(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 551 539 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
31.03.2021 Bulletin 2021/13

(21) Application number: **17826286.1**

(22) Date of filing: **07.12.2017**

(51) Int Cl.:
B65B 23/20 *(2006.01)* ***B65B 27/02*** *(2006.01)*
B65B 61/20 *(2006.01)* ***B65D 19/44*** *(2006.01)*
B65D 85/62 *(2006.01)*

(86) International application number:
PCT/IB2017/057726

(87) International publication number:
WO 2018/104903 (14.06.2018 Gazette 2018/24)

(54) **A METHOD FOR FASTENING SLAB-SHAPED OBJECTS TO A SUPPORT ELEMENT USING STRAPPING**

VERFAHREN ZUR BEFESTIGUNG VON PLATTENFÖRMIGEN GEGENSTÄNDEN AUF EINEM TRÄGERELEMENT MIT UMREIFUNG

PROCÉDÉ DE FIXATION D'OBJETS EN FORME DE PLAQUE À UN ÉLÉMENT DE SUPPORT AU MOYEN DE SANGLES

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **07.12.2016 IT 201600124148**

(43) Date of publication of application:
16.10.2019 Bulletin 2019/42

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a method for fastening slab-shaped objects to a support element using strapping, in particular large-dimension slabs such as for example slabs made of ceramic material, or other materials for construction, with dimensions of up to and beyond 3200x1600 mm.

DESCRIPTION OF THE PRIOR ART

[0002] In order to be shipped and stored, these slabs, possibly packaged in packs of slabs, are usually positioned horizontally on support benches or crates, with a certain number of slab or slab packs being superposed on one another or inclined on wooden racks.

[0003] This solution presents various drawbacks. Firstly, the number of slabs that can be placed on each bench is limited because of the considerable weight of each slab, which does not allow superposing a large number of slabs due to the risk of breakage or damage to the slabs at the bottom of each group of slabs. Further, the benches have large plan dimensions, equal at least to the dimensions of the slabs placed on them, and are therefore difficult to shift. The large dimensions of the benches and the crates, together with the limited number of slabs that can be positioned on each bench, do not enable adequate exploitation of the storage spaces and the transport spaces, limiting the quantity of slabs that can be stored or transported for each square metre of surface available for storage or for shipping. Further, the large dimensions of the crates and racks when empty also incur high shipping costs for the end user. A method for fastening slab-shaped objects according to preamble of claim 1 is known from US 3955676 A.

SUMMARY OF THE INVENTION

[0004] An aim of the present invention is to provide a method for fastening slab-shaped objects to a support element using strapping, thus obviating the above-described drawbacks and enabling optimising exploitation of the space available for storage or transport of slab-shaped objects, maximising the quantity of objects that can be stored or transported, for each square metre of surface available for storage or transport.

[0005] The aim of the present invention is attained with a method according to claim 1.

[0006] With the method of the invention, the number of slab-shaped objects that can be arranged on the support element can be maximised without any risk of damaging the objects themselves because of their weight. The number of slab-shaped objects which can be arranged on a support element according to the method of the invention depends only on the dimensions of the support element and the thickness of the slab-shaped objects.

[0007] In particular, the method of the invention includes using a support element which enables arranging the slab-shaped objects, or the packs of slab-shaped objects, vertically on the support element, i.e. rested on the support element by an edge thereof, i.e. flanked on their edges. This involves each slab-shaped object being subjected only to their own weight and not having to support the weight of other slab-shaped objects, so that the accumulated weight of the slab-shaped objects no longer constitutes a limit to the number of the slab-shaped objects which can be arranged on a support element.

[0008] The method includes each slab-shaped object or pack of slab-shaped objects being arranged on the base, and then fastened both to the rest element and to the other slab-shaped objects, or packs of slab-shaped objects, already arranged on the base, using a strap ring. Therefore, the strap ring embraces the slab-shaped object or pack of slab-shaped objects just arranged on the base, the rest element and the other slab-shaped objects, or packs of slab-shaped objects, previously arranged on the base and which have already been fastened to one another and to the rest element.

[0009] Once the support element, with the slab-shaped objects, or packs of slab-shaped objects fastened thereto, have reached the predetermined destination, a slab-shaped object or a pack of slab-shaped objects can be released one at a time, starting from the most external one, removing the strap ring which fastens it to the other slab-shaped objects, or packs of slab-shaped objects, as well as the rest element.

[0010] The remaining slab-shaped objects or packs of slab-shaped objects advantageously remain stably fastened to one another and to the rest element, which prevents accidental falling.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Some examples of embodiments of a method according to the invention are described in the following purely by way of non-limiting example, with reference to the appended drawings, wherein:

figure 1 is a perspective view of a support element used in the method according to the invention;

figure 2 is a perspective view illustrating the fastening of a first slab-shaped object to the support element of figure 1;

figure 3 is a perspective view illustrating the fastening of a second slab-shaped object to the support element of figure 1;

figure 4 is a perspective view illustrating the fastening of a third slab-shaped object to the support element of figure 1;

figure 5 is a perspective view illustrating the fastening of a fourth slab-shaped object to the support element of figure 1;

figure 6 is a perspective view illustrating a support element alike that of figure 1 on which a plurality of slab-shaped objects has been fastened in such a way as to completely exploit the space available on the support element;

figure 7 Is a perspective view of the support element illustrated in figure 6, which shows an optional additional fastening of the slab-shaped objects to the support element;

figure 8 illustrates two superposed support elements, on which a plurality of slab-shaped objects has been fastened;

figure 9 is a perspective view illustrating the fastening of a first pack of slab-shaped objects to the support element of figure 1;

figure 10 is a perspective view illustrating the fastening of a second pack of slab-shaped objects to the support element of figure 1;

figure 11 is a perspective view illustrating the fastening of a third pack of slab-shaped objects to the support element of figure 1;

figure 12 is a perspective view illustrating the fastening of a fourth pack of slab-shaped objects to the support element of figure 1;

figure 13 is a perspective view illustrating a support element alike that of figure 1 on which a plurality of packs of slab-shaped objects has been fastened in such a way as to completely exploit the space available on the support element;

figure 14 is a perspective view of the support element illustrated in figure 13, which shows an optional additional fastening of the slab-shaped objects to the support element;

figure 15 illustrates two superposed support elements, on which a plurality of packs of slab-shaped objects has been fastened.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] Figure 1 illustrates a support element (1) usable in the method according to the invention. The support element (1) illustrated is of the type that is the object of Italian patent for industrial invention no. 102016000095498, in the name of the same applicant, to which reference is made for a detailed description of the support element (1).

[0013] In the following a method, object of the present invention, is described for fastening slab-shaped objects (14) or packs (15) of slab-shaped objects (14) to a support element (1) using strapping, wherein said support element (1) comprises a base (2) to which a rest element (7), which rises from the base (2) and which is destined to provide a rest for the slab-shaped objects (14) or packs (15) of slab-shaped objects (14), is associated. The method comprises the steps according to claim 1.

[0014] The rest element (7) is preferably substantially perpendicular to the base (2).

[0015] The strap ring is preferably arranged vertically or horizontally.

[0016] The rest element (7) is destined to provide a rest for large-dimension slab-shaped objects, for example up to 3200x1600 mm, for example single slabs (14) or packaged slabs (15) in packs including a plurality of slabs (14), for example slabs made of a ceramic material, or other construction materials.

[0017] The base (2) comprises a plurality of longitudinal members (3, 3a, 4), for example a central longitudinal member (4), a first lateral longitudinal member (3) and a second lateral longitudinal member (3a), for example substantially parallel to one another, which, in their entirety, define a rest base for the base (2).

[0018] The longitudinal members (3, 3a, 4) are interconnected by a plurality of cross members (5, 6), for example positioned above the longitudinal members (3, 3a, 4), for example a pair of central cross members (5) and a pair of lateral cross members (6). The cross members (5, 6) are in turn interconnected by a plurality of further longitudinal members (11, 11a, 12) for example positioned above the cross members (5, 6).

[0019] The further longitudinal members (11, 11a, 12) can comprise a first pair of further lateral longitudinal members (11) and a second pair of further lateral longitudinal members (11a) which connect the central cross members (5) with the lateral cross members (6), and at least a further central longitudinal member (12) interposed between the first pair of lateral longitudinal members (11) and the second pair of lateral longitudinal members (11a).

[0020] With reference to figure 1, the base (2) comprises a first flank (200) and a second flank (201), opposite the first flank (200), and the rest element (7) can be arranged in an intermediate position between the first flank (200) and the second flank (201) of the base (2),

[0021] The rest element (7) is preferably arranged in a centred position on the base (2). The rest element (7) comprises, for example, a pair di lateral uprights (8) and a central upright (9) connected to the base (2). The lateral uprights (8) and the central upright (9) are connected to one another by an upper cross member (10) and at least a lower cross member (13). The slab-shaped objects (14), or packs (15) of slab-shaped objects (14), can be arranged vertically on the base (2), i.e. rested on the base (2) on an edge (16) thereof, i.e. side-by-side, and be sup-

ported by the rest element (7), to which they can be fixed by binding, as will be explained in greater detail in the following.

[0022] A first step of the method according to the invention is illustrated in figure 2, in which a first slab-shaped object (14a) is fastened to the support element (1). Firstly, the first slab-shaped object (14a) is placed on the support element (1) in a vertical position, i.e. resting by an edge (16) on the base (2) and with a first face (not visible in the figures) in contact with the rest element (7). Then, the first slab-shaped object (14a) is fastened to the rest element (7) by at least a binding (17) with a strap ring, also known as a strap, for example made of a plastic or other binding material which is such as not to damage a surface of the slab-shaped objects (14). The strap ring is arranged vertically, i.e. parallel to an axis of symmetry (A) of the support element (1), parallel to the lateral uprights (8) of the rest element (7), by passing it on a second face (22) of the first slab-shaped object (14a), opposite the first face, then over the upper cross member (10) of the rest element (7) and beneath the lower cross member (13), so that the first slab-shaped object (14a) is constrained to the rest element (7).

[0023] It is specified that the axis of symmetry (A) of the support element (1) is a vertical axis of symmetry.

[0024] The first slab-shaped object (14a) is preferably fastened to the rest element (7) by two bindings (17) arranged preferably in a symmetrical position with respect to said axis of symmetry (A). Alternatively, the at least a binding can be realised horizontally i.e. by arranging the strap ring perpendicularly to the axis of symmetry (A), by passing it over the second face (22) of the first slab-shaped object (14a) and over the lateral uprights (8) of the rest element (3).

[0025] A second step of the method according to the invention is illustrated in figure 3, in which a second slab-shaped object (14b) is fastened to the support element (1). Firstly, the second slab-shaped object (14b) is placed on the support element (1) in a vertical position, i.e. resting by an edge (16) on the base (2) and with a first face (not visible in the figure) in contact with the rest element (7), on the opposite side with respect to the first slab-shaped object (14a). Then, the second slab-shaped object (14b) is fastened to the rest element (7) by at least a second binding (18) using, for example, a strap ring alike to the one used for realising the at least a first binding (17). The strap ring is arranged vertically, i.e. parallel to the axis of symmetry (A) of the support element (1), by passing it over a second face of the second slab-shaped object (14b) (also not in the figure), opposite the first face, then over the upper cross member (10) of the rest element (7), over the second face (22) of the first slab-shaped object (14a) and beneath the lower cross member (13), so that the second slab-shaped object (14b) is constrained to the rest element (7) and to the first slab-shaped object (14a). The second slab-shaped object (14b) is preferably fastened to the rest element (7) by two second bindings (18) arranged preferably in a symmetrical position with respect to the axis of symmetry (A). Alternatively, the at least a second binding (18) can be realised horizontally I.e. by arranging the strap ring perpendicularly to the axis of symmetry (A), by passing it over the second face (22) of the first slab-shaped object (14a), over the second face of the second slab-shaped object (14b) and over the lateral surfaces of the lateral uprights (8) of the rest element (7).

[0026] Figure 4 illustrates a third step of the method according to the invention, in which a third slab-shaped object (14c) is fastened to the support element (1). Firstly, the third slab-shaped object (14c) is placed on the support element (1) in a vertical position, i.e. resting by an edge (16) on the base (2) and with a first face (not visible in the figures), arranged on the second face (22) of the first slab-shaped object (14a). Then, the third slab-shaped object (14c) is fastened to the rest element (7) by at least a third binding (19) using, for example, a strap ring alike to the one used for realising the preceding bindings. The strap ring is arranged vertically, i.e. parallel to the axis of symmetry (A), by passing it over a second face (23) of the third slab-shaped object (14c), opposite the first face, then over the upper cross member (10) of the rest element (7), over the second face of the second slab-shaped object (14b) and beneath the lower cross member (13), so that the third slab-shaped object (14c) is constrained to the rest element (7) and to the first slab-shaped object (14a) and to the second slab-shaped object (14b). The third slab-shaped object (14c) is preferably fastened to the rest element (7) by third bindings (19) arranged preferably in a symmetrical position with respect to the axis of symmetry (A). Alternatively, the at least a third binding (19) can be realised horizontally i.e. by arranging the strap ring perpendicularly to the axis of symmetry (A), by passing it over the second face (23) of the third slab-shaped object (14c), over the second face of the second slab-shaped object (14b) and over the lateral surfaces of the lateral uprights (8) of the rest element (7).

[0027] Figure 5 illustrates a fourth step of the method according to the invention, in which a fourth slab-shaped object (14d) is fastened to the support element (1). Firstly, the fourth slab-shaped object (14d) is placed on the support element (1) in a vertical position, i.e. resting by an edge (16) on the base (2) and with a first face (not visible in the figure), arranged on the second face of the second slab-shaped object (14b). Thereafter the fourth slab-shaped object (14d) is fastened to the rest element (7) by at least a fourth binding (20) using, for example, a strap ring alike to the one used for realising the preceding bindings. The strap ring is arranged vertically, i.e. parallel to the axis of symmetry (A), by passing it over a second face (23) of the third slab-shaped object (14c), then over the upper cross member (10) of the rest element (7), over a second face of the fourth slab-shaped object (14d) (not visible in the figure), opposite the first face, and beneath the lower cross member (13), so that the fourth slab-shaped object (14d) is constrained to the rest element

(7) and to the second slab-shaped object (14b) and to the third slab-shaped object (14c). The fourth slab-shaped object (14d) is preferably fastened to the rest element (7) by two fourth bindings (20) arranged preferably in a symmetrical position with respect to the axis of symmetry (A). Alternatively, the at least a fourth binding (20) can be realised horizontally i.e. by arranging the strap ring perpendicularly to the axis of symmetry (A), by passing it over the second face (23) of the third slab-shaped object (14c), over the second face of the fourth slab-shaped object (14d) and over the lateral surfaces of the lateral uprights (8) of the rest element (7). The fastening of the slab-shaped objects (14) on the support element (1) proceeds by arranging the slab-shaped objects (14) alternatively on opposite sides with respect to the rest element (7) and constraining them using bindings to the rest element (7) and to the other slab-shaped objects (14), up to occupying all the space available on the base (2).

[0028] The above-described steps are preferably repeated until the whole available space on the base (2) of the support element (1) is occupied.

[0029] By way of example, figure 6 illustrates a support element (1) on which a plurality of slab-shaped objects (14) has been fastened in such a way as to completely exploit the space available on the base (2) of the support element (1). The slab-shaped objects (14) are fastened to the support element (1) by a first group of bindings (L1) and a second group of bindings (L2), arranged in a symmetrical position with respect to the axis of symmetry (A) of the support element (1). The bindings of each group of bindings (L1), (L2) are realised in such a way that the slab-shaped objects (14) positioned on each side of the rest element (7) are constrained to one another, to the rest element (7) and to the slab-shaped objects (14) positioned on the opposite side of the rest element (7).

[0030] Figure 7 illustrates, as in figure 6, a support element (1) on which a plurality of slab-shaped objects (14) has been fastened in such a way as to completely exploit the space available on the base (2) of the support element (1). The slab-shaped objects (14) are fastened to the support element (1) by a first group of bindings (L1) and a second group of bindings (L2), arranged in a symmetrical position with respect to the axis of symmetry (A) of the support element (1). At least a further supplementary binding (21) is included, preferably two further supplementary bindings (21), arranged in a symmetrical position with respect to the axis of symmetry (A), which is vertical. The at least a further supplementary binding (21) is realised, for example, with a strap ring similar to the one used for realising the groups of bindings (L1) and (L2). The at least a further supplementary binding (21) passes across the faces directed towards the outside of the most external slab-shaped objects (14), on both sides of the rest element (7). The at least a further binding (21) then passes over the upper cross member (10) of the rest element (7) and beneath the lateral cross members (6) and the central cross members (5) of the base (2) so as to constrain all the slab-shaped objects (14) also at the base (2), so as further to reinforce the fastening of the slab-shaped objects (14) to the support element (1). Note that, with the mode of binding described, each slab-shaped object (14) is not in direct contact with the slab-shaped objects (14) immediately adjacent, as at least a strap ring is always interposed between the two slab-shaped objects (14), so as to prevent any possible damage to the slab-shaped objects (14) deriving from a direct contact between a slab-shaped object (14) and an immediately adjacent object (14).

[0031] The strap rings used for fastening the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) to one another and to the rest element (7) are preferably arranged flanked one to another along the horizontal extension direction of the slab-shaped objects (14) or packs (15) of slab-shaped objects (14).

[0032] The flanked arrangement of the strap rings along the horizontal extension direction of the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) advantageously enables maximising the number of slab-shaped objects (14) or packs (15) of slab-shaped objects (14) which can be loaded on the support element (1): in fact by avoiding the mutual superposing of a plurality of strap rings, there will be more space available on the base (2), which can be occupied by slab-shaped objects (14) or packs (15) of slab-shaped objects (14).

[0033] The slab-shaped objects (14) or packs (15) of slab-shaped objects (14), once arranged on the base (2), preferably reach a same height that is greater than or equal to the height of the rest element (7), so that the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) define a rest surface with the relative upper edge thereof.

[0034] The flanked arrangement of the strap rings advantageously enables having a rest surface that is almost flat, suitable for stably restingly receiving a support element (1) loaded with slab-shaped objects (14) or packs (15) of slab-shaped objects (14).

[0035] Figure 8 illustrates two support elements (1) superposed on one another, on each of which a plurality of slab-shaped objects (14) has been fastened up to completely exploiting the space available on the support element (1).

[0036] The overlying support element (1) is arranged on the rest surface defined by the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) using straps, of the underlying support element (1).

[0037] The rest surface is preferably horizontal.

[0038] The slab-shaped objects (14) or packs (15) of slab-shaped objects (14), once arranged on the base (2), preferably reach a height equal to the height of the rest element (7).

[0039] As it is possible to superpose two or more support elements (1), the volume available for loading in a means of transport on which the support elements (1) are loaded is maximised.

[0040] In figures from 9 to 14, which are like figures

from 2 to 7, respectively, the fastening of the packs (15) of slab-shaped objects (14) on the support elements (1) is illustrated. The fastening of the packs (15) of slab-shaped objects (14) takes place using modalities that are entirely alike those for the fastening of the slab-shaped objects (14) described with reference to figures from 2 to 7. For this reason the fastening of the packs (15) of slab-shaped objects (14) will not be further described in detail. For the detailed description of the fastening operations of the packs (15) of slab-shaped objects (14), refer to the description of the fastening operations of the slab-shaped objects (14), described with reference to figures from 2 to 7.

[0041] Figure 15 illustrates two support elements (1) superposed on one another, on each of which a plurality of packs (15) of slab-shaped objects (14) has been fastened up to completely exploiting the space available on the support element (1). As it is possible to superpose two or more support elements (1), the volume available for loading in a means of transport on which the support elements (1) are loaded is maximised.

[0042] According to the invention, the slab-shaped objects (14) or the packs (15) of slab-shaped objects (14) are arranged alternatively on opposite sides of the rest element (7).

[0043] The figures illustrate the fastening of each slab-shaped object (14) or each pack (15) of slab-shaped objects (14), by means of two respective bindings. It is understood that each slab-shaped object (14) or each pack (15) of slab-shaped objects (14) can also be fastened by means of a single binding, or by three or more bindings, without thus forsaking the scope of the present invention.

[0044] To bind the packs (15) of slab-shaped objects (14) it is possible also to use metal tapes, as there is no risk of damaging the surfaces of the slab-shaped objects (14), as the metal tapes come into contact only with the surface of the packs (15) of slab-shaped objects (14), without coming into direct contact with the surface of the slab-shaped objects (14).

Claims

1. A method for fastening slab-shaped objects (14) or packs (15) of slab-shaped objects (14) to a support element (1) using strapping, wherein the support element (1) comprises a base (2) to which a rest element (7), which rises from the base (2) and which is destined to provide a rest for the slab-shaped objects (14) or the packs (15) of slab-shaped objects (14), is associated, **characterised in that** it comprises following steps, which occur in a cyclical way:

   - arranging a slab-shaped object (14) or a pack (15) of slab-shaped objects (14), on the base (2) in a vertical position, resting the slab-shaped object (14) or pack (15) of slab-shaped objects (14), by an edge (16) thereof on the base (2);
   - realising at least a binding (17, 18, 19, 20) with a strap ring which fastens the slab-shaped object (14), or the pack (15) of slab-shaped objects (14) which has just been arranged on the base (2), the rest element (7) and the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) which have previously been arranged on the base (2) and which have already been fastened to one another and to the rest element (7);

   and it comprises a step of cyclically arranging each slab-shaped object (14) or each pack (15) of slab-shaped objects (14), alternatively on opposite sides of the rest element (7).

2. The method of claim 1, wherein the step of realising at least a binding (17, 18, 19, 20) with a strap ring includes passing the strap ring at least: on the face of the slab-shaped object (14) or pack (15) of slab-shaped objects (14), as soon as it is arranged on the base (2) and opposite the rest element (7), over the upper edge of the rest element (7) and beneath the lower edge of the rest element (7).

3. The method of any one of the preceding claims, wherein each slab-shaped object (14) or pack (15) of slab-shaped objects (14) is fastened by means of at least two bindings (17; 18; 19; 20) with relative strap rings.

4. The method of claim 3, wherein the at least two bindings (17; 18; 19; 20) with relative strap rings are arranged on opposite sides with respect to an axis of symmetry (A) of the support element (1).

5. The method of any one of the preceding claims 1, 3, 4, wherein the strap ring is arranged vertically or horizontally.

6. The method of any one of the preceding claims, wherein the strap ring comprises a tape made of a binding material which is such as not to damage a surface of the slab-shaped objects (14).

7. The method of any one of claims 1 to 5, wherein the strap ring comprises a tape made of a metal material.

8. The method of any one of the preceding claims, wherein the axis of symmetry (A) of the support element (1) is vertical and wherein the slab-shaped objects (14), or the packs (15) of slab-shaped objects (14) are also fastened to the base (2) by means of at least a further binding (21) with a strap ring, the strap ring being arranged parallel to the axis of symmetry (A) of the support element (1).

9. The method of claim 8, wherein the slab-shaped objects (14) or the packs (15) of slab-shaped objects (14) are fastened to the base (2) by at least two fur-

ther bindings (21) realised using relative strap rings, the at least two further bindings being arranged parallel to the axis of symmetry (A) of the support element (1).

10. The method of claim 9, wherein the at least two further bindings (21) are arranged on opposite sides with respect to the axis of symmetry (A).

11. The method of any one of claims from 1 to 4 and from 6 to 10, wherein the strap rings used for fastening the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) to one another and to the rest element (7) are arranged flanked one to another along the horizontal extension direction of the slab-shaped objects (14) or packs (15) of slab-shaped objects (14).

12. The method of the preceding claim, wherein the slab-shaped objects (14) or packs (15) of slab-shaped objects (14), once arranged on the base (2), reach a same height that is greater than or equal to the height of the rest element (7), so that the slab-shaped objects (14) or packs (15) of slab-shaped objects (14) define a rest surface with the relative upper edge thereof.

Patentansprüche

1. Verfahren zur Befestigung von plattenförmigen Gegenständen (14) oder Paketen (15) plattenförmiger Gegenstände (14) an einem Trägerelement (1) durch Umreifung, wobei das Trägerelement (1) eine Unterlage (2) umfasst, mit der ein Anlageelement (7) verbunden ist, das sich von der Unterlage (2) ausgehend nach oben erstreckt und dafür ausgelegt ist, eine Anlagefläche für die plattenförmigen Gegenstände (14) oder die Pakete (15) plattenförmiger Gegenstände (14) bereitzustellen, **dadurch gekennzeichnet, dass** es folgende Schritte umfasst, die zyklisch erfolgen:

- Anordnen eines plattenförmigen Gegenstands (14), oder eines Pakets (15) plattenförmiger Gegenstände (14), in senkrechter Stellung auf der Unterlage (2), indem der plattenförmige Gegenstand (14), oder das Paket (15) plattenförmiger Gegenstände (14), auf einer seiner Kanten (16) aufliegend auf die Unterlage (2) gestellt wird;
- Verwirklichen zumindest einer Bindung (17, 18, 19, 20) mit einem Umreifungsring, der den plattenförmigen Gegenstand (14), oder das Paket (15) plattenförmiger Gegenstände (14), der/das gerade eben auf der Unterlage (2) angeordnet wurde, an dem Anlageelement (7) und den plattenförmigen Gegenständen (14) oder Paketen (15) plattenförmiger Gegenstände (14) befestigt, die zuvor auf der Unterlage (2) angeordnet wurden und die bereits aneinander und an dem Anlageelement (7) befestigt wurden;

und dadurch, dass es einen Schritt des zyklischen Anordnens jedes plattenförmigen Gegenstands (14) oder jedes Pakets (15) plattenförmiger Gegenstände (14) wechselweise auf einander gegenüberliegenden Seiten des Anlageelements (7) umfasst.

2. Verfahren nach Anspruch 1, wobei der Schritt des Verwirklichens zumindest einer Bindung (17, 18, 19, 20) mit einem Umreifungsring beinhaltet, den Umreifungsring zumindest wie folgt zu führen: über die Oberfläche des plattenförmigen Gegenstands (14) oder des Pakets (15) plattenförmiger Gegenstände (14), sobald dieser/dieses auf der Unterlage (2) und gegen das Anlageelement (7) anliegend angeordnet ist, über die obere Kante des Anlageelements (7) und unter der unteren Kante des Anlageelements (7) hindurch.

3. Verfahren nach einem der vorhergehenden Ansprüche, wobei jeder plattenförmige Gegenstand (14) oder jedes Paket (15) plattenförmiger Gegenstände (14) durch mindestens zwei Bindungen (17; 18; 19; 20) mit entsprechenden Umreifungsringen befestigt wird.

4. Verfahren nach Anspruch 3, wobei die zumindest zwei Bindungen (17; 18; 19; 20) mit entsprechenden Umreifungsringen auf einander gegenüberliegenden Seiten in Bezug auf eine Symmetrieachse (A) des Trägerelements (1) angeordnet sind.

5. Verfahren nach einem der vorhergehenden Ansprüche 1, 3, 4, wobei der Umreifungsring senkrecht oder waagrecht angeordnet wird.

6. Verfahren nach einem der vorhergehenden Ansprüche, wobei der Umreifungsring ein Band umfasst, das aus einem Bindematerial hergestellt ist, das keine Beschädigungen an der Oberfläche der plattenförmigen Gegenstände (14) verursacht.

7. Verfahren nach einem der Ansprüche von 1 bis 5, wobei der Umreifungsring ein aus Metallmaterial hergestelltes Band umfasst.

8. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Symmetrieachse (A) des Trägerelements (1) senkrecht ist und wobei die plattenförmigen Gegenstände (14), oder die Pakete (15) plattenförmiger Gegenstände (14), zusätzlich an der Unterlage (2) durch mindestens eine weitere Bindung (21) mit einem Umreifungsring befestigt werden, wobei der Umreifungsring parallel zu der Symmetrieachse (A) des Trägerelements (1) angeordnet ist.

9. Verfahren nach Anspruch 8, wobei die plattenförmigen Gegenstände (14) oder die Pakete (15) plattenförmiger Gegenstände (14) an der Unterlage (2) durch mindestens zwei weitere Bindungen (21) befestigt werden, die mit entsprechenden Umreifungsringen verwirklicht werden, wobei die mindestens zwei weiteren Bindungen parallel zu der Symmetrieachse (A) des Trägerelements (1) angeordnet sind.

10. Verfahren nach Anspruch 9, wobei die mindestens zwei weiteren Bindungen (21) auf einander gegenüberliegenden Seiten in Bezug auf die Symmetrieachse (A) angeordnet sind.

11. Verfahren nach einem der Ansprüche von 1 bis 4 und von 6 bis 10, wobei die zum Befestigen der plattenförmigen Gegenstände (14) oder Pakete (15) plattenförmiger Gegenstände (14) aneinander und an dem Anlageelement (7) verwendeten Umreifungsringe Seite an Seite nebeneinander entlang der waagrechten Ausdehnungsrichtung der plattenförmigen Gegenstände (14) oder der Pakete (15) plattenförmiger Gegenstände (14) angeordnet sind.

12. Verfahren nach dem vorhergehenden Anspruch, wobei die plattenförmigen Gegenstände (14) oder Pakete (15) plattenförmiger Gegenstände (14), nachdem sie auf der Unterlage (2) angeordnet sind, eine selbe Höhe erreichen, die größer oder gleich ist wie die Höhe des Anlageelements (7), so dass die plattenförmigen Gegenstände (14) oder Pakete (15) plattenförmiger Gegenstände (14) mit ihren jeweiligen oberen Kanten eine Auflagefläche bilden.

Revendications

1. Un procédé de fixation d'objets en forme de plaque (14) ou de paquets (15) d'objets en forme de plaque (14) à un élément de support (1) au moyen de sangles, dans lequel l'élément de support (1) comprend un bâti (2) auquel est associé un élément d'appui (7), qui se dresse à partir du bâti (2) et qui est destiné à fournir un appui aux objets en forme de plaque (14) ou aux paquets (15) d'objets en forme de plaque (14), **caractérisé en ce qu'**il comprend les étapes suivantes, qui ont lieu de manière cyclique :

- disposer un objet en forme de plaque (14) ou un paquet (15) d'objets en forme de plaque (14) sur le bâti (2) dans une position verticale, en appuyant l'objet en forme de plaque (14) ou le paquet (15) d'objets en forme de plaque (14) avec un bord (16) de celui-ci sur le bâti (2) ;
- réaliser au moins une ligature (17, 18, 19, 20) avec un anneau de sangle qui fixe l'objet en forme de plaque (14) ou le paquet (15) d'objets en forme de plaque (14) qui vient d'être disposé sur le bâti (2), à l'élément d'appui (7) et les objets en forme de plaque (14) ou les paquets (15) d'objets en forme de plaque (14) qui ont été précédemment disposés sur le bâti (2) et qui ont déjà été fixés les uns aux autres et à l'élément d'appui (7) ;

et **en ce qu'**il comprend une étape consistant à disposer cycliquement chaque objet en forme de plaque (14) ou chaque paquet (15) d'objets en forme de plaque (14), en alternance, sur des côtés opposés de l'élément d'appui (7) .

2. Le procédé selon la revendication 1, dans lequel l'étape consistant à réaliser au moins une ligature (17, 18, 19, 20) avec un anneau de sangle prévoit de faire passer l'anneau de sangle au moins : sur la face de l'objet en forme de plaque (14) ou du paquet (15) d'objets en forme de plaque (14), dès qu'il est disposé sur le bâti (2) et opposé à l'élément d'appui (7), sur le bord supérieur de l'élément d'appui (7) et sous le bord inférieur de l'élément d'appui (7).

3. Le procédé selon l'une quelconque des revendications précédentes, dans lequel chaque objet en forme de plaque (14) ou paquet (15) d'objets en forme de plaque (14) est fixé au moyen d'au moins deux ligatures (17 ; 18 ; 19 ; 20) avec des anneaux de sangle correspondants.

4. Le procédé selon la revendication 3, dans lequel lesdites au moins deux ligatures (17 ; 18 ; 19 ; 20) avec des anneaux de sangle correspondants sont disposées sur des côtés opposés par rapport à un axe de symétrie (A) de l'élément de support (1).

5. Le procédé selon l'une quelconque des revendications précédentes 1, 3, 4, dans lequel l'anneau de sangle est disposé verticalement ou horizontalement.

6. Le procédé selon l'une quelconque des revendications précédentes, dans lequel l'anneau de sangle comprend un ruban réalisé dans un matériau de ligature qui est de nature à ne pas endommager une surface des objets en forme de plaque (14).

7. Le procédé selon l'une quelconque des revendications de 1 à 5, dans lequel l'anneau de sangle comprend un ruban réalisé dans un matériau métallique.

8. Le procédé selon l'une quelconque des revendications précédentes, dans lequel l'axe de symétrie (A) de l'élément de support (1) est vertical et dans lequel les objets en forme de plaque (14), ou les paquets (15) d'objets en forme de plaque (14), sont également fixés au bâti (2) au moyen d'au moins une autre ligature (21) avec un anneau de sangle, l'anneau de sangle étant disposé parallèlement à l'axe de symé-

trie (A) de l'élément de support (1).

9. Le procédé selon la revendication 8, dans lequel les objets en forme de plaque (14) ou les paquets (15) d'objets en forme de plaque (14) sont fixés au bâti (2) au moyen d'au moins deux autres ligatures (21) réalisées avec des anneaux de sangle correspondants, lesdites au moins deux autres ligatures étant disposées parallèlement à l'axe de symétrie (A) de l'élément de support (1).

10. Le procédé selon la revendication 9, dans lequel lesdites au moins deux autres ligatures (21) sont disposées sur des côtés opposés par rapport à l'axe de symétrie (A).

11. Le procédé selon l'une quelconque des revendications de 1 à 4 et de 6 à 10, dans lequel les anneaux de sangle utilisés pour fixer les objets en forme de plaque (14) ou les paquets (15) d'objets en forme de plaque (14) les uns aux autres et à l'élément d'appui (7) sont disposés les uns à côté des autres le long de la direction d'extension horizontale des objets en forme de plaque (14) ou des paquets (15) d'objets en forme de plaque (14).

12. Le procédé selon la revendication précédente, dans lequel les objets en forme de plaque (14) ou les paquets (15) d'objets en forme de plaque (14), une fois disposés sur le bâti (2), atteignent une même hauteur qui est supérieure ou égale à la hauteur de l'élément d'appui (7), de sorte que les objets en forme de plaque (14) ou paquets (15) d'objets en forme de plaque (14) définissent une surface d'appui avec leur bord supérieur correspondant.

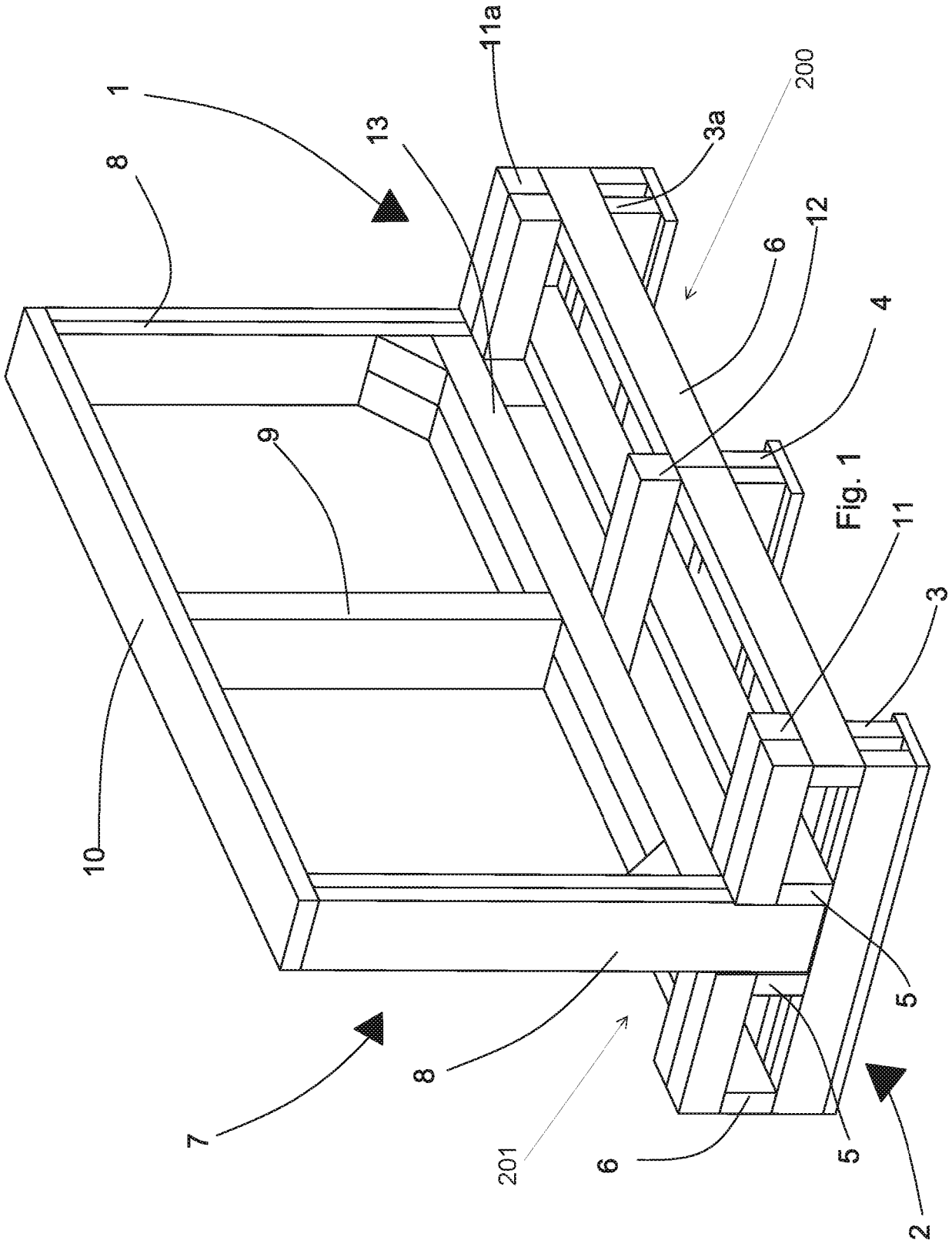


Fig. 1

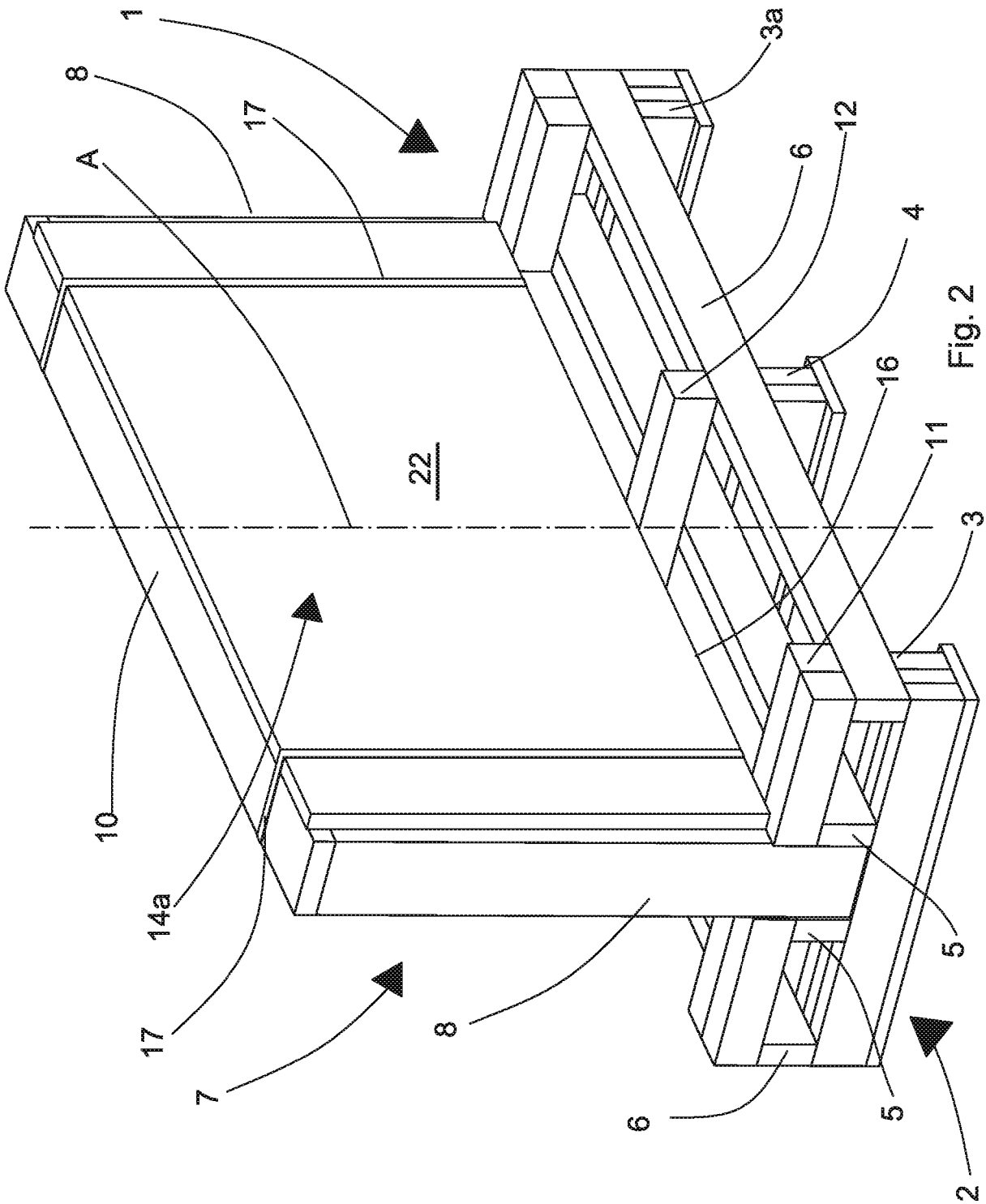


Fig. 2

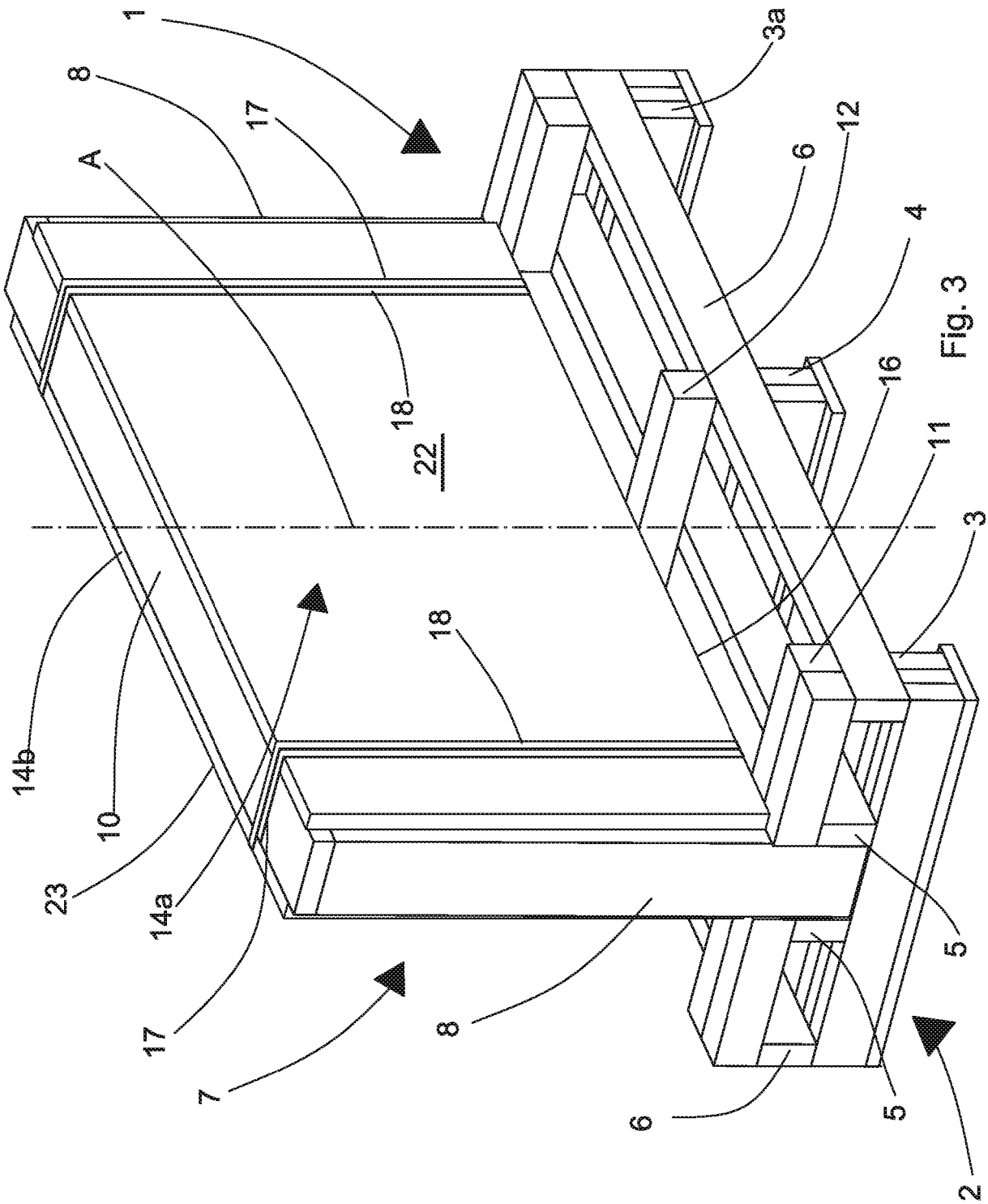


Fig. 3

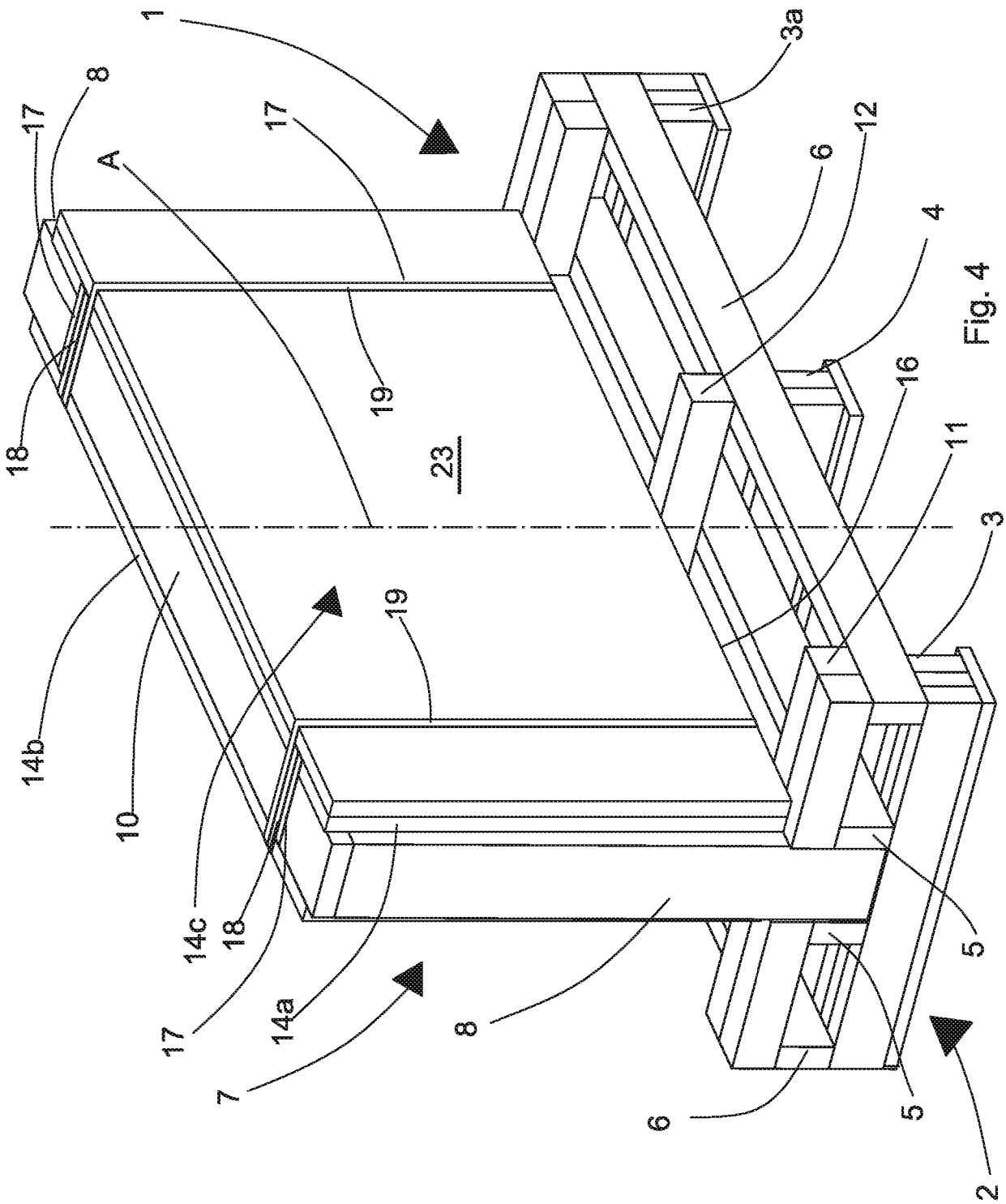
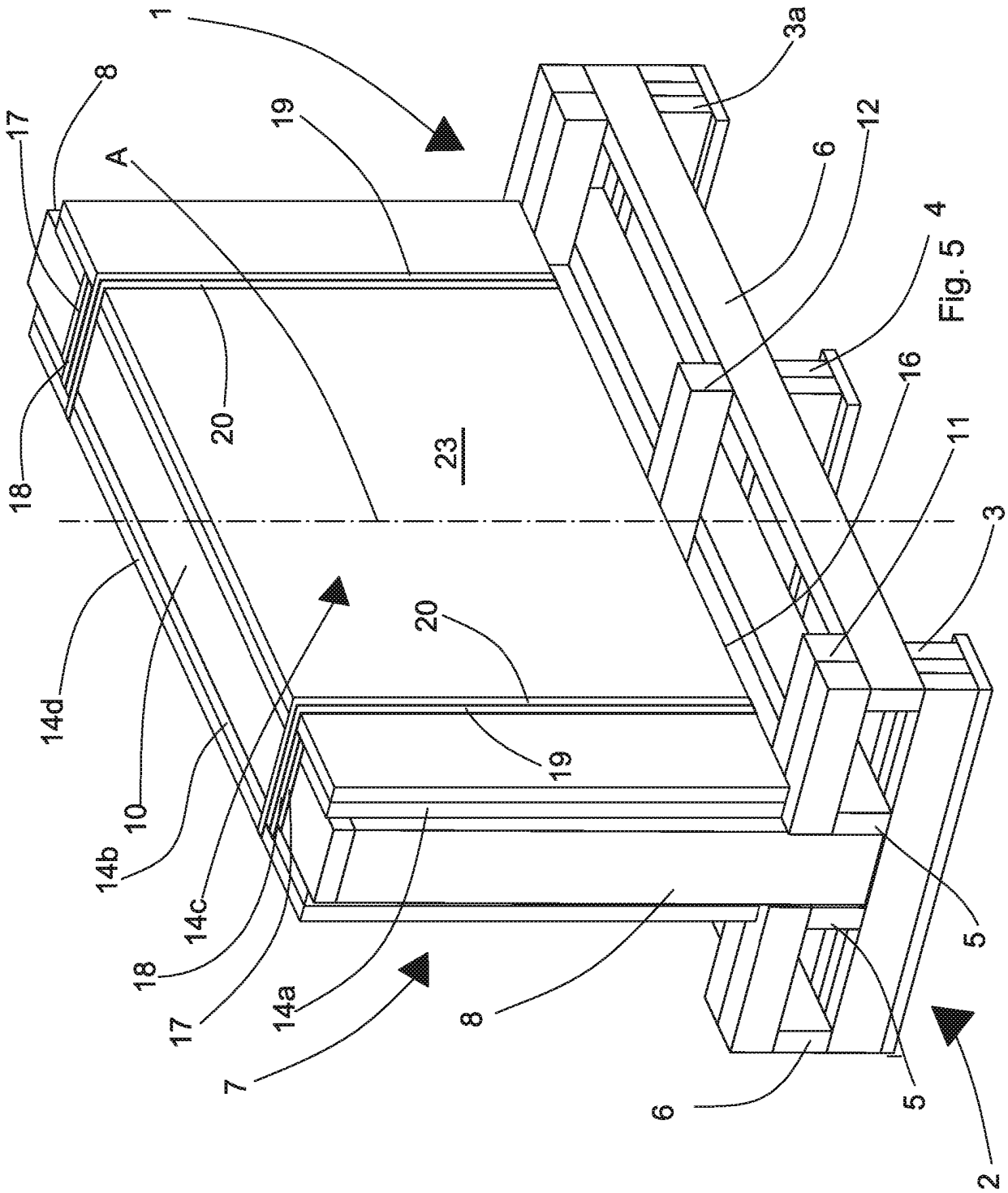


Fig. 4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3a
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19
A
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12
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16
18
23
11
3
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14d
19
10
14b
14c
18
17
14a
8
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7
6
5
2

Fig. 5

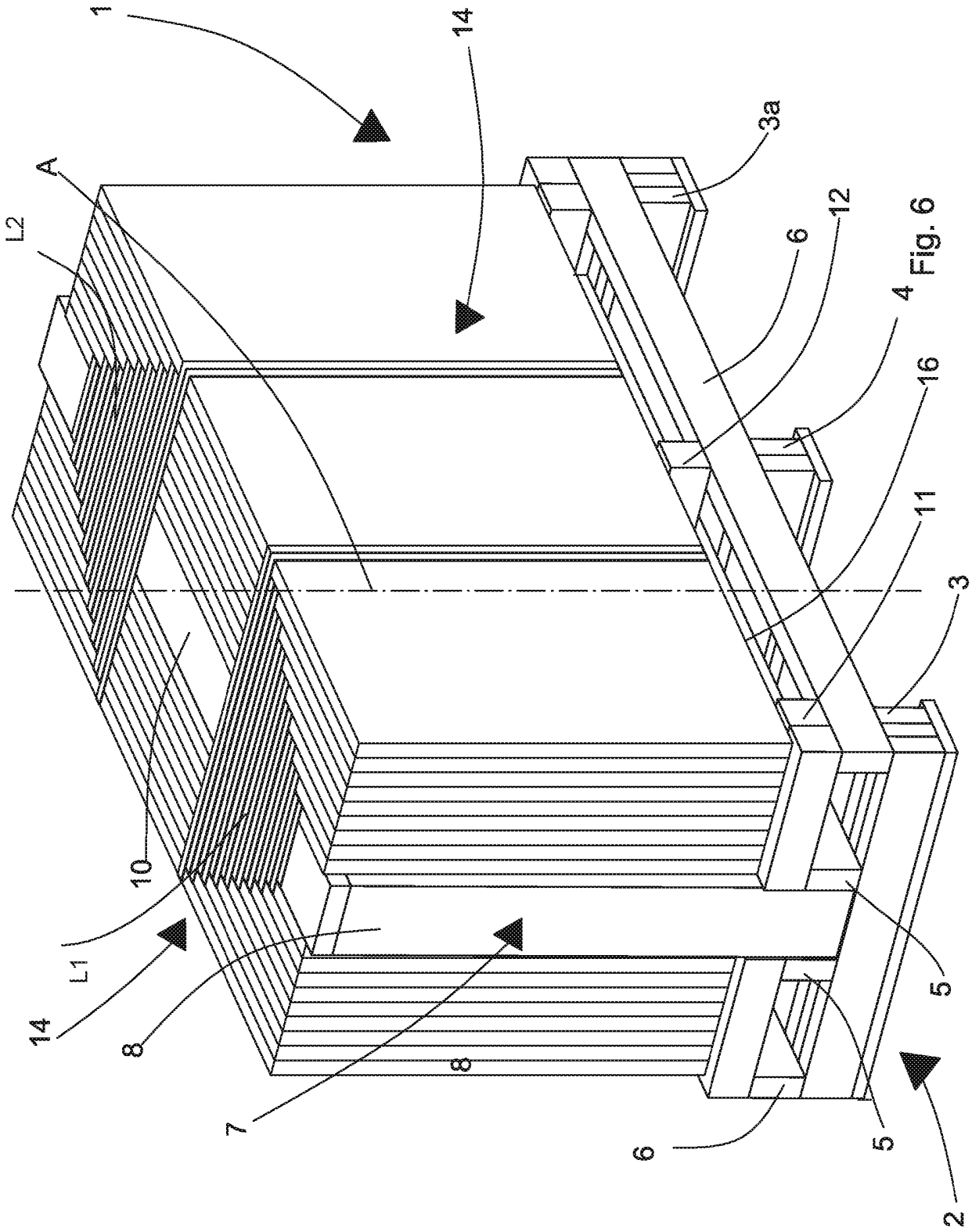

Fig. 6

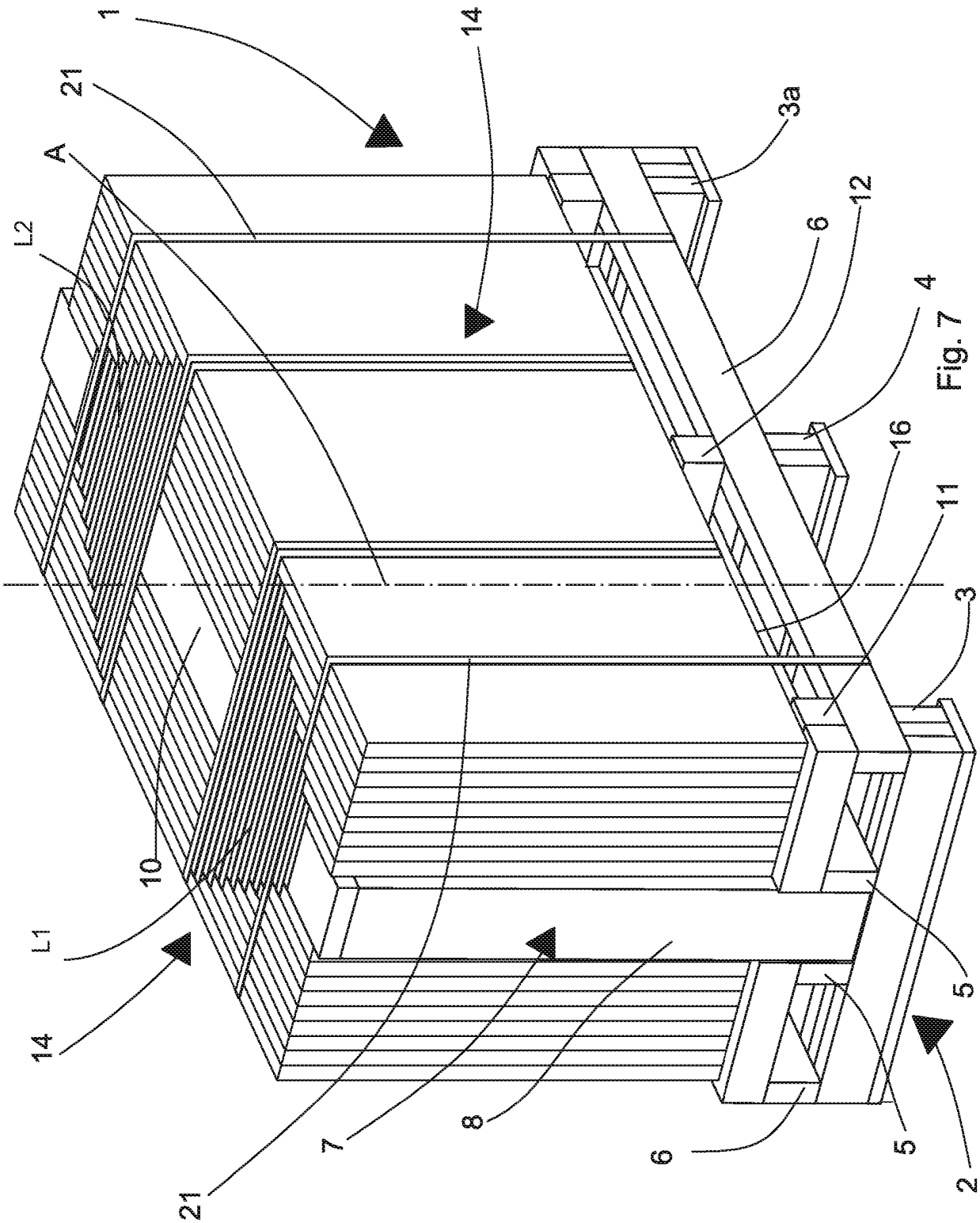

Fig. 7

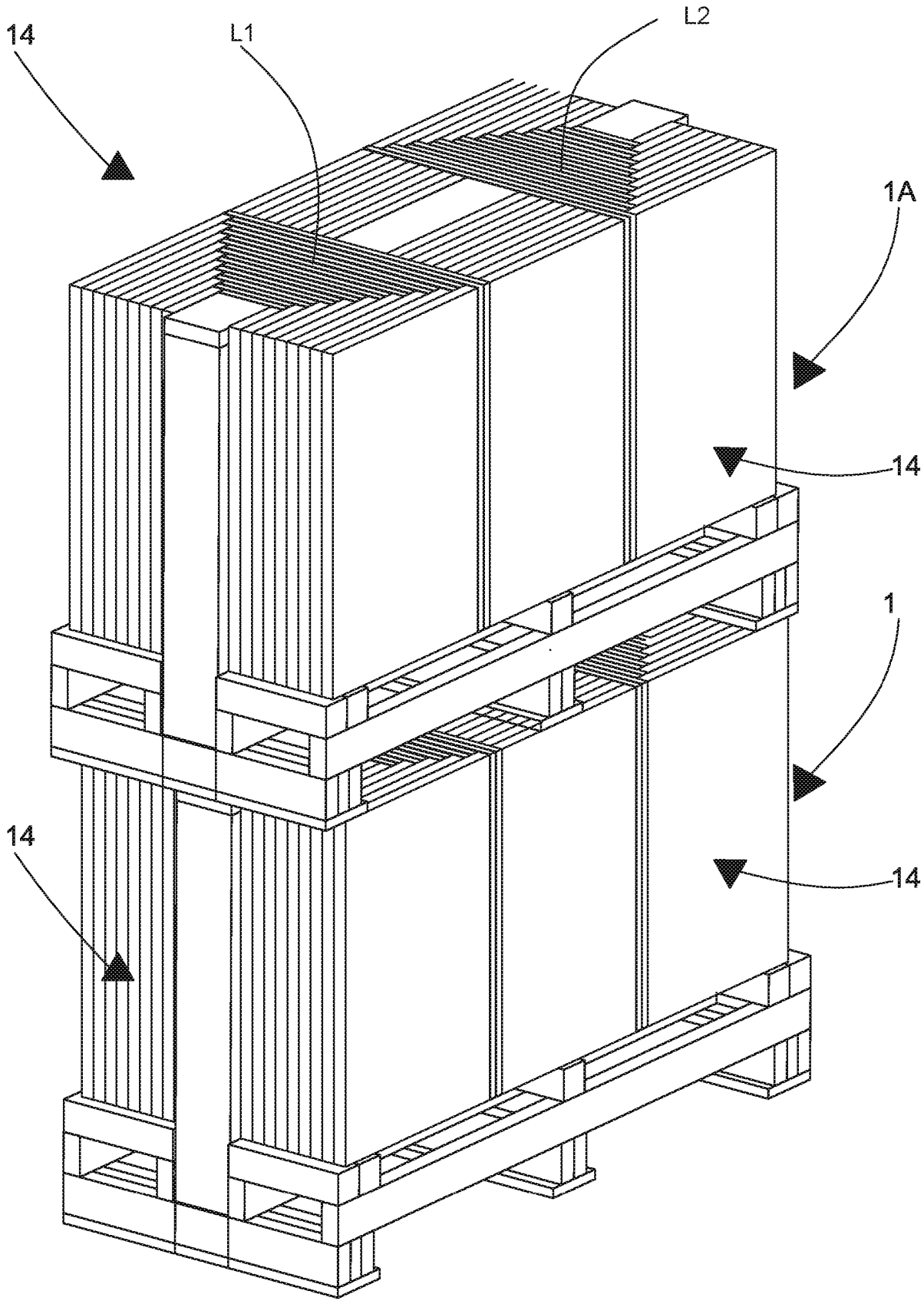

Fig. 8

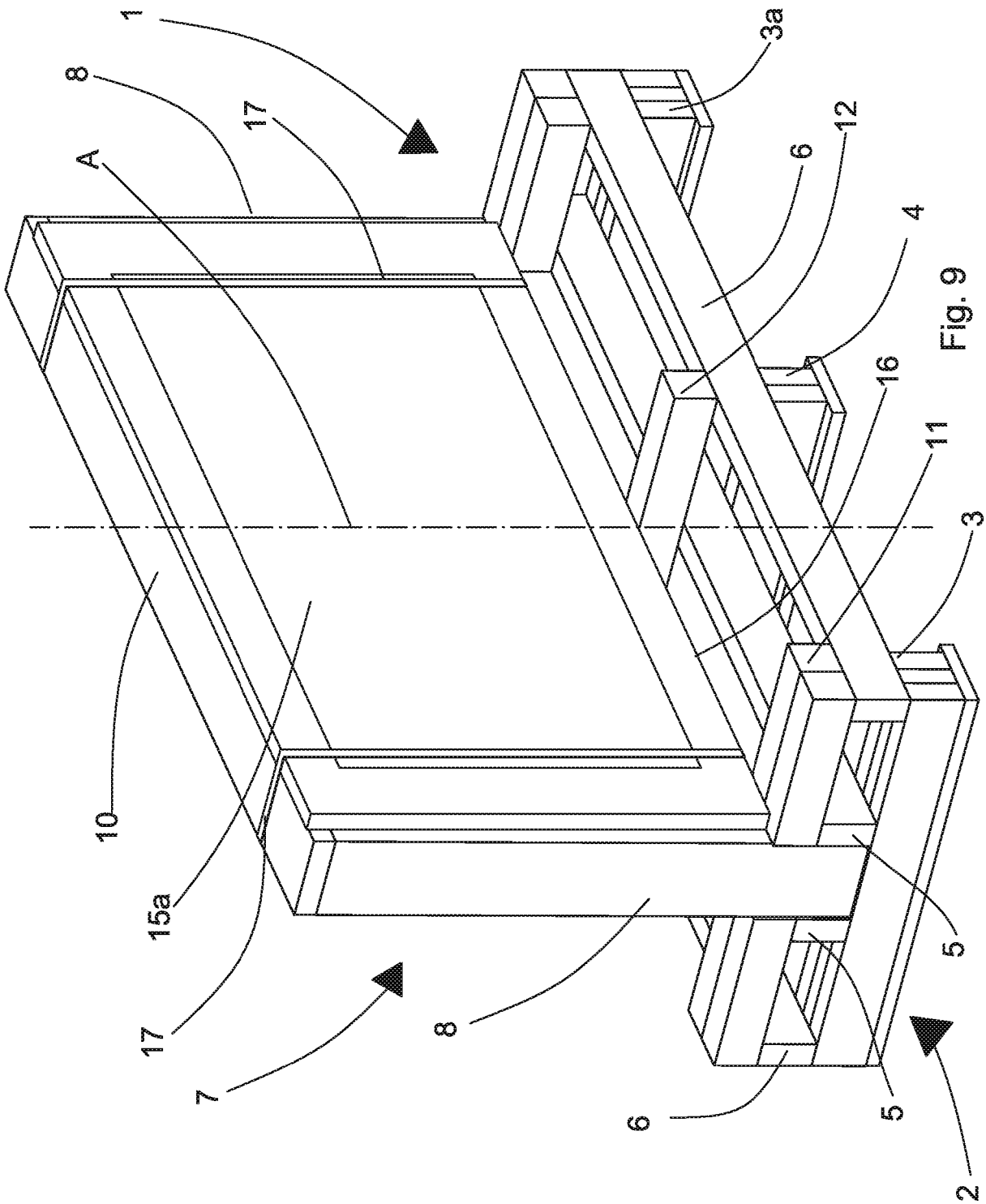

Fig. 9

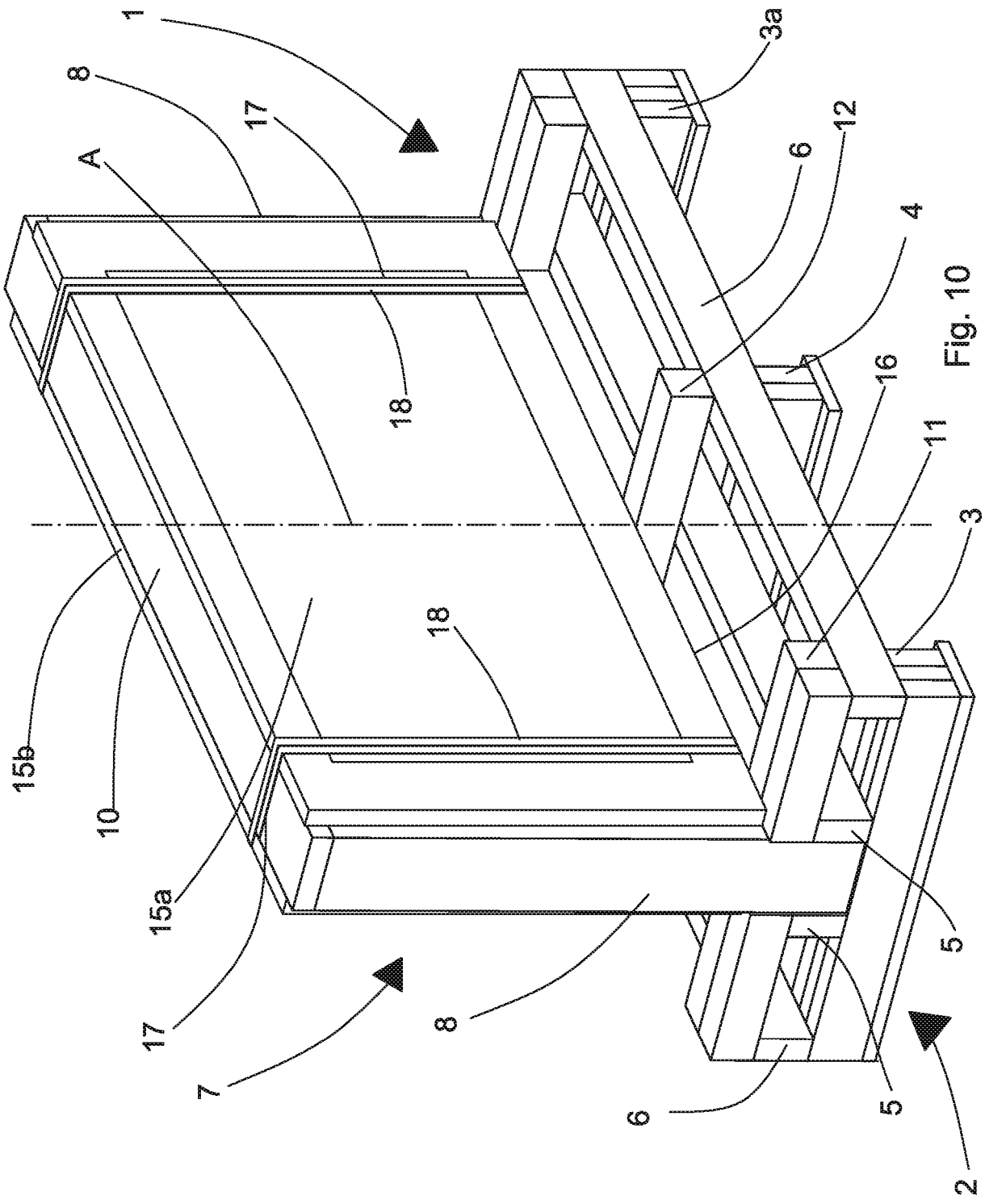

Fig. 10

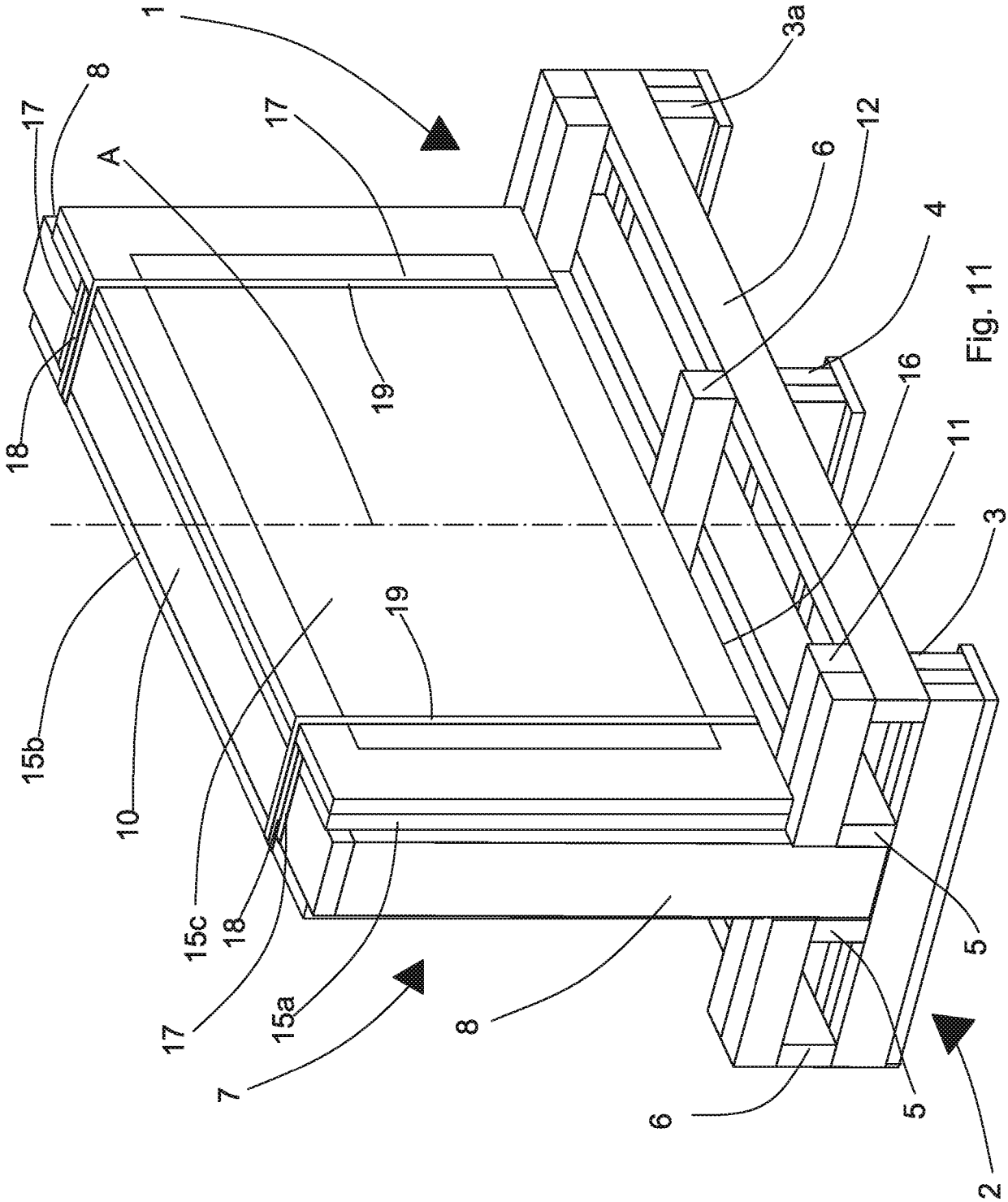

Fig. 11

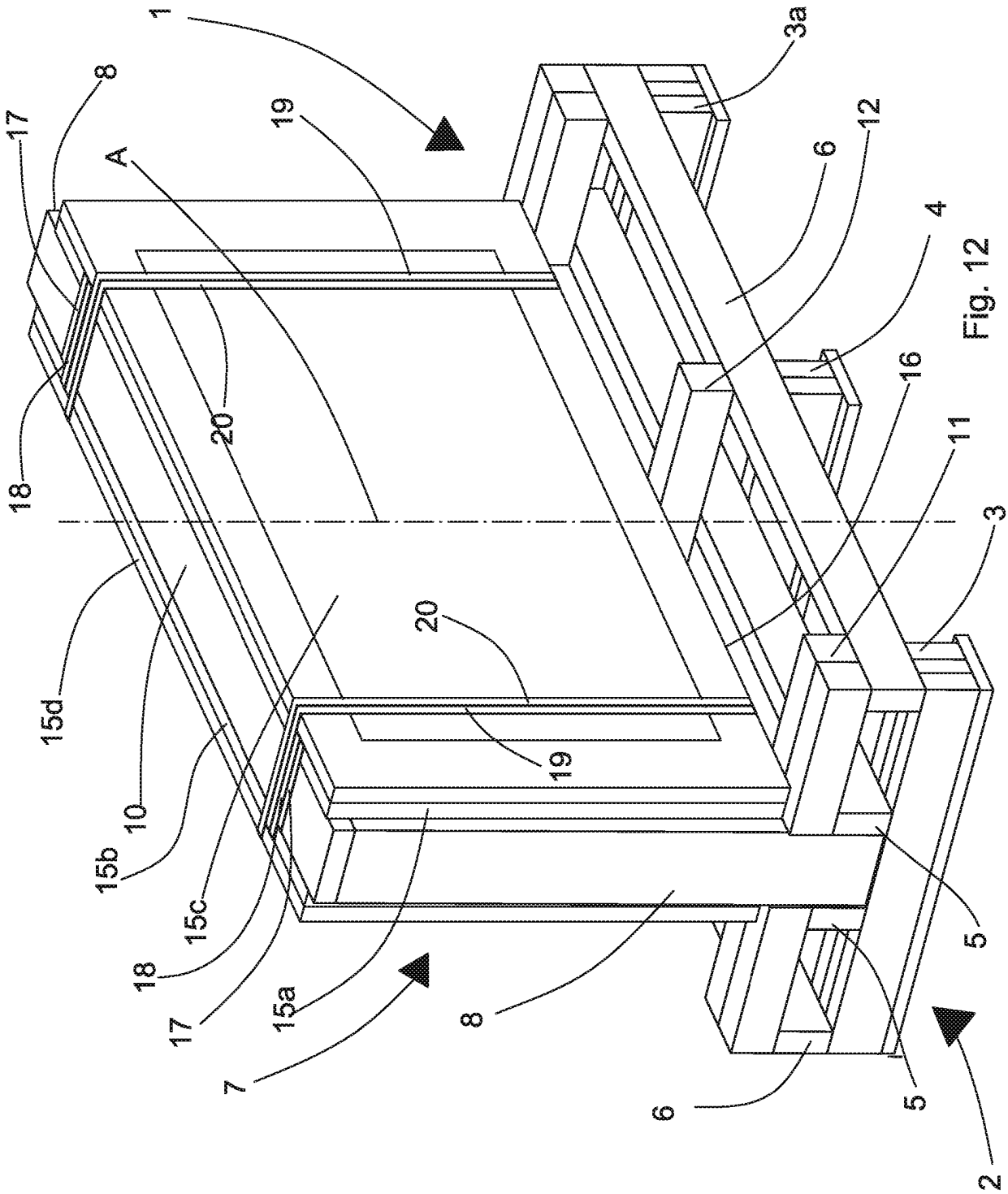
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Fig. 12

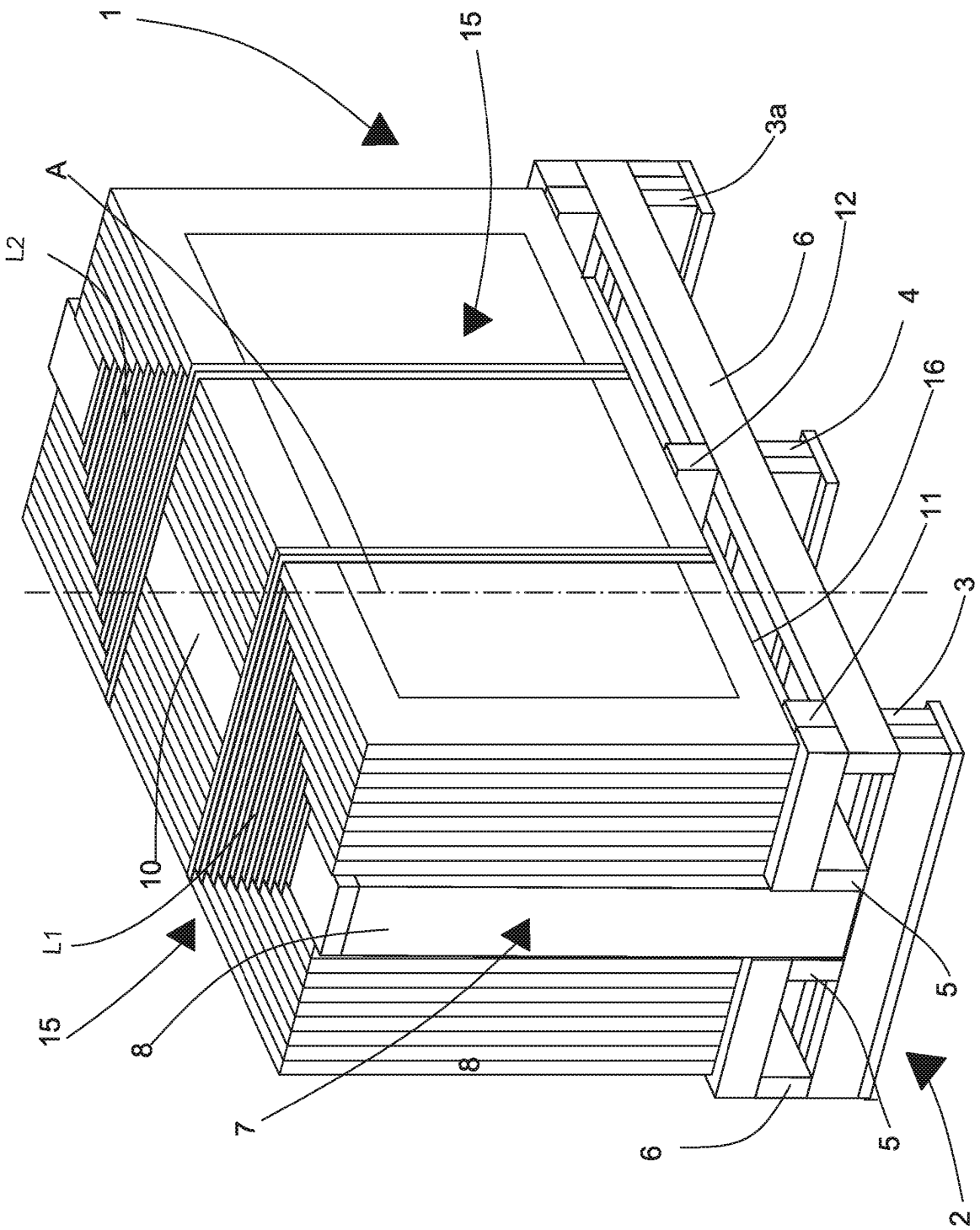

Fig. 13

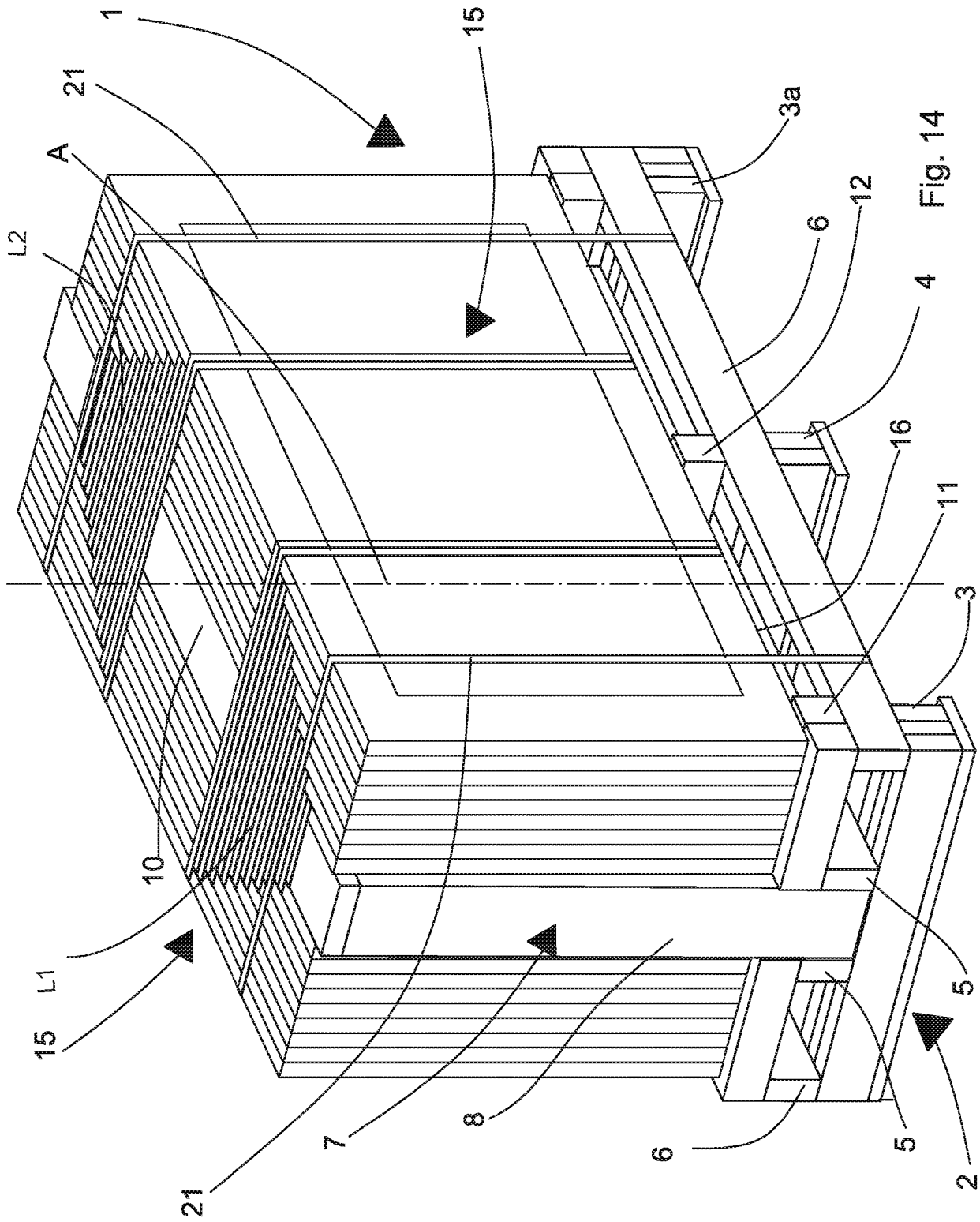

Fig. 14

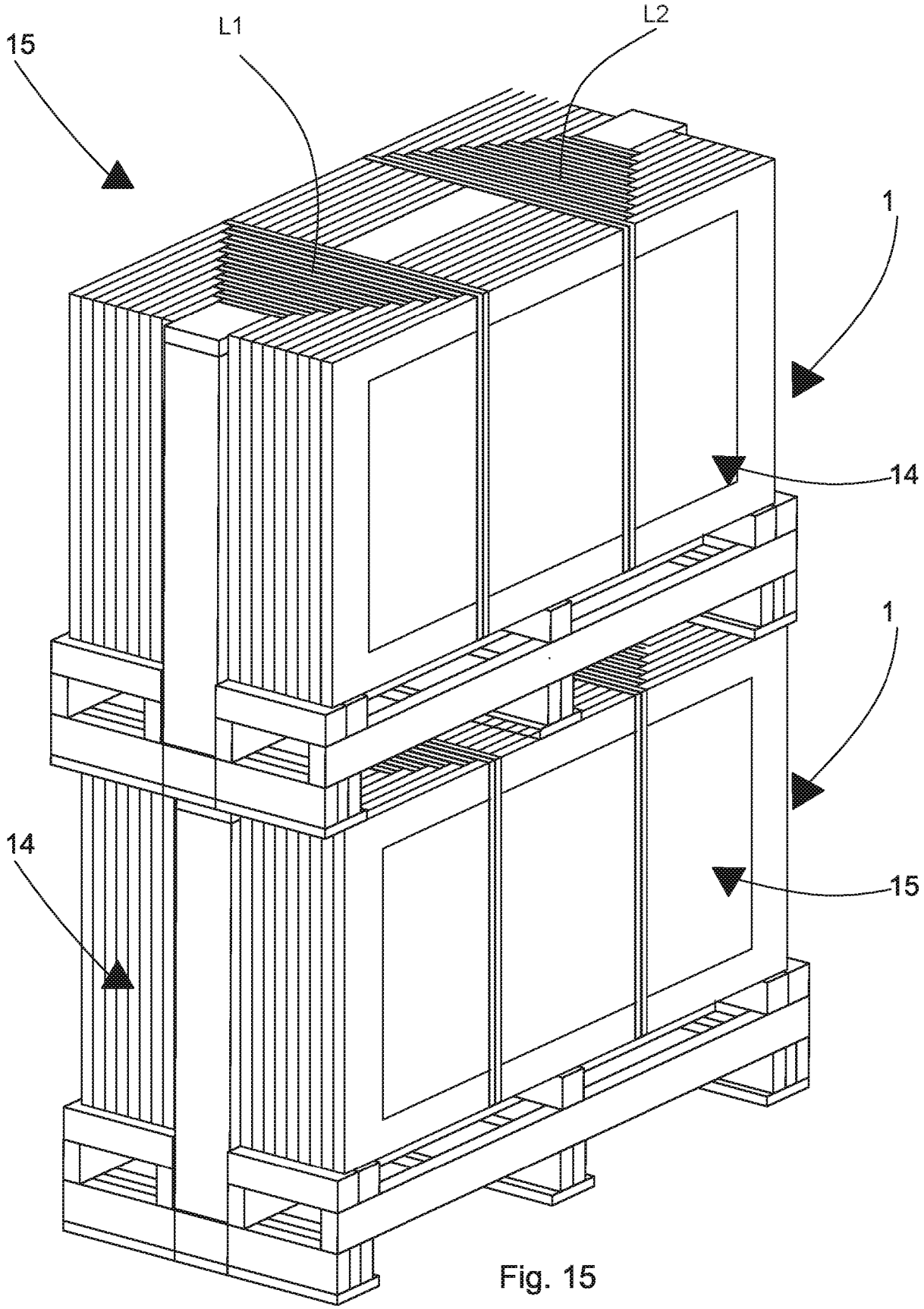

Fig. 15

REFERENCES CITED IN THE DESCRIPTION

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- IT 102016000095498 **[0012]**