged in its unassembled configuration. Hence, the raise resisting locking device of the side wall advantageously allows for improved and efficient use of the container in automated, and/or continuous, packing machine systems, wherein the goods or foods are loaded on the support surface of the container. In particular, the goods may be loaded, slid, or moved onto the support surface without accidental, or unintentional, raising of the side wall. Furthermore, by maintaining the side wall in the unassembled configuration, i.e. the outwardly folded position, using the raise resisting locking device, handling and loading of the container may be improved since jamming or failure of automated handling or loading processes due to unintentional raising of the side wall may be reduced or avoided.

[0015] Put in slightly different words, the present invention is based on the realization that, by providing a raise resisting locking device, raising of the side wall when the container is being fed, or loaded, into packing position in a packing machine is prevented by the container itself. Hence, the container is provided with a self-acting raise resisting locking device. Furthermore, unintentional raising of the side wall when goods or foods are being loaded, or arranged, on the support surface of the base member is mitigated, while, after the loading step, the side wall may be erected, or raised, in a controlled manner to its upright position in an efficient manner.

[0016] Accordingly, the present container allows for improved and more time efficient handling and packing using continuous packing machine system since additional actuators and control members for controlling and maintaining the side walls of the container in the intended outwardly folded position during the packing process may be avoided. Also, the container is advantageous in that it is more durable since e.g. the side wall is firmly held in place by the raise resisting locking device over time while minimizing influence of material fatigue or inner stress build-up in the portions, such as the hinge, of the con-

tainer.

[0017] For example, the container according to the present invention comprises, or is formed of, plastic and may e.g. be manufactured using injection molding techniques, or similar techniques.

[0018] The bottom edge of the side wall may be attached to the base member by various types of hinge devices, wherein the raise resisting locking device may be formed integrally with the hinge or arranged separately in relation to the hinge device. For example, the bottom edge of the side wall may be hingedly connected to the base member by a film hinge comprising a film member which bends in order to enable relative articulated movement between the side wall and the base member. The dimension of the film of the film hinges may be adapted to a suitable thickness in order to allow appropriate assembling, or folding, of the side wall over a long time period. The film of the film hinges may further be impressed, or stamped, in order to improve bending of the film hinge and to orient the structure of the film in order to improve the internal structure of the film material such that the life span and durability of the film hinge may be further increased. The film hinge may further be essentially formed of, or comprise, similar, or equal, material as the side wall and base member. According to various embodiments, the complete container may form by one continuous unit comprising the same or similar material, or the container may be formed by, and manufactured, in separate units which are connected to form the container. For example, the side wall and base member are manufactured separately in relation to each other and hingedly connected to each other in a later manufacturing step.

[0019] For example, in the substantially upright position, the side wall has an angle in relation to the geometrical plane of the base member between 70 and 110 degrees, or between 80 and 100 degrees, or between 90 and 110 degrees.

[0020] According to an exemplifying embodiment, the locking device of the container comprises a raise force threshold, wherein the raise resisting locking device prevents raising of the side wall from the outwardly folded position until a raising force exerted on the side wall reaches, or exceeds, the raise force threshold. In other words, when side wall is unassembled, the raise resisting locking device maintains the side wall in that position until a raising force, or moment, is applied to the side wall, in relation to the base member, which force, or moment, reaches or exceeds a predetermined force level, i.e. the raise force threshold. Hence, the side wall is firmly held in place by the locking device such that unintentional movements of the side wall in relation to the base member are advantageously avoided.

[0021] According to one exemplifying embodiment, the raise resisting locking device may be configured to only generate a raise resisting function when the side wall is in its outwardly folded position, such that the side wall efficiently may be moved between any intermediate po-

sition and its upright position.

[0022] Moreover, the raise resisting locking device may further function by means of snap-action, or friction-action, whereby the lock is controlled, or operated, by raising, or forcing, the side wall from its unassembled position towards its upright position against the raise resisting function of the locking device. In other words, the raise resisting locking device is self acting, wherein no auxiliary equipment, tools or actuators are required in order to control, or operate, the raise resisting locking device.

[0023] According to an exemplifying embodiment, the locking device comprises at least one resilient member which is arranged to flex when the side wall is being raised from the outwardly folded position. Hence, the flexible member advantageously prevents the side wall from raising until the flex resistance of the flexible member is overcome. This enables a durable and efficient solution of the raise resisting locking device for controlling the assembling of the side wall. For example, the resilient member may be formed of the same material as the base member of side wall of the container and/or extend from anyone of these parts of the container.

[0024] Moreover, according to an embodiment, the edge of the base member comprises a first edge surface and the bottom edge of the side wall comprises a second edge surface, wherein the raise resisting locking device is substantially arranged in a space defined by the first and second edge surfaces and the geometrical plane of the support surface of the base member, when the side wall is arranged in the outwardly folded position. Advantageously, the raise resisting locking device is integrated, or built in, in the containers such that locking device does not extend into, or obstruct, the carrying, or loading space, of the container as defined by the support surface, which facilitates packing and handling of the container as such as well as loading of goods in the container.

[0025] Furthermore, in an embodiment, the locking device, or any member thereof, does not extend, or protrude, outwardly from the bottom side of the base member or from the outer side of the side wall.

[0026] According to an embodiment of the container according to the present invention, the raise resisting locking device comprises a flexing projection arranged on and/or protruding from the base member, and a projecting member arranged on and/or protruding from the bottom edge of the side wall, wherein the projecting member abuts the flexing member when the side wall is arranged in the outwardly folded position.

[0027] By providing the base member with a flexing projection which is arranged to cooperate with a projecting member protruding from the side wall, a more compact and durable locking device is provided. In more detail, the side wall is prevented from unintentional raising by the projecting member which abuts, or rests against, the two flexing projections.

[0028] According to yet an embodiment of the container according to the present invention, the raise resisting

locking device comprises two, e.g. a first and a second, flexing projections protruding from the base member, and a projecting member protruding from the bottom edge of the side wall, wherein the projecting member abuts the two flexing member when the side wall is arranged in the outwardly folded position. By providing the base member with first and second flexing projections which are arranged to cooperate with a projecting member protruding from the side wall, a more compact and durable locking device is provided. In more detail, the side wall is prevented from unintentional raising by the projecting member which abuts, or rests against, the two flexing projections. By providing one or two flexing projections which are arranged to cooperate to counteract a relative movement between the flexing projection(s) and the projecting member of the side wall, a stronger and more balanced construction of the raise resisting locking device is provided. Also, according to an exemplifying embodiment, the orientation of the part members of the raise resisting locking device may be inverted, wherein e.g. the flexing projections are arranged on the side wall and the projecting member is arranged on the base member.

[0029] According to a further embodiment, the flexing members define a receiving opening, wherein the projecting member is arranged to be inserted, or wedged, between the two flexing projections, into the receiving opening, when raising the side wall to the upright position. For example, this embodiment of the raise resisting locking device is advantageous in that it allows for a compact and durable solution which considerably facilitates controlled and efficient assembling of the container using an automated packing machine system. The raise resisting locking device is further cost efficient to manufacture and comprises a minimum number of separate parts and/or moving parts. Hence, the locking device allows for long life time involving assembling and disassembling of the one of many foldable side walls during handling and continuous packing operation of the containers.

[0030] For example, the projecting member is arranged to rest upon, via two point contact, opposing outer edges of the first and second flexing member, wherein the receiving opening extends between the outer edges. During raising of the side wall, from its outwardly folded position to its upright position, the edges of the flexing member will prevent the projecting member from being inserted in the receiving opening, and thereby prevent raising of the side wall until the raising force applied to the side wall overcomes the flexing resistance of the flexing member. When the flexing resistance is overcome, the projecting member separates, via flexing, the flexing members increase their relative distance between the outer edges of the flexing member such that the projecting member may move into the receiving opening. The projecting member may furthermore comprise an outer end having increased dimension, such as a globular end portion.

[0031] According to a further exemplifying embodiment of the container according to the present invention,

the container comprises a brace member which is connected between the edge of the base member and the bottom edge of the side wall, wherein the brace member prevents, or restrains, the side wall from folding further than the outwardly folded position. Hence, the position of the side wall is advantageously further controlled and maintained in an intended position in relation to the base member, when the side wall is arranged in its outwardly folded position. In particular, the inner side surface of the side wall is prevented from being arranged below the geometrical plane of the support surface of the base member. Furthermore, the arrangement of the one or more brace members is advantageous in that it facilitates automatic handling of the container and that it is configured to reduce the risk of obstructing or blocking goods or foods which are loaded on the support surface of the base member. For example, the brace members are built-in, or integrated, between the edge of the base member and the bottom edge of the side wall, such that they are essentially housed in the space between the respective edge portions of the side wall and the base member, below the geometrical plane of the support surface.

[0032] The brace member is according to one embodiment bendable and arranged in a stretched out configuration when the side wall is arranged in the outwardly folded position. The brace member may advantageously bend during assembling of the container essentially without affecting the movement of the side wall when being raised to its upright position. Furthermore, the design of the brace member provides a durable and compact solution to support the side wall in an aligned orientation with respect to the support surface of the base member. For example, the brace member is attached to edge of the base member and to the bottom edge of the side wall via a film hinge which enables the brace member to fold in relation to the side wall and/or the base member respectively. Moreover, according to an embodiment, the one or many brace members is/are band shaped.

[0033] In yet an embodiment, the brace member is arranged to essentially conform with the geometrical plane of the support surface of the base member, when the side wall is arranged in the outwardly folded position. For example, the brace member aligns with and increases the available space of the support surface. The brace member further prevents goods or foods which are loaded onto the support surface of the container from getting entangled or jammed in the longitudinal slit, or transverse opening, extending between the base member and the side wall.

[0034] According to an embodiment of the container, the bottom edge of the side wall is hingedly connected to the edge of the base member by at least one film hinge extending at least partially along the edge of the base member. Alternatively, according to an embodiment, the bottom edge of the side wall is hingedly connected to the edge of the base member by at least one snap-on hinge extending at least partially along the edge of the base member. Advantageously, the snap-on hinge enables

manufacturing of the side wall in a separate process, wherein the side wall is connected to the base member at a later step. Hence, more efficient manufacturing and more durable side walls as provided for. Also, during use of the container, a broken side wall may be replaced with a new side wall. In addition, different side walls with different designs and dimensions may be utilized and connected to the base member depending on the intended use of the container. However, the present invention is not limited to film type, or snap-on type hinges. Other types of hinges comprise metal or plastic portions or member, such as hinge pins, are also possible. For, example, a separate side wall may be connected to the base member of the container by a different metal or plastic hinge in a separate manufacturing step.

[0035] According to an exemplifying embodiment of the container, the locking device is further arranged to position, and/or maintain, the side wall in an inclined intermediate position between the upright position and the outwardly folded position. In other words, the side wall is pivotable between, and possible to arrange in, at least three different positions: a flat outwardly folded position, an upright position, and an intermediate position in which the side wall is inclined at an angle between the flat 0 degree horizontal position and the upright position, e.g. an approximate 90 degree upright position. According to one exemplifying embodiment, the intermediate position of the side wall has a angle in relation to the outward fold back position between 10 and 80 degrees, or between 30 and 60 degrees, or between 45 and 55 degrees, or the angle is about 35 degrees \pm 2, 5 or 10 degrees or any angle there between, or about 63 degrees \pm 2, 5 or 10 degrees or any angle there between.

[0036] The intermediate position of the side wall enables improved handling and transportation of the container when not used for carrying items. For example, a plurality of the containers having side wall, or walls, in the intermediate position, may be arranged into a vertical stack. The containers may further be sequentially stacked, or nested, into each other, wherein the bottom portion of a top containers are received in the opening defined by the base member and corresponding side walls which are arranged in the intermediate position. Thereby, the space required for storing or transporting a set of not used container is considerably improved. For example, an increased number of containers may be stacked on top of each other compared to non-foldable containers. Also, compared to foldable, flat containers, the required base area of the containers is reduced due to the intermediate position of the side walls. The intermediate position of the side walls during transportation of a stack of nested containers are further advantageous in that the containers are secured in their relative stacked configuration. For example, the containers in the stack of containers are prevented from falling off, or from horizontal misalignment, in relation to each other. Furthermore, according to an embodiment, the locking device may comprises raise resisting functionality and features

which at least partially prevents unintentional raising of the side wall when it is positioned in its intermediate position, in similar manners as described with reference to the outwardly folded position. Furthermore, the locking device may comprise corresponding lowering resisting functionality and features which at least partially prevents unintentional lowering of the side wall when it is positioned in its intermediate position.

[0037] According to an exemplifying embodiment, the flexing members of the locking device comprise at least one receive portion arranged to receive a portion of the projecting member for securing, or locking, the side wall when it is arranged in the inclined intermediate position.

[0038] Flexing, or resilient, members of different suitable materials, comprising e.g. plastic or metal or combinations thereof, may be used for providing the locking device with raise resisting function, or for securing the side wall in the intermediate position. For example, locking devices based on snap acting or friction acting means which are self operated upon application of a force, or moment, to the side wall in relation to the base member are considered.

[0039] According to yet an embodiment, the base member comprises stacking support portion, or portions, which extends upward from the top side support surface, which stacking support portion is arranged to support an upper container piled, or stacked, on top of a bottom container, such that the base member of the upper container is at least partly separated from the base member of the bottom container. This is advantageous in that the base member of the upper container does not rest upon any portion of the side walls of the bottom containers, when the side walls are arranged in the intermediate position. Hence, a higher number of containers may be piled, or stacked, without exerting a downwardly directed force on the underlying inclined sidewalls, which advantageously reduce the risk of unfolding of a side wall of e.g. the bottom container in a stack of a plurality of containers during handling or transportation. For example, the stacking support portion comprises an upwardly protruding border arranged along the peripheral portions of the top side support surface of the base member, or the stacking support portion comprises a plurality of separated sections arranged at e.g. the corners of the top side support surface of the base member. Also, according to an embodiment, the stacking support portion may alternatively be arranged on the bottom side of the base member, extending in a vertically downward direction, such that the main part of the base member of an upper container is arranged a distance above the base member of the bottom container, when stacked.

[0040] Furthermore, the container may, according to an embodiment, comprise four side walls, wherein each side wall is hingedly connected to separate edges of the base member and each is pivotally moveable between an upright position and outwardly folded position in relation to the base member. Hence, a fully foldable container comprising four side wall is provided, wherein the side

walls may be assembled and locked to each other in an upright position such that a loading space, or carrying space, for goods is formed between the side walls and the bottom base member, and/or in an intermediate position. Furthermore, the container may, according to an embodiment, comprise four side walls, wherein each side wall is hingedly connected to separate edges of the base member and each is pivotally moveable between an upright position, and intermediate position and outwardly folded position in relation to the base member. However, the container is not limited to comprising four side walls. Various embodiments of the container may e.g. comprise one to eight foldable side walls.

[0041] According to another aspect of the present invention, it relates to the use of an embodiment of the container according to the present invention, wherein the container is used for continuous line packaging of goods or foods in the container using a packing machine. Furthermore, according to an embodiment, the pivotally movable side wall of the container is being arranged in its upright position by the packing machine, for example by an actuator or mounting fixture of the packing machine.

[0042] A method for manufacturing a container for carrying items comprises a base member and at least one side wall which is hingedly connected to the base member, wherein the side wall is pivotally movable between an upright position and an outwardly folded position in relation to the base member, and wherein a top side of the base member and an inner side of the side wall forms an essentially plane support surface when the side wall is arranged in the outwardly folded position. The method comprises providing the container with a raise resisting locking device which prevents the side wall from unintentional raising, when the side wall is arranged in the outwardly folded position. Advantageously, the above method for manufacturing provides a durable foldable container which provides improved control of the side wall in relation to the base member during assembling and improved long term operational properties. Furthermore, the provided container is cost efficient to manufacture and may be realized with reduced number of parts, as compared to prior art containers. The method is further advantageous in that it provides a container for carrying items having the advantageous properties as described above in relation to the various exemplifying embodiments of containers according to the present invention.

[0043] According to an embodiment of the method, if further comprises providing at least one flexing projection arranged on the base member, and a projecting member arranged on the bottom edge of the side wall, wherein in the flexing projection and the projecting member are arranged to cooperate to prevent unintentional raising.

[0044] According to a further embodiment of the method, it comprises adapting the projecting member to abut the flexing projection when the side wall is arranged in the outwardly folded position. The container according

to the present invention may further be arranged such that it forms part of a system of a plurality, or at least two, stackable containers. The system of containers may be arranged on top of each other in a stack, wherein the containers may be arranged in their assembled configuration, i.e. with their respective side walls in the upright position, or the containers may be arranged in the disassembled configuration, i.e. with their side walls in the outwardly folded position, or the containers may be arranged with the side walls in the intermediate position. By providing a system of stackable containers, wherein the containers are stackable in their assembled position, their folded position, and/or in their intermediate position, transportation of goods via stacking of containers carrying goods and transportation and handling of empty disassembled containers is considerably facilitated.

[0045] According to a further aspect of the present invention, it relates to a plastic container for carrying items, comprising a base member having a top side support surface and at least one edge, the topside surface defining a geometrical plane, and at least one side wall comprising an inner side surface and a bottom edge which is hingedly connected to the at least one edge of the base member, wherein the at least one side wall is pivotally movable between an upright position and an outwardly folded position in relation to the base member. Furthermore, the inner side surface of the at least one side wall essentially coincides, or conforms, with the geometrical plane of the support surface of the base member, when the side wall is arranged in the outwardly folded position. The container further comprises a locking device arranged to maintain the side wall in an inclined intermediate position between the upright position and the outwardly folded position.

[0046] Other objectives, features, and advantages of the present invention will appear from the following detailed disclosure, from the attached dependent claims as well as from the drawings.

Brief Description of Drawings

[0047] The present invention will now be described in more detail, with reference to the appended drawings showing exemplifying embodiments of the invention, wherein:

Fig. 1 is a schematic perspective view of the container for carrying items according to an exemplifying embodiment of the present invention, wherein the container is assembled.

Fig. 2 is a schematic perspective view of the container for carrying items according to an exemplifying embodiment of the present invention, wherein the container is unassembled.

Fig. 3 is a schematic partial perspective view, with a zoom-in view, of the container for carrying items according to an exemplifying embodiment of the present invention.

Fig. 4 is a partial schematic perspective view of the container for carrying items according to an exemplifying embodiment of the present invention during assembling wherein a side wall is being raised.

Fig. 5a is a partial schematic perspective view of two disassembled containers according to an exemplifying embodiment of the present invention.

Fig. 5b is a partial schematic perspective and partly cut-out view of two stacked containers according to an exemplifying embodiment of the present invention.

Fig. 6 is a partial schematic perspective view from below of the container for carrying items according to an exemplifying embodiment of the present invention.

Fig. 7 is a schematic perspective view of a system of stacked assembled containers, wherein some parts have been omitted for illustrative purposes.

Fig. 8 is a schematic perspective view of an exemplifying automated packing process using a container according to an exemplifying embodiment of the present invention.

Fig. 9 is a schematic perspective view of an exemplifying automated packing process using a container according to an exemplifying embodiment of the present invention, wherein the side walls are arranged in an intermediate position.

Fig. 10a is a schematic perspective view of two stacked containers for carrying items according to an exemplifying embodiment of the present invention, the containers being stacked in a semi-assembled configuration wherein the side walls are arranged, or secured, in intermediate positions.

Fig. 10b is a schematic perspective view of the base member of the container according to an embodiment of the present invention, wherein the view comprises a zoom-in view of the locking device of the base member.

Fig. 11 is a partial schematic perspective side view of two stacked containers according to an exemplifying embodiment of the present invention, wherein the side walls of the containers are arranged in an intermediate inclined position.

Fig. 12a is a schematic side view of a separate non-mounted side wall of the container according to an embodiment of the present invention.

Fig. 12b is a schematic perspective view of a separate non-mounted side wall of the container according to an embodiment of the present invention.

Figs. 13a-d are schematic perspective zoom-in views of the locking device of the container from different angles according to an embodiment of the present invention.

Fig. 14 is a schematic cross-sectional view of parts of the container according to an embodiment of the present invention.

Fig. 15 is a schematic cross-sectional view of parts of the container according to an embodiment of the

present invention.

[0048] In the drawings, similar, or equal elements are referred to by equal reference numerals. The drawings are merely schematic representations, not true to scale and should not be considered as limiting the scope of the invention.

Detailed Description of Embodiments of the Invention

[0049] In Fig. 1 and Fig. 2, schematic perspective views of a container 1 for carrying items according to an exemplifying embodiment of the present invention, are illustrated. The container 1 comprises a base member 2 having a top side support surface 3 for supporting items such as goods or foods, wherein the top side surface 3 defines a geometrical plane. The base member 2 further comprises through openings which are arranged to reduce the weight of the base member while also providing appropriate, or enough, support area. As further illustrated, the base member 2 comprises edges, such as the edge 4, which edge 4 forms a short side edge of the rectangular shaped base member 2.

[0050] Side walls, such as side wall 6, are provided, wherein the side wall 6 comprises an inner side surface 7 and a bottom edge 8 arranged at the bottom end of the side wall 6. The bottom edge 8 of the side wall 6 is hinged, or pivotally, connected to the edge 4 of the base member 2 such that the side wall is pivotally moveable between an upright position in relation to the base member 2, as shown with reference to Fig. 1, and an outwardly folded position in relation to the base member 2, as shown with reference to Fig. 2. Hence, the side wall 6 is attached to the base member such that it is rotatable around a rotational axis which essentially extends along the edge 4 of the base member 2, or along the bottom edge 8 of the side wall 6.

[0051] Also the side wall 6 comprises through openings for reducing the weight of the side wall 6 while at the same time allowing for a sufficiently rigid and durable construction.

[0052] In the upright position, wherein the container is in an assembled configuration arranged for carrying items, the side wall 6 has an essentially vertical orientation, or an essentially perpendicular orientation in relation to the support surface of the base member 2, wherein the inner side surface 7 faces into the container 1. The inner side surface 7, together with the support surface 3 of the base member 2, define a carrying, or loading, space which is open in an upward direction. As illustrated in Fig. 1, one or many of the side walls, such as the side walls attached to the short sides of the base member 2, may be slightly tilted, such as less than 10 degrees, or less than 5 degrees, from vertical towards, or away from, the center of the container 1. For example, slightly inwardly tilted side walls facilitate handling and stacking of the containers, wherein the an upper assembled container which is stacked on top of another lower assembled

container may be lifted by end portions of the base member 2 which extend outside the side walls of the bottom container.

[0053] In the outwardly folded position, wherein the container is in an disassembled configuration intended for e.g. handling and transportation of the container 1 as such, the side wall 6 has an horizontal orientation, or, in other words, the inner side surface 7 of the side wall 6 essentially coincides with the geometrical plane of the support surface 3 of the base member 2. Hence, the container 1 is arranged in a flat disassembled configuration wherein inner side wall 6 is arranged in an even, or leveled, configuration with the base member 2.

[0054] Furthermore, the container 1 is provided with raise resisting locking devices 9 which are arranged to prevent the side wall 6 from unintentional raising when the side wall 6 is arranged in the outwardly folded position. Hence, the raise resisting locking devices 9 is arranged to at least partly maintain the side wall 6, or the complete container 1, in the unassembled, or flat, configuration, which considerably facilitates e.g. handling and operation of automated processes in which the container 1 is moved and operated by actuators of packing machine systems. For example, the process design and process speed of automated packing system may be considerably improved and increased since the side wall 6 of the container 1 advantageously is maintained, or secured, in its intended outwardly folded position. Hence, during the automated packing process, there is a significantly reduced risk that the side wall 6 will be accidentally raised, or moved, in relation to the base member 6 towards the upright position, which would hamper, or even completely interrupt, the process flow.

[0055] In Fig. 3, a schematic partial perspective view with a zoom-in view of the container 1 and side walls 6a and 6b according to an exemplifying embodiment of the present invention, are illustrated. The raise resisting locking device 9 comprises a raise force threshold which e.g. is provided by a resilient member 10 which is arranged to flex, wherein raising of the side wall 6b is allowed if the raise force exerted on the side wall 6 generates a force in the raise resisting locking device 9 which overcomes the flexing resistance of resilient member 10.

[0056] As shown in the zoom-in view, the resilient member comprises a first 10 and a second 10' flexing projection which protrude from a first edge surface 11 of the base member 2, which flexing portions being spaced apart and arranged at a distance from each other. Furthermore, a projecting member 14 protrudes from the bottom edge 8 of the side wall 6b, which projecting member 14 comprises an enlarged end portion 14' having an increased width, e.g. a globular shape with increased dimensions. The projecting member 14 is arranged in a bottom edge opening 18, and extends towards the edge 4 of the base member 2. Moreover, the end portion 14' abuts the two flexing projections 10 and 10' and is aligned with a receiving opening 15 arranged between, and defined by, the flexing projections 10 and 10'. The width of

the end portion 14' of the projecting member is further adapted in relation to the receiving opening 15 such that the flexing members 10, 10' supports, and maintains, the side wall in the outwardly folded position. During, raising of the side wall 6b, the projecting member may be forced into the receiving opening 15, wherein the flexing members 10, 10' flex, or bend, in the A and A' directions, respectively, as indicated with the schematic arrows in the zoom-in view, e.g. in a direction along the edge of the base member, essentially orthogonal in relation to the movement direction of the projecting member during folding.

[0057] Furthermore, during raising of the side wall 6b, the bottom edge opening 18 is adapted to accommodate the flexing projections 10, 10' such that the side wall 6b advantageously may be raised to its upright position.

[0058] As further illustrated, the members of each raise resisting locking device 9 are arranged below the geometrical plane of the support surface 3 of the base member 2. The projecting member 14 and the flexing projections 10 and 10' are arranged in the space defined by the first edge surface 11, or bottom edge surface, and a second edge surface 12, or base edge surface. Hence, in the disassembled configuration, the container is limited to, and conforms with, a flat plane, wherein no part or portion of the raise resisting locking devices 9 extends upwardly into the flat plane.

[0059] The zoom-in view of Fig. 3 further shows a film hinge 17 which connects and provides an articulated joint between the side wall 6b and the base member 2. The film hinge is arranged on a lower portion of the respective first and second edge surfaces 11 and 12, and extends along the extension of the edge 4 and bottom edge 8, however, with some interruptions for e.g. the bottom edge opening 18 and a brace member opening 19 for accommodating a brace member 16.

[0060] The brace member 16 is formed of a bendable bandshape structure and is attached to respective upper portions of the first and second edge surfaces 11 and 12, wherein the brace member is arranged to prevent the side wall 6b from folding outwardly further than the intended outwardly folded position. During raising of the side wall 6b, the brace member is arranged to fold and to be accommodated in the brace member opening 19 provided in the bottom edge 8 of the side wall 6b and the edge 4 of the base member 2. In order to facilitate folding of the brace member 16 during raising of the side wall 6b, the brace member comprises at least one middle recess 20 arranged between end portions of the brace member, and end recesses 21 and 21' which function as film hinges in order to allow the brace member to fold in a controlled manner.

[0061] In Fig. 4, a partial schematic perspective view of the container 1 is illustrated during assembling, wherein a side wall 6a is being raised toward its upright position, as indicated by the direction of arrow B. The projecting member 14 is partially inserted in the receiving opening 15 and the brace member 16 is partially bent downwards

in a direction into the brace member opening 19.

[0062] As further illustrated, the container 1 has a side wall locking device for securing the side walls 6a and 6b in their upright position. Along its short side edge, the side wall 6b comprises protruding connector elements 22 which are arranged to be received in and secured in corresponding connector slots 23 arranged along the short side edge of the side wall 6a. The protruding connector elements 22 extend in a direction towards the center point of the side wall and arranged to cooperate with the connector slots 23 such that the side wall 6a is prevented from disengaging from locking connection with the connector elements by being pressed outwardly. Instead, in order to disengage the side wall locking device when being locked, the side wall is initially moved inwardly, or in the direction indicated by the arrow B.

[0063] In Fig. 5a and Fig. 5b, partial schematic perspective views of a system of two disassembled containers 1 a and 1 b are shown prior to and during the two containers 1 a and 1 b are arranged in a vertical stack 80. With reference to the Fig. 5a, a top container 1 a is arranged in its flat disassembled configuration wherein the side walls are arranged in the outwardly folded position and is aligned to be stacked on a disassembled lower container 1b. Hence, the containers 1 a and 1 b forms a system of containers which are compatible for vertical stacking, e.g. for the purpose of transportation and loading into an automated packing machine system. With reference to Fig 5b which comprises a cut out portion and in which the side walls on one side of the containers 1 a and 1 b have been omitted, the top container 1 a is arranged, or stacked, on the bottom container 1 b, wherein a protruding guide member 24 extend in an upward direction from the support surface 3 of the base member of the bottom container 1 b. Furthermore, the guide member 24 extends into a guide recess 25 of the top container 1 a, which guide recess extends into the base member 2. Hence, the guide member 24 and the guide recess 25 are arranged to cooperate in order to allow for aligned vertical stacking of the containers 1 a and 1 b. This cooperation further ensures that the containers are secured in the intended position during automated packing processes or during transportation of the containers as such.

[0064] A partial schematic perspective view from below of the container 1 according to an exemplifying embodiment of the present invention is illustrated in Fig. 6. The side walls 6c and 6d are arranged in the upright position and secured to each other by the side wall locking device 26. As further illustrated, the end portion 14' of the projecting member extend through the flexing projections 10 and 10', such that the end portion 14' is secured in an inner configuration in relation to the receiving opening, wherein the flexing projections 10 and 10' at least partly return towards their non-flexed position. Hence, the raise resisting locking device provides a second locking function when the side wall 6c is arranged in its upright position.

[0065] Thus, according to the exemplifying embodi-

ment of the container, it comprises a locking device comprising combined functionality, wherein the side wall is prevented from unintentional raising when it is arranged in the outwardly folded position, and wherein the side wall is prevented from unintentional outward tilting when it is arranged in its upright position. In particular, the locking device prevents the side wall from unintentional outward tilting also when it is not secured by the side wall locking device 26.

[0066] The container 1 further comprises a stack guide 27 extending from the outer end edge of the side wall 6c, which stack guide 27 is arranged to be fitted into opening 28 of another container during stacking of a plurality of assembled containers, as illustrated with reference to Fig. 7. As further illustrated in Fig. 7, a support portion 29 of the base member 2 of the upper container 1 a provides a lift region easy accessible for e.g. lift actuators or manual lifting of the container 1 a.

[0067] In Fig. 8, a schematic perspective view of an exemplifying automated packing process using a container 1 according to an exemplifying embodiment of the present invention is illustrated. In step I, a container 1 is retrieved from an unloaded stack 80 of disassembled containers 1 and loaded in a continuous-line arrangement 81. In step II, items, e.g. from a production line, are automatically loaded onto the support surface of the container. In step III, the side walls of the container 1 are raised and secured into their upright position, after which, in step IV, the containers are arranged in a stack 82 of assembled and loaded containers. In Fig. 9, a further embodiment of a packing process arranged as described in relation to Fig. 8, unless otherwise is stated. In particular, the stack of containers 1 have side walls which are arranged in an intermediate position, e.g. as described below with reference to Figs. 10a-15.

[0068] In Fig. 10a-15, optional or alternative embodiments of the container 101 and its parts are schematically illustrated, wherein the container 101 and its parts are arranged in similar manner as, and according to, the container 1, and parts thereof, as described with reference to Figs. 1-8, if not explicitly stated otherwise. The container 101 comprises a base member 102 having a top side support surface 103 and an edge 104 along which edge a bottom edge 108 of a side wall 106, having an inner side surface 107, is pivotally attached. The side wall 106 is pivotally movable between an upright position and an outwardly folded position, wherein the side wall 106 is arranged to align with the base member in the outwardly folded position.

[0069] The locking device 109 of the container 101 is arranged to maintain, or secure, the side wall in an inclined intermediate position between the upright position and the outwardly folded position. In other words, the side wall is pivotable between, and possible to arrange, or secure, in at least three different positions: a flat outwardly folded position, an upright position, and an intermediate position in which the side wall is inclined at an angle between the flat 0 degree horizontal position and

the approximate 90 -110 degree upright position.

[0070] In Fig. 10a, two stacked containers 101, 101 b for carrying items are shown, wherein the side wall 106 of the upper container 101 is arranged in the intermediate position, and secured in that position by locking device 109 via cooperation between the bottom edge 108 of the side wall 106 and the edge 104 of the base member 102. In other words, the locking device 109 is provided with a locking function which maintains, or secures, the side wall 106 in a predetermined inclined position.

[0071] In Fig. 10b, a schematic perspective view of the based member 102 of the container, is shown, wherein the view comprises a zoom-in view of the locking device 109a of the base member 102 and a hinge support member 144 in the form of a rod portion extending longitudinally along the edge of the base member 102. As shown, the hinge support member is integrated in the edge of the base member and arranged between the top side support surface 103 and the bottom surface of the base member 102.

[0072] In Fig. 11, a stack of an upper container 101 a and a lower container 101 b is schematically shown in a partial view from the side. As illustrated, the side walls of the respective upper and lower containers 101 a, 101 b are arranged to align in adjacent positions in relation to each other in an angle about 35 degrees in relation to a horizontal geometrical plane of the support surface of the base member. The side walls 106a, 106b, on a left hand side in the figure, further comprise projecting members 122, such as a locking resilient projecting member, arranged to be inserted into receiving openings 123 in respective adjacent side walls, wherein the projecting member 122 is secured, at least partially, in the receiving opening 123, such that the side walls of the containers may be secured in an assembled upright configuration during handling and use, in a similar manner as describes in relation to Fig. 4. As further illustrated, the upper container 101 a further comprises a stacking support portion 148 which is arranged on the bottom side of the base member, extending in a vertically downward direction, such that the main part of the base member of an upper container is arranged a distance above the base member of the bottom container, when stacked. Hence, the outer end 149 of the upper base member does not weigh down on the below side wall 106b.

[0073] In Fig. 12a-b, schematic perspective views of separate non-mounted side walls 106a and 106b of the container according to an embodiment of the present invention, are illustrated, wherein respective locking devices 109b of the side walls 106a, 106b are arranged to cooperate with the respective locking devices 109a of the base member 102 to form locking devices 109 of the container.

[0074] When mounted on the base member and arranged in their upright positions, the side wall 106a, which forms a first edge side wall of the container, is arranged to, in a releasable manner, lock with the side wall 106b, which forms a second edge side wall of the container,

wherein the first and second edges are perpendicular and share a common corner of the base member. For this purpose, with reference to Fig. 12a, the side wall 106a comprises projecting members 122 extending from essentially shorter vertical edge of the side wall 106a, wherein the projecting member 122 forms a snap-in looking device, e.g. comprising two adjacent extensions arranged to flex towards each other during insertion of the projecting member 122 into the receiving opening 123 of the side wall 106b, with reference to Fig. 12b and Fig. 11. The side walls 106a, 106b further comprise a plurality of hinge portions 142 arranged at least partially extending along the bottom edge of the side wall. Each hinge portion 142 has an inner annular inner space arranged to securely receive and accommodate a corresponding longitudinal hinge support member arranged at the edge of the base member. Each hinge portion 142 is further provided with a slot via which the hinge support member (e.g. 144 in Fig. 13c) of the base member is properly secured in the annular space, e.g. via snap-locking by providing an elastic hinge portion 142. Between the illustrated respective pairs of hinge portions 142, a respective projecting member 114 of the locking device 109b extends from the bottom edge of the side walls 106a, 106b. Hence, each projecting member 114 of the respective locking device is surrounded by hinge portions 142 on both sides, which ensures effective and durable operation and alignment of the projecting member 114 during its cooperation with the receiving opening of the locking device arranged in the base member, when the side walls 106a, 106b are mounted on the base member. The side wall(s) further comprises an information area 141, for e.g. indicating a logo, type, and/or other information via e.g. printing, writing, etc on the information area 141.

[0075] Each side wall 106a, 106b is further provided with lifting means 146 enabling easy and controlled lifting of a container when it is assembled, which lifting means are arranged at the corners of the containers. As illustrated, the lifting means 146 comprises respective indentations in each lower corner of the side walls 106a, 106b, wherein each indentation forms a lifting support surface 145 facing in an essentially downward direction. When the container is assembled, the indentations of the side walls align such that guide member and automated actuators may be partially inserted in the lifting means. Hence, a desired number of assembled containers, from a stack of container, may advantageously be lifted simultaneously.

[0076] In Figs. 13a-d, various perspective zoom-in views of the locking device 109 of the container are shown from different angles, when the side wall 106 is arranged, or secured, in different positions in relation to the base member 102. Fig. 13a, illustrates a top view, while the Figs. 13b-d illustrate view from below.

[0077] In Fig. 13a, base member 102 comprising a top side support surface 103 and a first edge surface 111, is shown. The side wall 106 is arranged in the outwardly folded position such that the inner side surface 107 of

the side wall 106 essentially coincides with a geometrical plane defined by the top side support surface 103. In other words, the respective support surface of the base member 102 and the side wall 106 are leveled and forms a common essentially continuous support surface covering e.g. the base member 106 and thereto, on respective edges of the base member, attached side walls.

[0078] The locking member 109 of the container comprises a first and a second flexing projections 110 and 110' which extend from the edge of the base member 102 and forms a receiving opening 115 into which the projecting member 114 is arranged to be inserted by pivotally moving the side wall 106 from the outwardly folded position towards the secured intermediate position, the upright position, or any other intermediate position in relation to the base member 102. As described with reference to Fig. 3, the projecting member 114 comprises an enlarged end portion 114' formed of a wider section which is arranged to cooperate with the flexing member 110. In the outwardly folded position, as illustrated in Fig. 13a, the projecting member 114, or its end portion 114', is arranged above and in an abutting configuration with vertically upper ends of the respective flexing portions 110'.

[0079] In Fig. 13b, the side wall 106 is arranged in the upright position in relation to the base member 102, wherein the projecting member is arranged in the receiving opening such that the end portion 114' is arranged below and in an abutting configuration with bottom ends of the respective flexing portions 110 and 110'. During pivotal movement of the side wall 106 in relation to the base member 102, the flexing projections 110 and 110' are arranged to flex in respective directions, as indicated by direction arrow F and F', such that the projecting member 114 and its end portion 114' may slide through the receiving opening.

[0080] The flexing portions 110 and 110' further comprise intermediate locking means 140, as illustrated in Fig 13c. According to the depicted embodiment, the intermediate locking means 140 comprises a groove, or recess, formed on the inner side of the flexing portions 110, 110', in a facing relationship to each other. The intermediate locking means 140 are arranged to, at least partly, secure the projecting member 114, e.g. by receiving the end portion 114', in the groove, such the side wall 106 is maintained in the intermediate position in relation to the base member, as illustrated with reference to Fig. 13d.

[0081] In Fig. 14, a schematic cross-sectional view taken in a corresponding vertical plane along A - A of a container, with reference to Fig. 13a, wherein the side wall is inclined in relation to the base member. As illustrated, the end portion 114' of the projecting member is arranged in the receiving opening between a first flexing projection 110 and second flexing projection (not shown). A similar configuration of the container is illustrated in Fig. 15, wherein the cross-sectional view is taken in a corresponding vertical plane along B - B of a container, with reference to Fig. 13a. As shown, respective lateral

end portions 114' of the projecting portion member 114 are received, and secured, in respective grooves 140 in a first and second flexing projection 110 and 110'.

[0082] Generally, the above described various embodiments of the container and systems of compatible containers are arranged in a similar or corresponding manner, if not specifically specified.

[0083] It is further noted that the invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended patent claims. For example, the side walls may be connected to the base member with different types of hinges of different materials. Furthermore, the raise resisting locking device may be formed by plastic or metallic members, or materials involving suitable elastic properties such that e.g. durable and strong flexing projection may be realized.

[0084] It should be noted that, in the claims, the word "comprising" does not exclude other elements or steps, and the indefinite article "a" or "an" does not exclude a plurality. A single apparatus or other unit may fulfill the functions of several items recited in the claims. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage. It is noted, that the container 1 according to the invention may be assembled and manufactured in different orders.

Claims

1. A container (1) for carrying items, comprising a base member (2) having a top side support surface (3) and at least one edge (4), the top side support surface (3) defining a geometrical plane, and at least one side wall (6) comprising an inner side surface (7) and a bottom edge (8) which is hingedly connected to the at least one edge (4) of the base member (2), wherein the at least one side wall (6) is pivotally movable between an substantially upright position and an outwardly folded position in relation to the base member (2), wherein the inner side surface (7) of the at least one side wall (6) essentially coincides with the geometrical plane of the support surface (3) of the base member (2), when the side wall (6) is arranged in the outwardly folded position, and **characterised in that** the container (1) further comprises a locking device (9) arranged to prevent the side wall from unintentional raising, when the side wall (6) is arranged in the outwardly folded position.
2. A container according (1) to claim 1, wherein the locking device (9) comprises a raise force threshold, wherein the locking device prevents raising of the side wall (6) from the outwardly folded position until

a raising force exerted on the side wall reaches the raise force threshold.

3. A container (1) according to any one of the preceding claims, wherein the locking device (9) comprises at least one resilient member arranged to flex when the side wall (6) is being raised from the outwardly folded position.
4. A container (1) according to any one of the preceding claims, wherein the edge (4) of the base member (2) comprises a first edge surface (11) and the bottom edge (8) of the side wall (6) comprises a second edge surface (12), wherein the locking device (9) is arranged in a space defined by the first and second edge surfaces (11, 12) and the geometrical plane of the support surface of the base member, when the side wall (6) is arranged in the outwardly folded position.
5. A container (1) according to any one of claims 1-4, wherein the locking device (9) comprises:
 - a first flexing projection (10) protruding from the base member (2), and
 - a projecting member (14) protruding from the bottom edge of the side wall, wherein the projecting member (14) abuts the flexing member (10) when the side wall (6; 6a; 6b) is arranged in the outwardly folded position.
6. A container (1) according to any one of claims 1-4, wherein the locking device (9) comprises:
 - a first and second flexing projection (10, 10') protruding from the base member (2), and
 - a projecting member (14) protruding from the bottom edge of the side wall, wherein the projecting member (14) abuts the first and second flexing members (10, 10') when the side wall (6; 6a; 6b) is arranged in the outwardly folded position.
7. A container (1) according to any one of the preceding claims, wherein the container further comprises a brace member (16) which is connected between the edge (3) of the base member and the bottom edge (8) of the side wall, wherein the brace member (16) prevents the side wall (6) from folding further than the outwardly folded position.
8. A container (1) according to any one of the preceding claims, wherein the bottom edge (8) of the side wall (6) is hingedly connected to the edge (3) of the base member (2) by at least one film hinge (17) extending at

least partially along the edge (4) of the base member.

9. A container (1) according to any one of claims 1-7, wherein the bottom edge (8) of the side wall (6) is hingedly connected to the edge (3) of the base member (2) by at least one snap-on hinge (17) extending at least partially along the edge (4) of the base member. 5
10. A container (1) according to any one of the preceding claims, wherein the locking device is arranged to position the side wall in an inclined intermediate position between the upright position and the outwardly folded position. 10
11. A container (1) according to claim 10 when dependent on claim 4 or 5, wherein the flexing member (10; 10') comprises at least one receive portion (140) arranged to receive a portion of the projecting member (14) for securing the side wall when it is arranged in the inclined intermediate position. 20
12. A container (1) according to any one of the preceding claims, comprising four side walls (6a, 6b, 6c, 6d), wherein each side wall is hingedly connected to separate edges of the base member (2) and each is pivotally moveable between an upright position and outwardly folded position in relation to the base member (2). 25
13. Use of a container (1) according to any one of claims 1-12, for continuous line packaging of goods or foods in the container using a packing machine. 30
14. Use of a container (1) according to claim 13, wherein at least one pivotally movable side wall of the container is being arranged in its upright position by the packing machine. 35

Patentansprüche

1. Behälter (1) zum Transportieren von Objekten, umfassend ein Basiselement (2), das eine Oberseitenauf­fläche (3) und mindestens einen Rand (4) aufweist, wobei die Oberseitenauf­fläche (3) eine geo­metrische Ebene definiert, und mindestens eine Seitenwand (6), die eine Innenseitenfläche (7) und einen unteren Rand (8) umfasst, der mit dem mindestens einen Rand (4) des Basiselements (2) klappbar verbunden ist, wobei die mindestens eine Seitenwand (6) drehbar zwischen einer im Wesentlichen aufrechten Position und einer nach außen geklappten Position in Bezug auf das Basiselement (2) beweglich ist, wobei die Innenseitenfläche (7) der mindestens ei-

nen Seitenwand (6) im Wesentlichen mit der geometrischen Ebene der Auflagefläche (3) des Basiselements (2) zusammenfällt, wenn die Seitenwand (6) in der nach außen geklappten Position angeordnet ist, und

dadurch gekennzeichnet, dass der Behälter (1) weiter eine Sperrvorrichtung (9) umfasst, die angeordnet ist, um zu verhindern, dass die Seitenwand unabsichtlich angehoben wird, wenn die Seitenwand (6) in der nach außen geklappten Position angeordnet ist.

2. Behälter (1) nach Anspruch 1, wobei die Sperrvorrichtung (9) einen Anhebekraftschwellenwert umfasst, wobei die Sperrvorrichtung das Anheben der Seitenwand (6) von der nach außen geklappten Position verhindert, bis eine anhebende Kraft, die auf die Seitenwand ausgeübt wird, den Anhebekraftschwellenwert erreicht. 15
3. Behälter (1) nach einem der vorstehenden Ansprüche, wobei die Sperrvorrichtung (9) mindestens ein elastisches Element umfasst, das angeordnet ist, um sich zu biegen, wenn die Seitenwand (6) von der nach außen geklappten Position angehoben wird. 20
4. Behälter (1) nach einem der vorstehenden Ansprüche, wobei der Rand (4) des Basiselements (2) eine erste Randfläche (11) umfasst und der untere Rand (8) der Seitenwand (6) eine zweite Randfläche (12) umfasst, wobei die Sperrvorrichtung (9) in einem Raum angeordnet ist, der durch die ersten und zweiten Randflächen (11, 12) und die geometrische Ebene der Auflagefläche des Basiselements definiert ist, wenn die Seitenwand (6) in der nach außen geklappten Position angeordnet ist. 25
5. Behälter (1) nach einem der Ansprüche 1 bis 4, wobei die Sperrvorrichtung (9) umfasst: 30

einen ersten sich biegenden Vorsprung (10), der von dem Basiselement (2) vorsteht, und ein hervorstehendes Element (14), das von dem unteren Rand der Seitenwand vorsteht, wobei das hervorstehende Element (14) an das sich biegende Element (10) angrenzt, wenn die Seitenwand (6; 6a; 6b) in der nach außen geklappten Position angeordnet ist. 35

6. Behälter (1) nach einem der Ansprüche 1 bis 4, wobei die Sperrvorrichtung (9) umfasst: 40

einen ersten und zweiten sich biegenden Vorsprung (10, 10"), die von dem Basiselement (2) vorstehen, und ein hervorstehendes Element (14), das von dem unteren Rand der Seitenwand vorsteht, 45

wobei das hervorstehende Element (14) an die ersten und zweiten sich biegender Elemente (10, 10") angrenzt, wenn die Seitenwand (6; 6a; 6b) in der nach außen geklappten Position angeordnet ist.

7. Behälter (1) nach einem der vorstehenden Ansprüche, wobei der Behälter weiter ein Versteifungselement (16) umfasst, das zwischen dem Rand (3) des Basiselements und dem unteren Rand (8) der Seitenwand verbunden ist, wobei das Versteifungselement (16) verhindert, dass die Seitenwand (6) weiter geklappt wird, als in die nach außen geklappte Position.
8. Behälter (1) nach einem der vorstehenden Ansprüche, wobei der untere Rand (8) der Seitenwand (6) mit dem Rand (3) des Basiselements (2) mindestens durch ein Filmscharnier (17) klappbar verbunden ist, das sich mindestens teilweise entlang dem Rand (4) des Basiselements erstreckt.
9. Behälter (1) nach einem der Ansprüche 1 bis 7, wobei der untere Rand (8) der Seitenwand (6) mit dem Rand (3) des Basiselements (2) mindestens mit einem Schnappscharnier (17) klappbar verbunden ist, das sich mindestens teilweise entlang dem Rand (4) des Basiselements erstreckt.
10. Behälter (1) nach einem der vorstehenden Ansprüche, wobei die Sperrvorrichtung derart angeordnet ist, dass sie die Seitenwand in einer geeigneten Zwischenposition zwischen der aufrechten Position und der nach außen geklappten Position positioniert.
11. Behälter (1) nach Anspruch 10, wenn abhängig von Anspruch 4 oder 5, wobei das sich biegender Element (10; 10') mindestens einen Empfangsabschnitt (140) aufweist, der angeordnet ist, einen Abschnitt des hervorstehenden Elementes (14) zum Sichern der Seitenwand aufzunehmen, wenn sie in der geeigneten Zwischenposition angeordnet ist.
12. Behälter (1) nach einem der vorstehenden Ansprüche, umfassend vier Seitenwände (6a, 6b, 6c, 6d), wobei jede Seitenwand mit separaten Rändern des Basiselements (2) klappbar verbunden ist und jede drehbar zwischen einer aufrechten Position und einer nach außen geklappten Position in Bezug auf das Basiselement (2) beweglich ist.
13. Verwenden eines Behälters (1) nach einem der Ansprüche 1 bis 12 für Fließbandverpackung von Waren oder Lebensmittel in den Behälter unter Verwendung einer Verpackungsmaschine.
14. Verwenden von einem Behälter (1) nach Anspruch 13, wobei mindestens eine drehbar bewegliche Sei-

tenwand des Behälters von der Verpackungsmaschine in ihrer aufrechten Position angeordnet wird.

5 Revendications

1. Réceptacle (1) pour transporter des articles, comprenant :
 - 10 un élément de base (2) ayant une surface de support de côté supérieur (3) et au moins un bord (4), la surface de support de côté supérieur (3) définissant un plan géométrique, et
 - 15 au moins une paroi latérale (6) comprenant une surface de côté intérieur (7) et un bord de fond (8) qui est relié de manière articulée à l'au moins un bord (4) de l'élément de base (2), dans lequel l'au moins une paroi latérale (6) est mobile de manière pivotante entre une position sensiblement verticale et une position repliée vers l'extérieur par rapport à l'élément de base (2), dans lequel la surface de côté intérieur (7) de l'au moins une paroi latérale (6) coïncide essentiellement avec le plan géométrique de la surface de support (3) de l'élément de base (2) lorsque la paroi latérale (6) est disposée dans la position repliée vers l'extérieur, et
 - 20 **caractérisé en ce que** le réceptacle (1) comprend en outre un dispositif de blocage (9) étudié pour empêcher que la paroi latérale ne se soulève de manière intempestive lorsque la paroi latérale (6) est disposée dans la position repliée vers l'extérieur.
2. Réceptacle (1) selon la revendication 1, dans lequel le dispositif de blocage (9) comprend un seuil de force de soulèvement, dans lequel le dispositif de blocage empêche le soulèvement de la paroi latérale (6) à partir de la position repliée vers l'extérieur jusqu'à ce qu'une force de soulèvement exercée sur la paroi latérale atteigne le seuil de force de soulèvement.
3. Réceptacle (1) selon l'une quelconque des revendications précédentes, dans lequel le dispositif de blocage (9) comprend au moins un élément élastique étudié pour se fléchir lorsque la paroi latérale (6) est soulevée à partir de la position repliée vers l'extérieur.
4. Réceptacle (1) selon l'une quelconque des revendications précédentes, dans lequel le bord (4) de l'élément de base (2) comprend une première surface de bord (11), et le bord de fond (8) de la paroi latérale (6) comprenant une deuxième surface de bord (12), dans lequel le dispositif de blocage (9) est disposé dans un espace défini par les première et deuxième surfaces de bord (11, 12) et le plan géométrique de

la surface de support de l'élément de base lorsque la paroi latérale (6) est disposée dans la position repliée vers l'extérieur.

5. Réceptacle (1) selon l'une quelconque des revendications 1-4, dans lequel le dispositif de blocage (9) comprend :
- une première projection de flexion (10) dépassant de l'élément de base (2), et
un élément de projection (14) dépassant du bord de fond de la paroi latérale, dans lequel l'élément de projection (14) bute contre l'élément de flexion (10) lorsque la paroi latérale (6; 6a; 6b) est disposée dans la position repliée vers l'extérieur.
6. Réceptacle (1) selon l'une quelconque des revendications 1-4, dans lequel le dispositif de blocage (9) comprend :
- des première et deuxième projections de flexion (10, 10') dépassant de l'élément de base (2), et un élément de projection (14) dépassant du bord de fond de la paroi latérale, dans lequel l'élément de projection (14) bute contre les premier et deuxième éléments de flexion (10, 10') lorsque la paroi latérale (6; 6a; 6b) est disposée dans la position repliée vers l'extérieur.
7. Réceptacle (1) selon l'une quelconque des revendications précédentes, dans lequel le réceptacle comprend en outre un élément d'entretoisement (16) qui est relié entre le bord (3) de l'élément de base et le bord de fond (8) de la paroi latérale, dans lequel l'élément d'entretoisement (16) empêche la paroi latérale (6) de se replier au-delà de la position repliée vers l'extérieur.
8. Réceptacle (1) selon l'une quelconque des revendications précédentes, dans lequel le bord de fond (8) de la paroi latérale (6) est relié de manière articulée au bord (3) de l'élément de base (2) grâce à au moins une charnière pelliculaire (17) s'étendant au moins partiellement le long du bord (4) de l'élément de base.
9. Réceptacle (1) selon l'une quelconque des revendications 1-7, dans lequel le bord de fond (8) de la paroi latérale (6) est relié de manière articulée au bord (3) de l'élément de base (2) grâce à au moins une articulation à clipser (17) s'étendant au moins partiellement le long du bord (4) de l'élément de base.
10. Réceptacle (1) selon l'une quelconque des revendications précédentes, dans lequel le dispositif de blocage est étudié pour positionner la paroi latérale

dans une position inclinée intermédiaire entre la position verticale et la position repliée vers l'extérieur.

11. Réceptacle (1) selon la revendication 10 lorsque dépendante de la revendication 4 ou 5, dans lequel l'élément de flexion (10; 10') comprend au moins une partie de réception (140) étudiée pour recevoir une partie de l'élément de projection (14) pour sécuriser la paroi latérale lorsqu'elle est disposée dans la position inclinée intermédiaire.
12. Réceptacle (1) selon l'une quelconque des revendications précédentes, comprenant quatre parois latérales (6a, 6b, 6c, 6d), dans lequel chaque paroi latérale est reliée de manière articulée à des bords séparés de l'élément de base (2) et chacune pouvant se mouvoir de manière pivotante entre une position verticale et une position repliée vers l'extérieur par rapport à l'élément de base (2).
13. Utilisation d'un réceptacle (1) selon l'une quelconque des revendications 1-12 pour l'emballage à la chaîne en continu d'articles ou d'aliments dans le réceptacle en utilisant une machine d'emballage.
14. Utilisation d'un réceptacle (1) selon la revendication 13, dans lequel au moins la paroi latérale, pouvant se mouvoir en pivotant, du réceptacle est disposée dans sa position verticale grâce à la machine d'emballage.

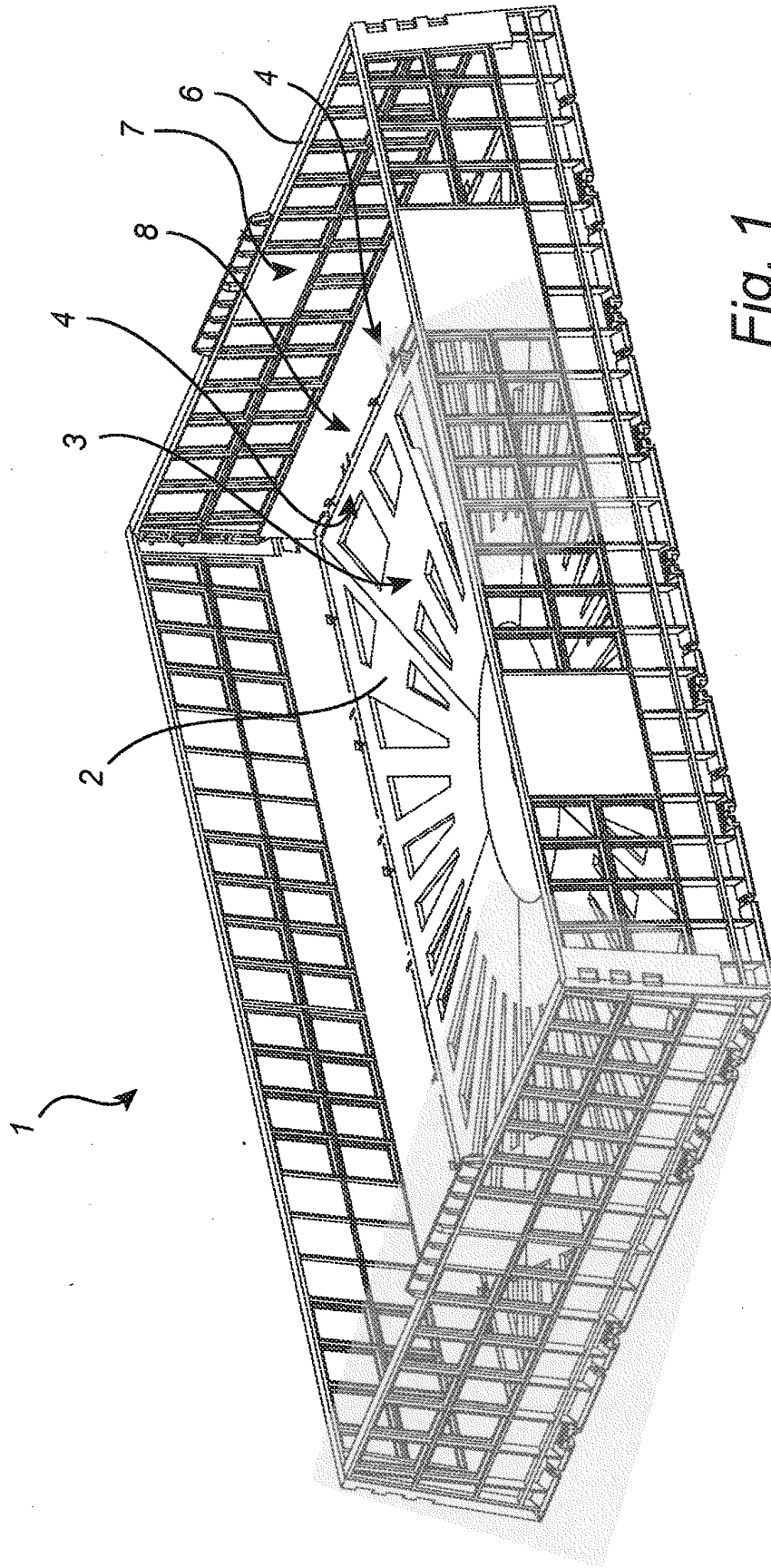


Fig. 1

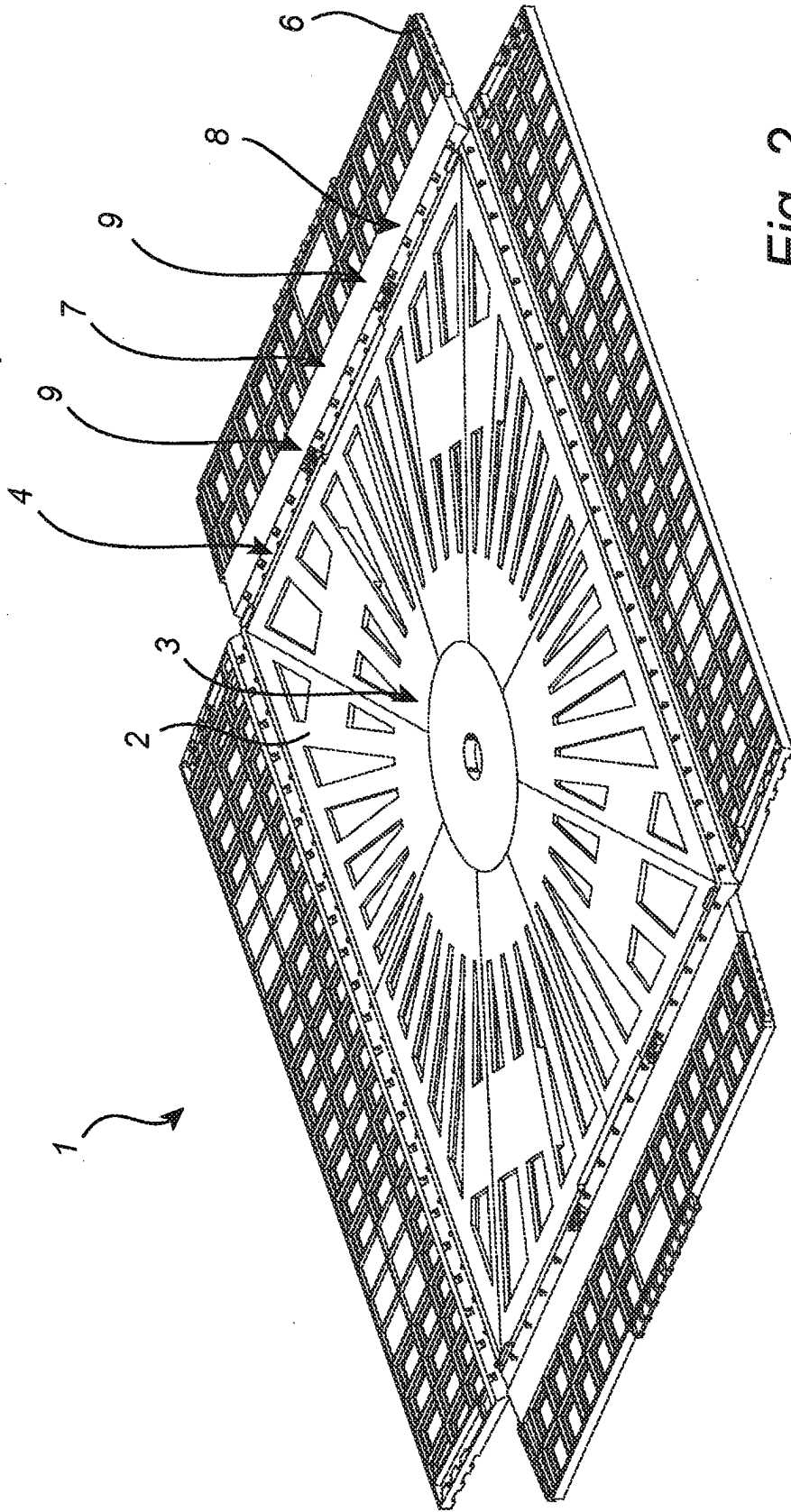


Fig. 2

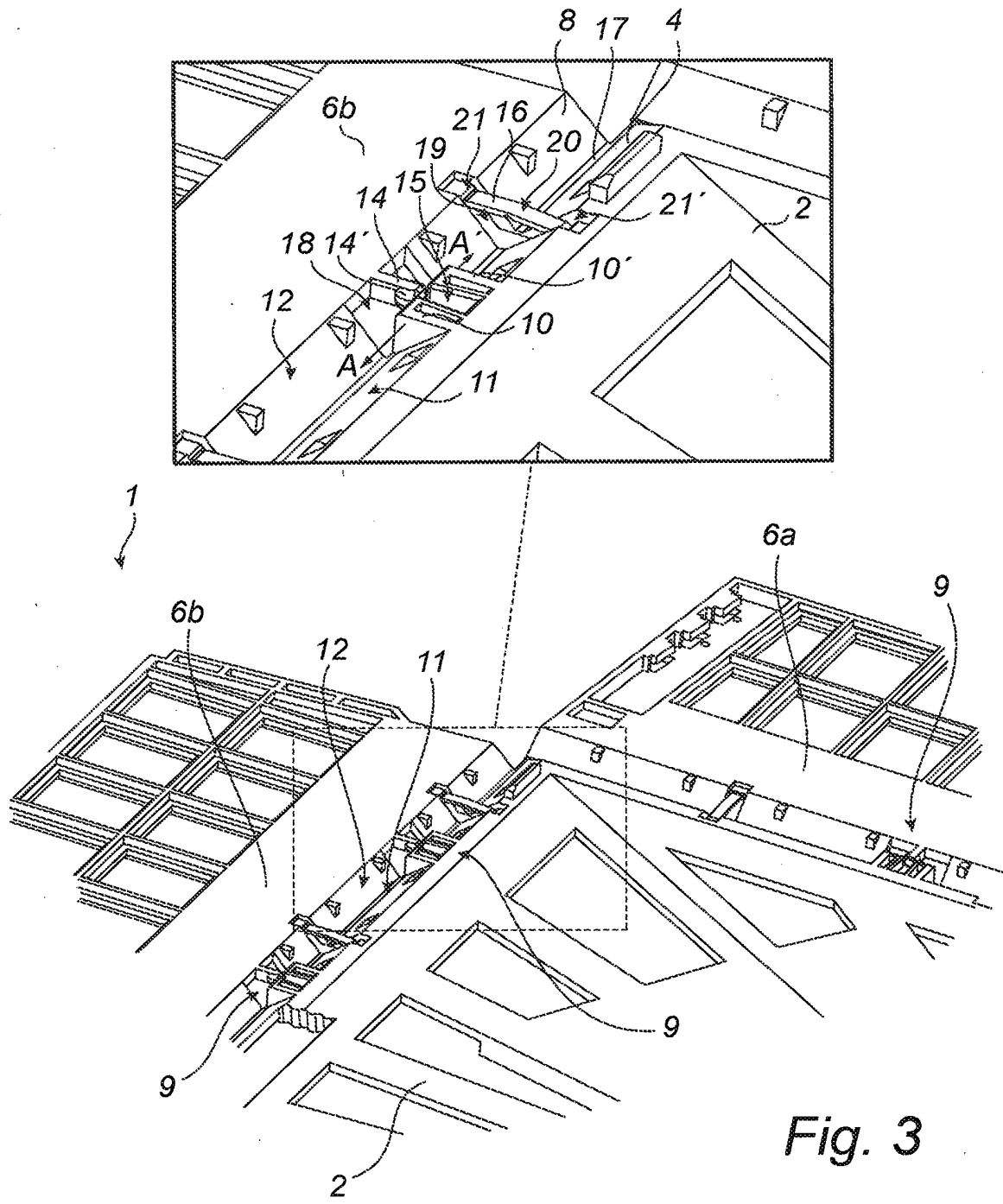


Fig. 3

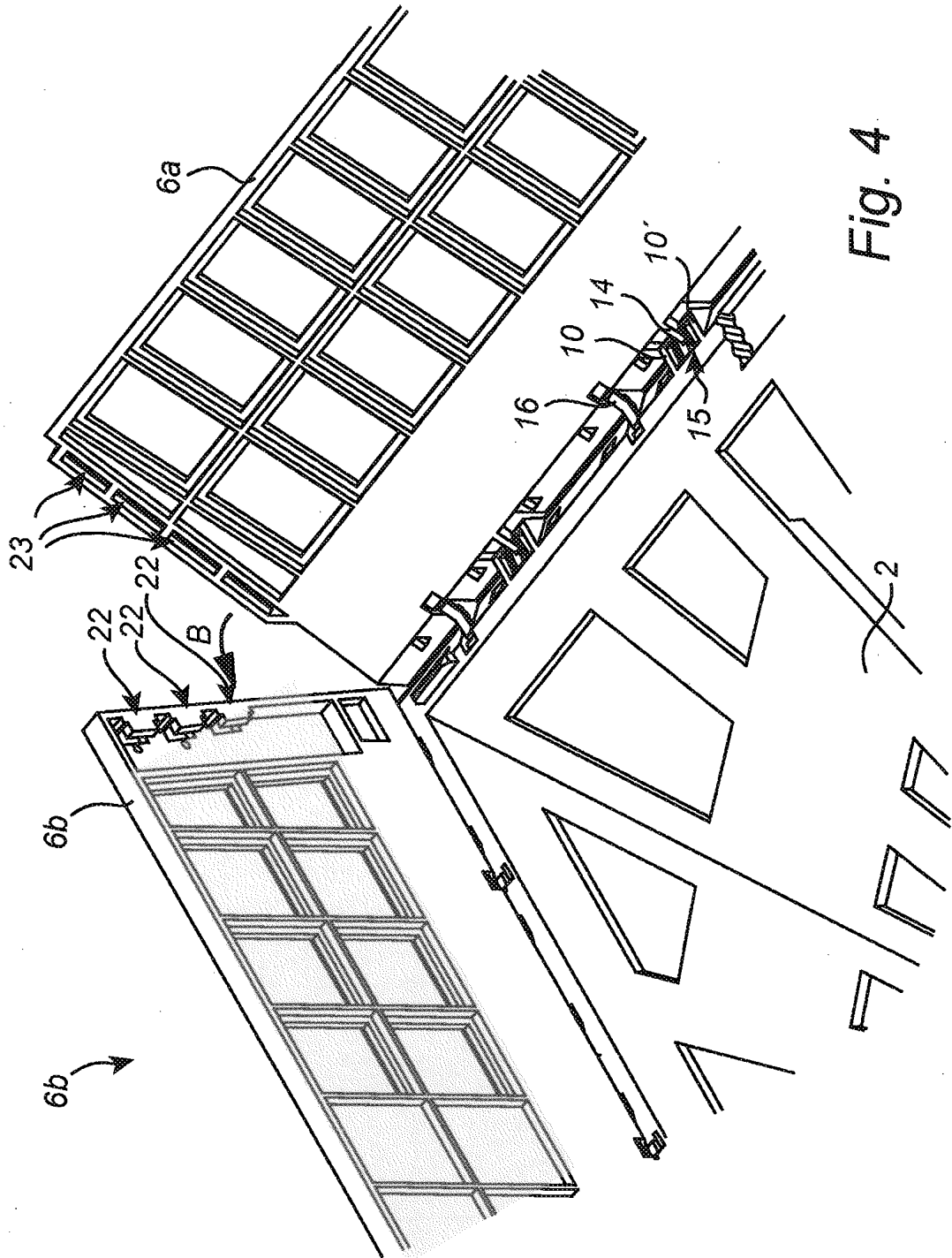
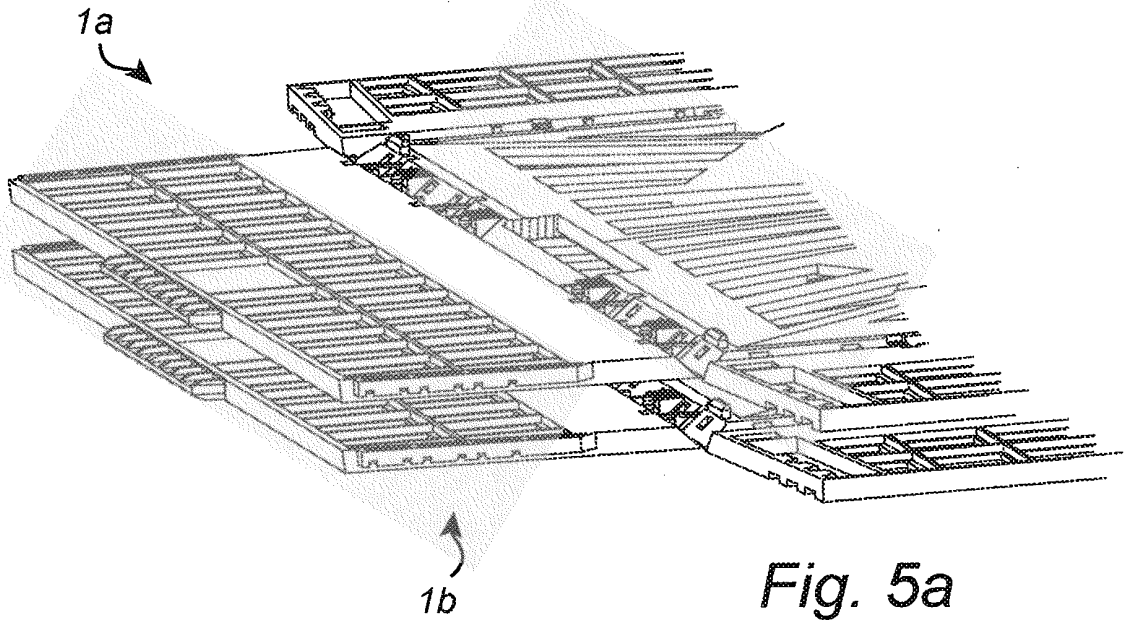


Fig. 4



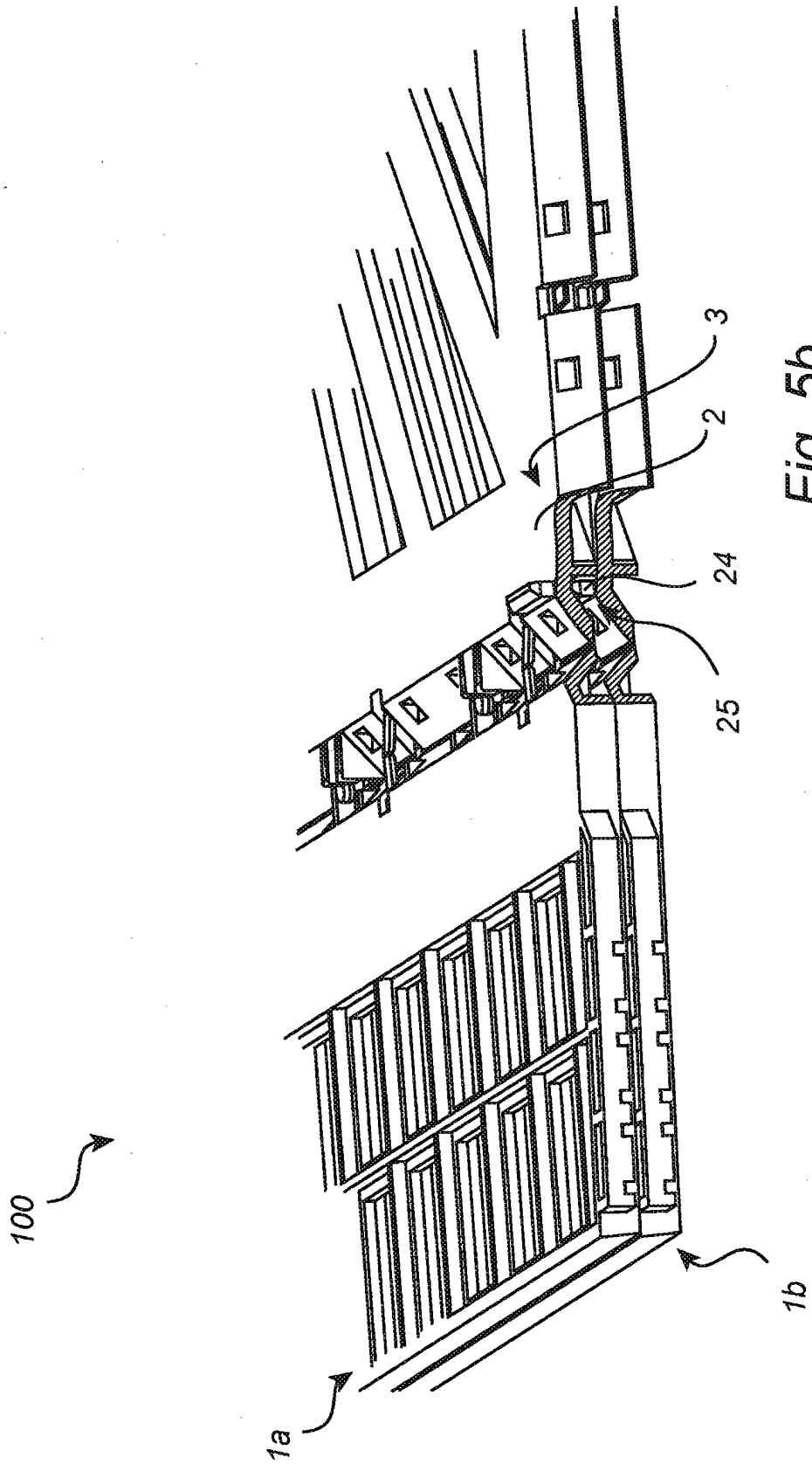


Fig. 5b

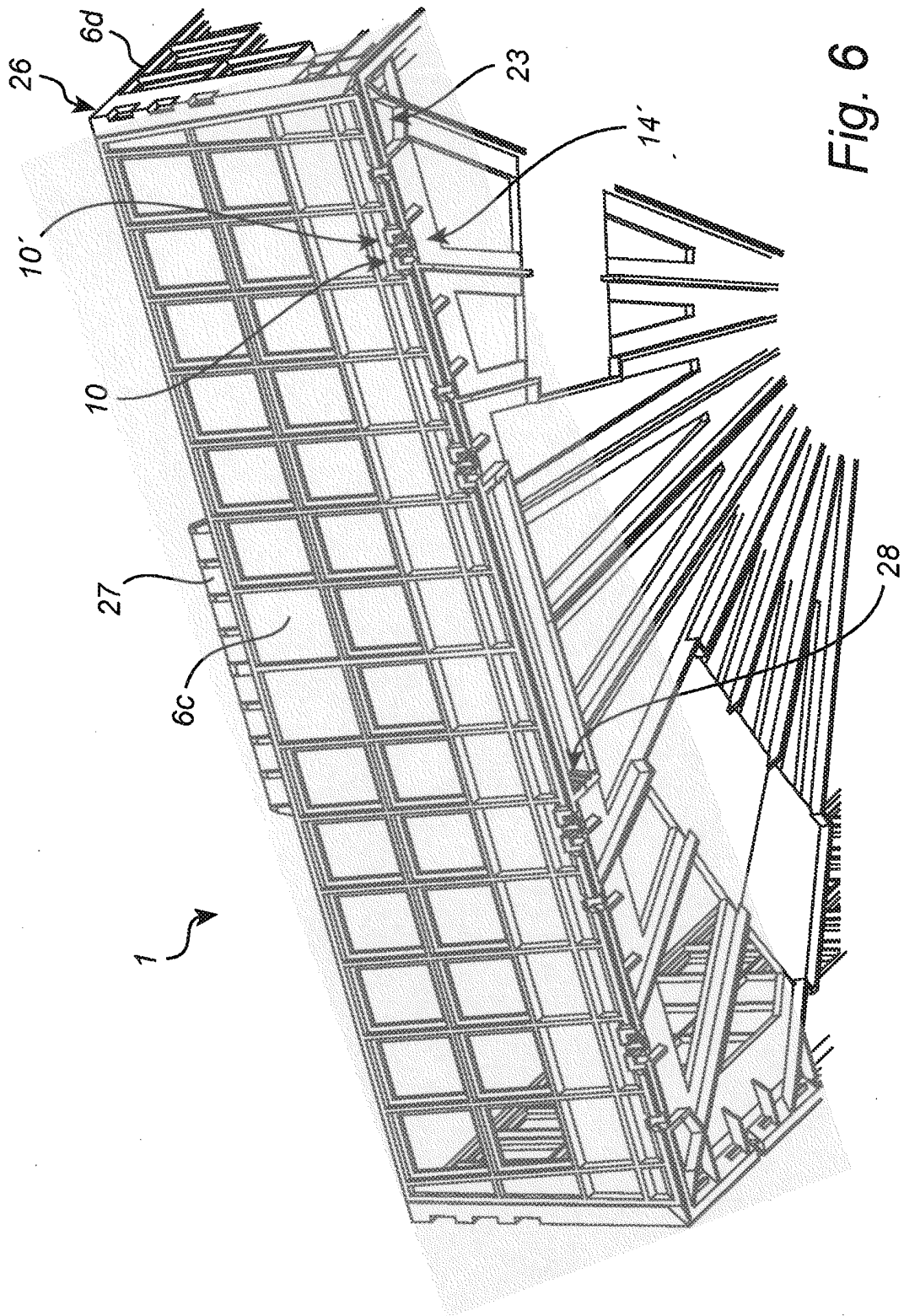


Fig. 6

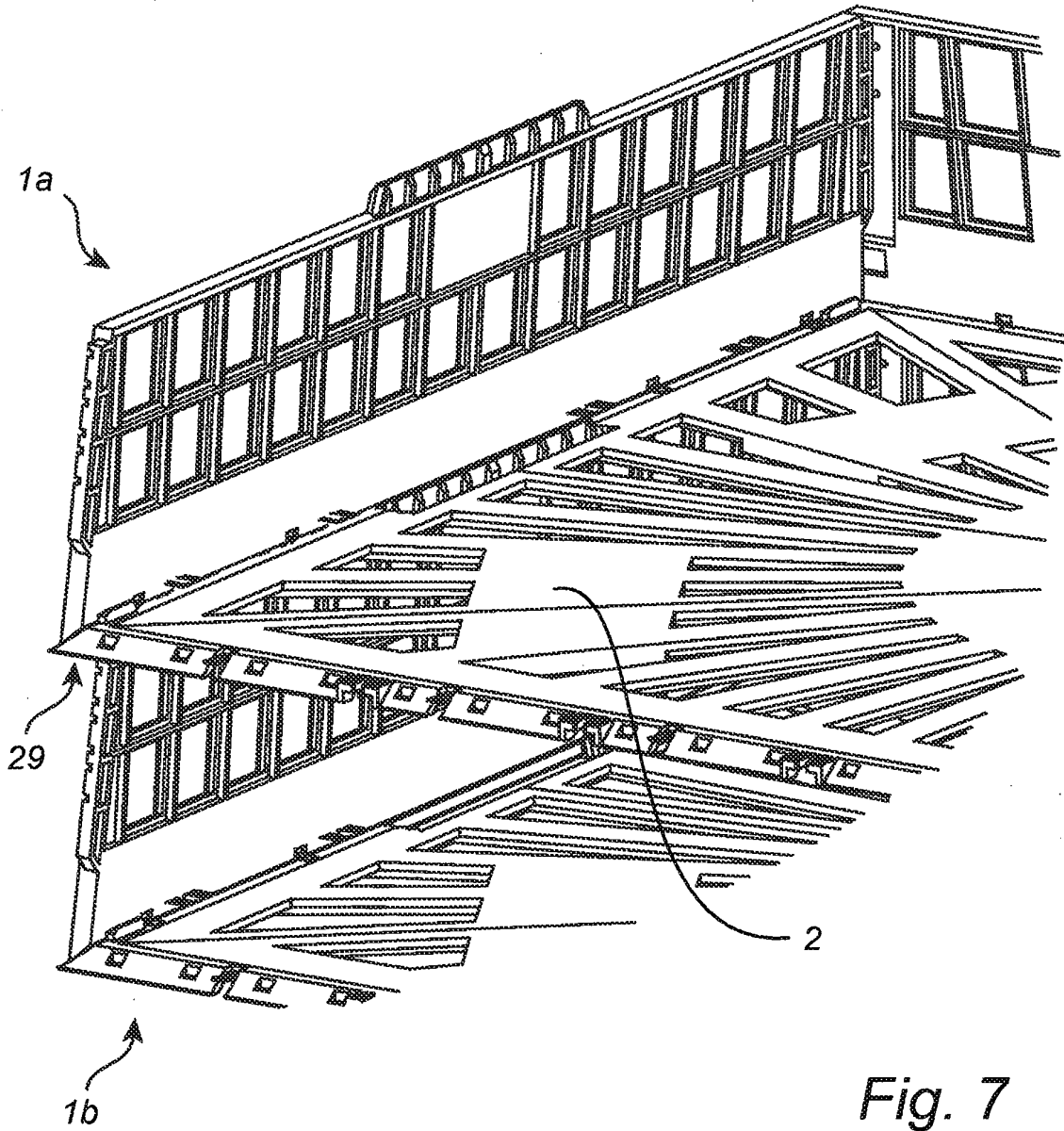


Fig. 7

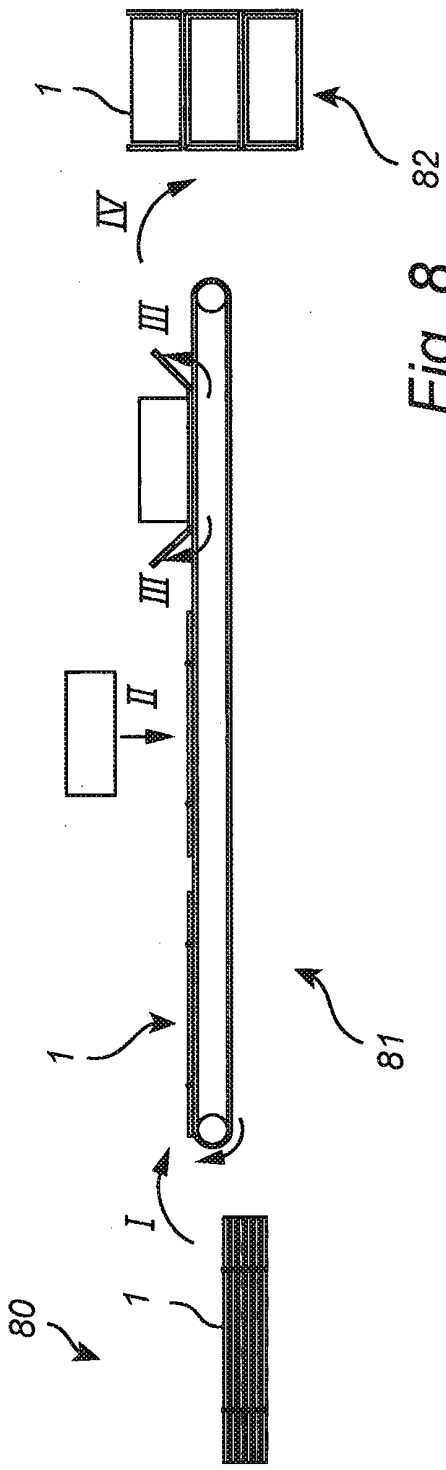


Fig. 8

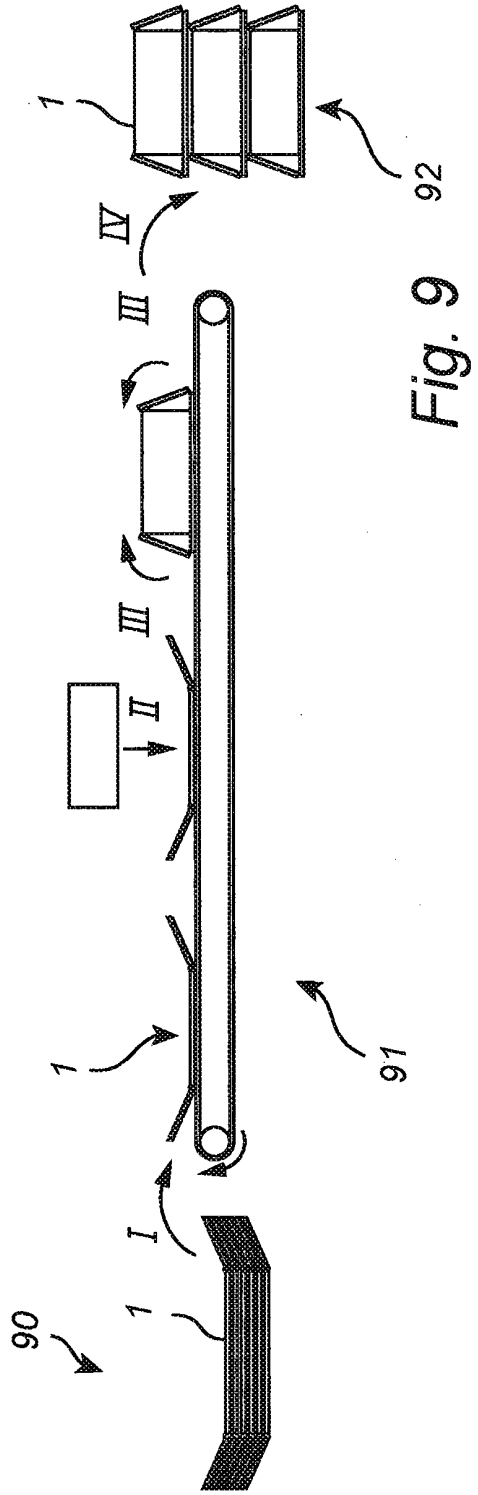


Fig. 9

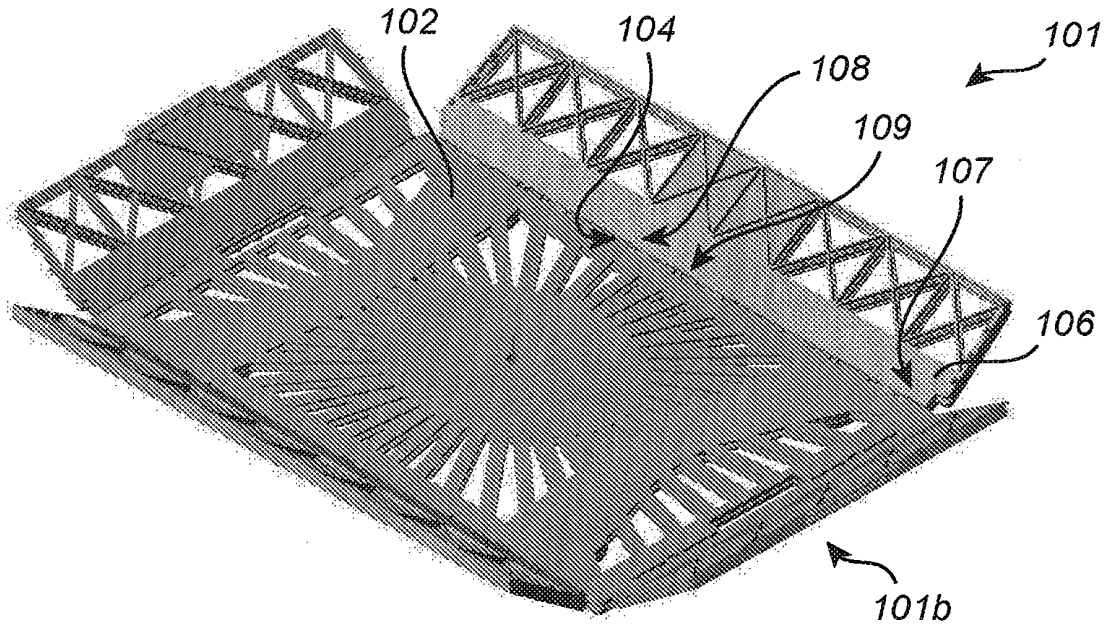


Fig. 10a

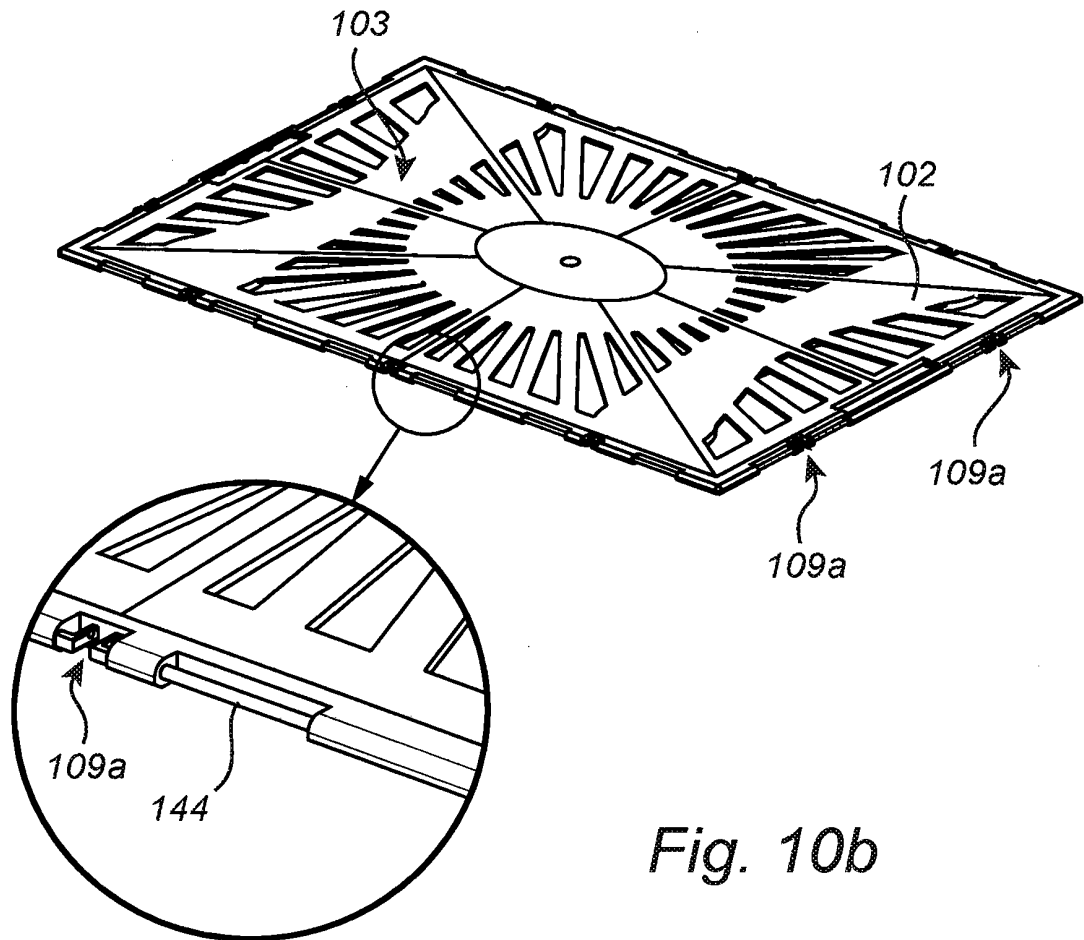


Fig. 10b

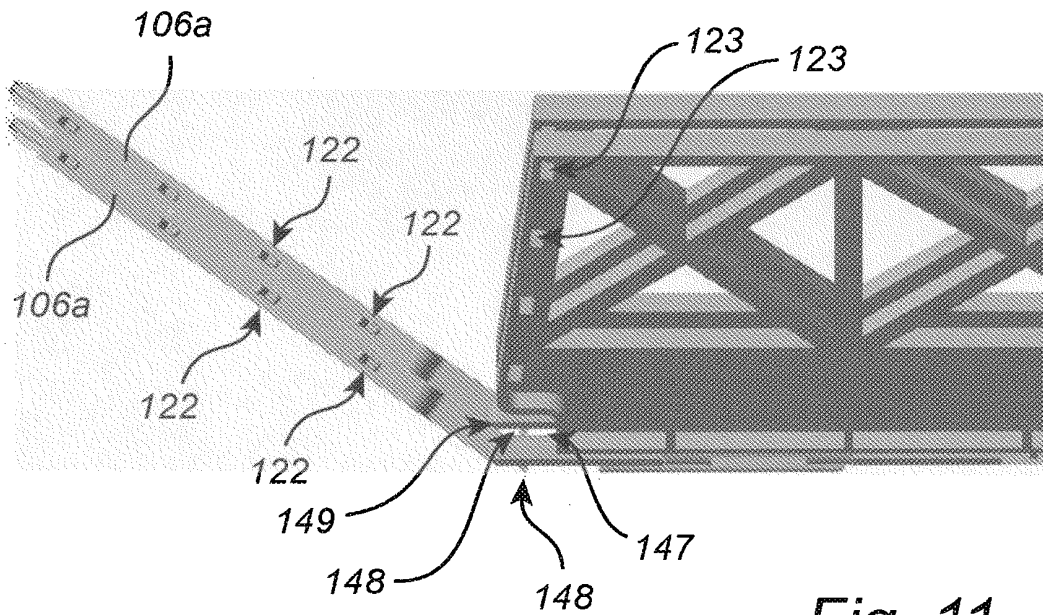


Fig. 11

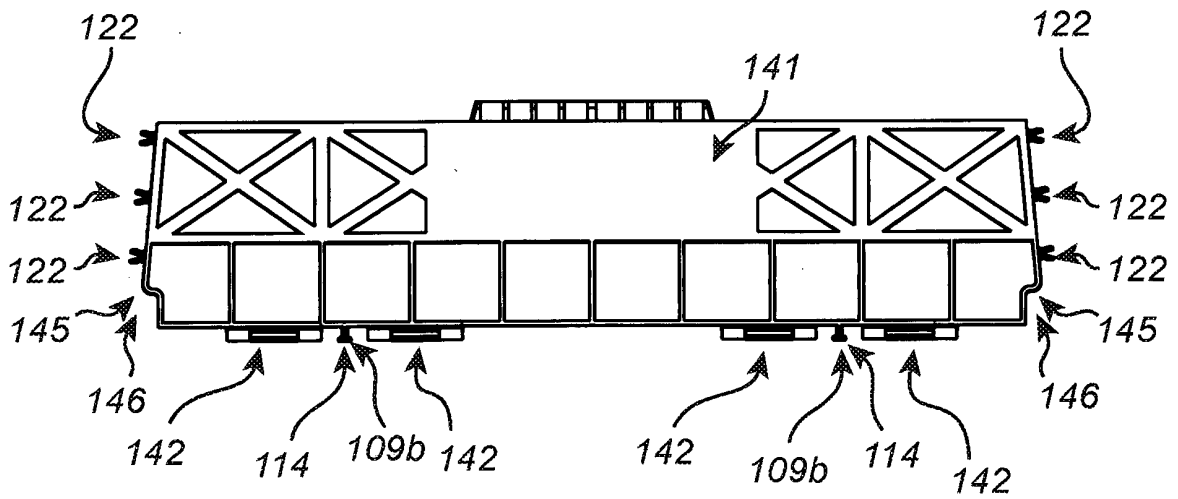
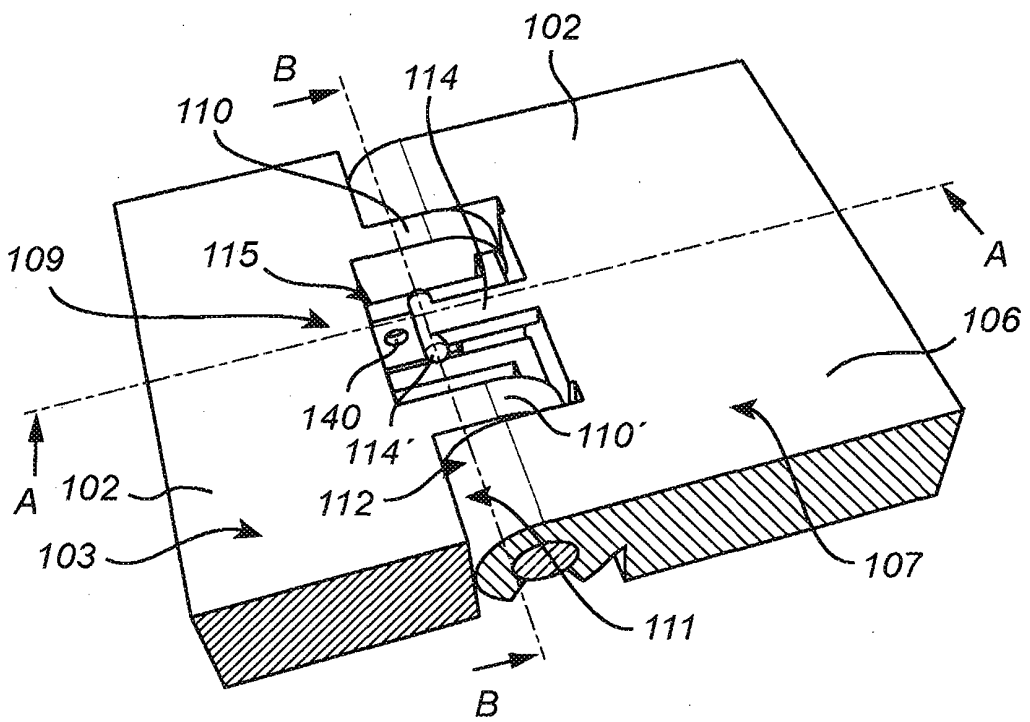
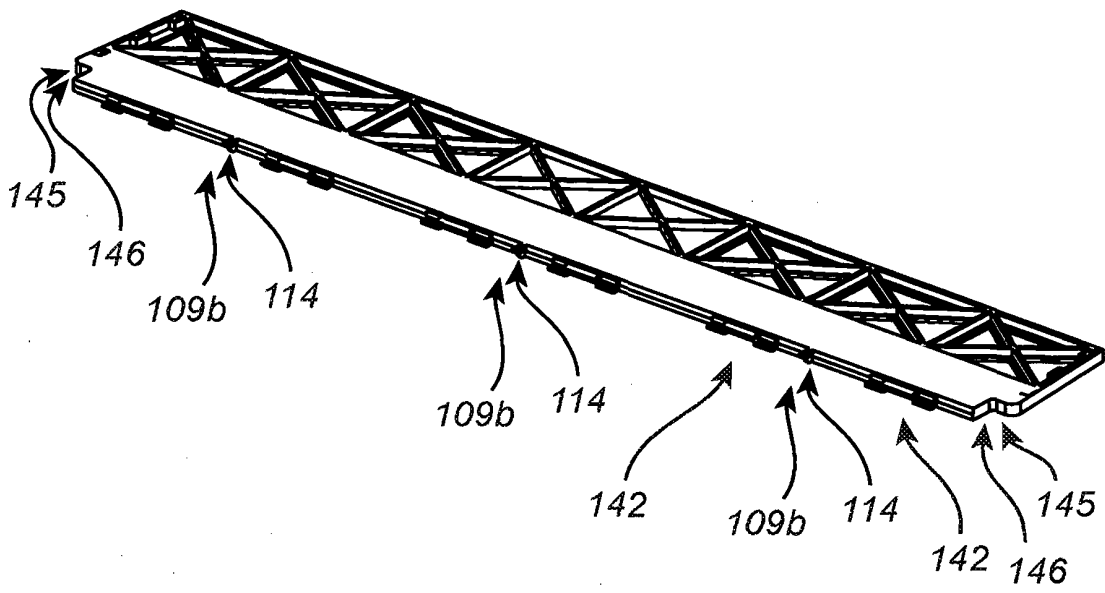


Fig. 12a



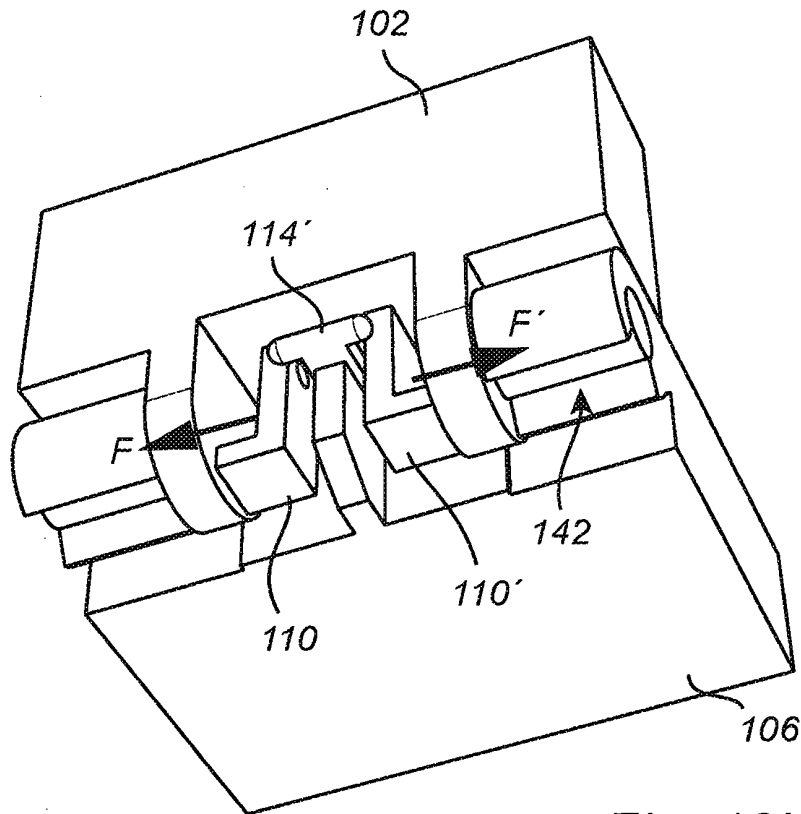


Fig. 13b

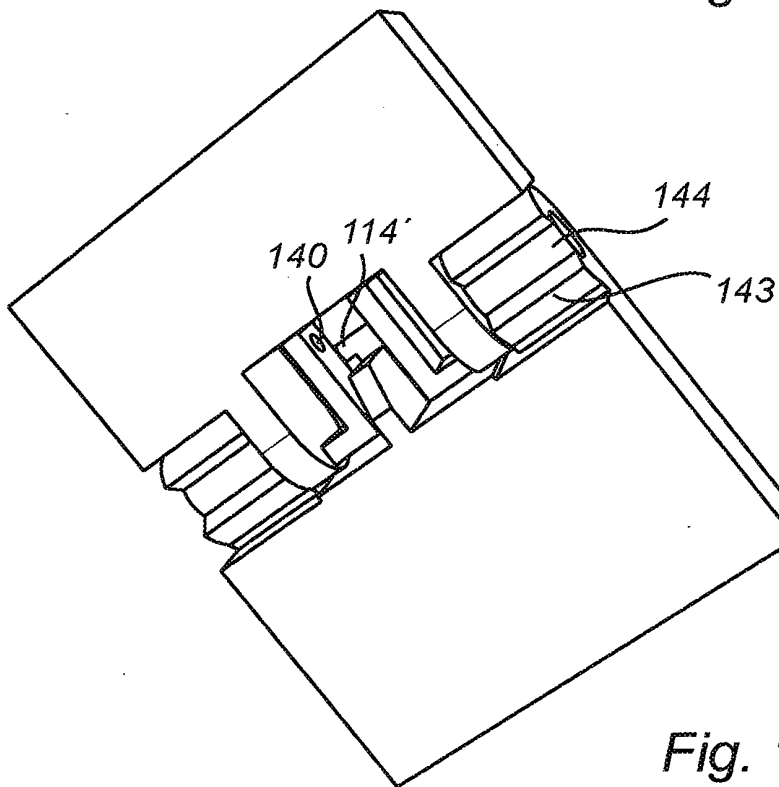


Fig. 13c

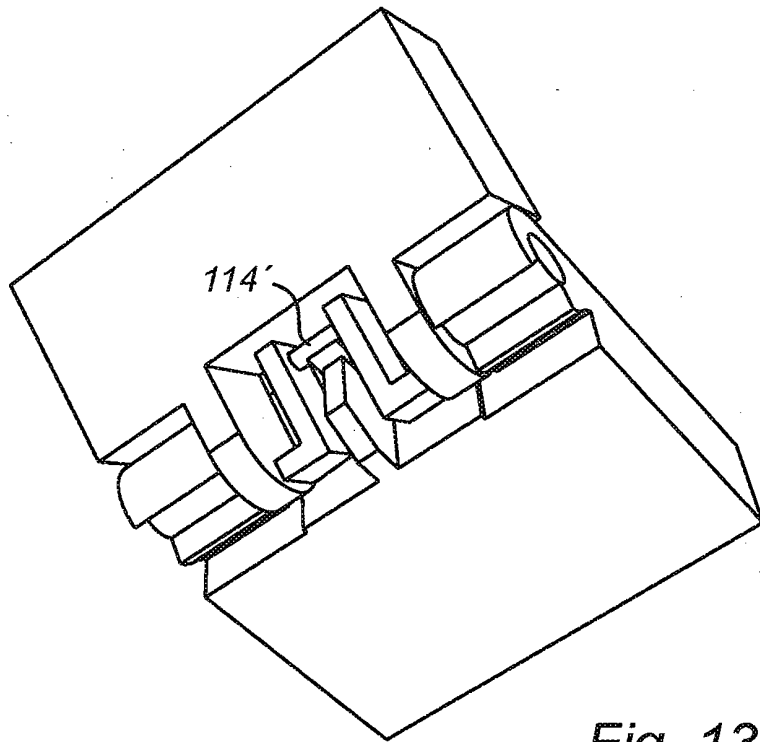
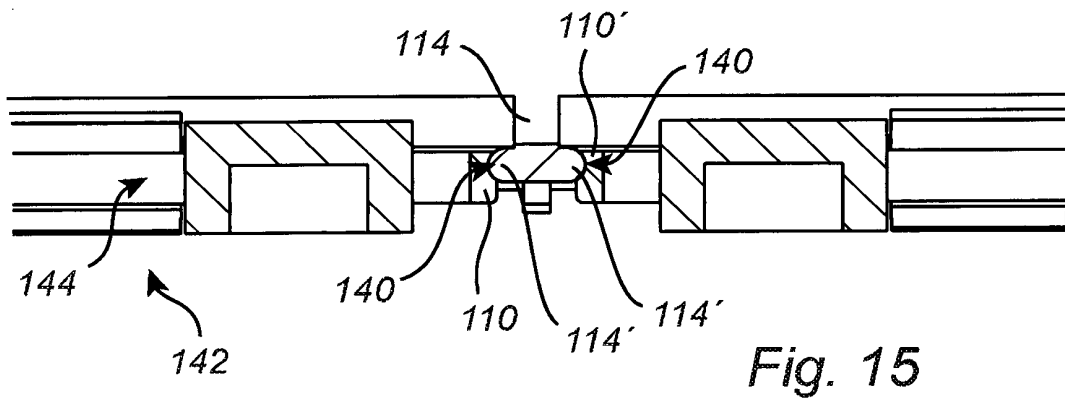
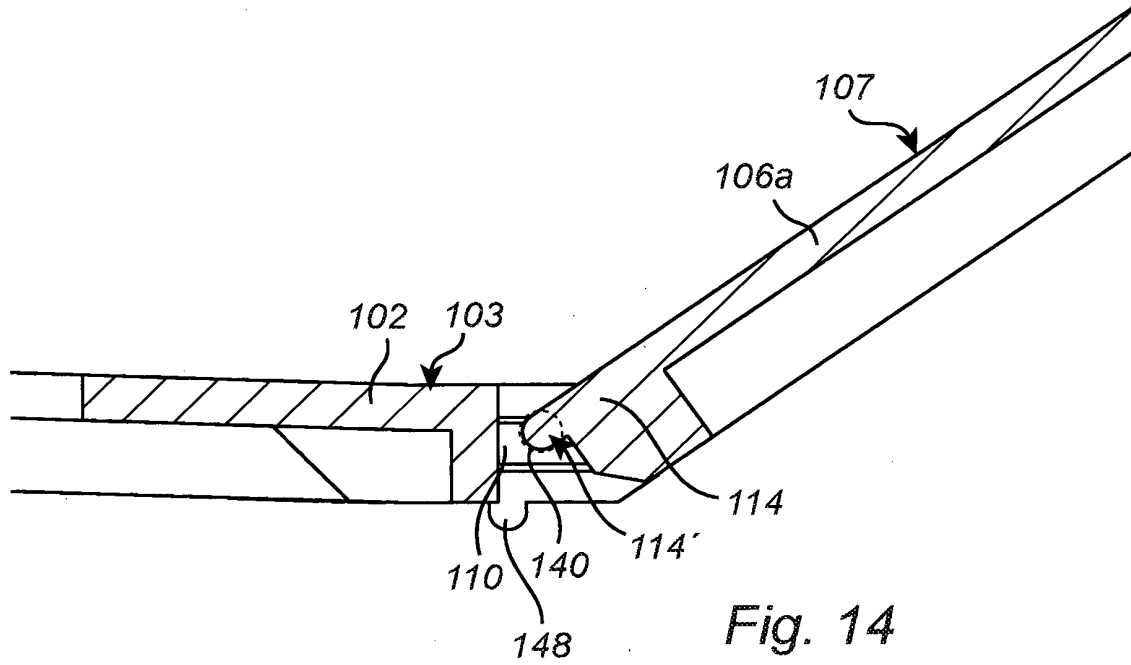


Fig. 13d



REFERENCES CITED IN THE DESCRIPTION

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