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(54) **Title:** MODULAR ELEMENTS FOR MAKING OVERHEAD PLATFORMS

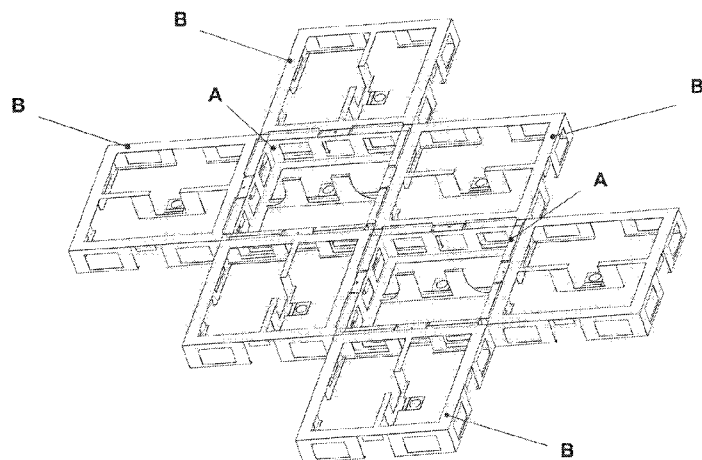


Fig. 3b

(57) **Abstract:** The invention is constituted by complementary modular elements (A, B) for making floor covering platforms, comprising parts and/or attachments (A3, B3) and/or components that are such as to allow two or more of said modular elements (A, B) to be correctly joined to one another. Each modular element (A, B) comprises four vertical walls (A1, B1) arranged so as to form a square, lower surfaces (A2, B1.2) for resting on the floor, upper surfaces (A4.1, A5", B2) suited to support upper treading panels (P), projections, walls (A4.1) or other upper elements suited to prevent the lateral translation of the upper treading panels (P).

MODULAR ELEMENTS FOR MAKING FLOOR COVERING PLATFORMS

The present patent concerns the field of floor covering platforms and raised floors,
and in particular it concerns modular elements for making floor covering platforms
5 and raised floors.

Floor covering platforms and raised floors are used for various purposes:

- to provide a stable and plane supporting surface;
- to provide a raised treading surface with respect to the surrounding treading
surface;
- 10 – to cover connecting cables running between two different positions on the
floor;
- to cover power strips, multiple sockets or other power distribution devices
positioned on the existing floor;
- to cover pipes, fittings or other hydraulic elements positioned on the
15 existing floor;
- to cover a damaged floor.

At present supporting elements are used to make and install floor covering
platforms and raised floors, and quadrangular panels constituting the floor covering
treading surface are laid on said supporting elements.

20 Each supporting element comprises a lower portion that rests on the existing floor,
a generically cylindrical extensible vertical portion, an upper portion on which the
quadrangular panels are laid.

Each quadrangular panel has all of its corners resting on a different supporting
element, so that each supporting element supports the corners of four distinct
25 quadrangular panels, or of two distinct quadrangular panels if said supporting
element is positioned in proximity to a wall.

The floor covering platforms and raised floors obtained in this way require that all
the supporting elements are positioned and fixed and that the quadrangular panels

are laid successively.

The operation of positioning and fixing the supporting elements is complex and requires much time, as each single supporting element must be positioned individually, in the correct position with respect to the other supporting elements, and furthermore must be properly fixed to the existing floor.

If, furthermore, the floor is inclined or not plane, it is necessary to adjust each supporting element in such a way that its upper portion, on which the panels are rested, is coplanar with the upper portions of the other supporting elements on which the panels are rested.

Two new complementary modular elements for making floor covering platforms form the subject of the present patent.

It is one object of the new modular elements to make it possible to provide floor covering platforms with no need to fix objects or elements to the existing floor.

It is another object of the new modular elements to allow the rapid and correct assembly of the various parts that make up the platform.

It is another object of the new modular elements to make it possible to provide floor covering platforms with no need to use any tools or instruments.

It is another object of the new modular elements to make it possible to provide floor covering platforms with a translucent treading surface, with internal illumination and cable passages.

These and other direct and complementary objects are achieved by the two new complementary modular elements for making floor covering platforms.

The two new modular elements are complementary to each other and are provided with parts and/or attachments and/or shaped portions that are such as to allow the correct connection of two or more of said modular elements without the aid of tools.

For the sake of simplicity, the two new complementary modular elements are described here below with reference to the drawings attached hereto by way of

non-limiting example.

Figures 1a and 1b respectively show an axonometric view and a plan view of the first modular element (A).

Figures 2a and 2b respectively show an axonometric view and a plan view of the second modular element (B).

Both of the modular elements (A, B) are made of a metallic material, preferably shaped and bent metal sheet.

The first modular element (A) has a square shape in plan view.

The first modular element (A) comprises:

- a lower horizontal square edge or frame (A2) suited to be placed in contact with the existing floor;
- four identical upper vertical walls (A1), arranged in a square pattern, each vertical wall (A1) being joined to an external side of said square edge or frame (A2).

Each vertical wall (A1) is provided with holes or openings (A1.1) for the passage of cables, ducts and pipes that need to be laid under the floor covering platform or raised floor.

The upper edge of each vertical wall (A1) is provided with one or more connection attachments (A3) and one or more support and containment attachments (A4) for the upper panel (P).

The example shown in the drawings illustrates a connection attachment (A3) and two support and containment attachments (A4) on the edge of each vertical wall (A1).

Substantially, the edge of each vertical wall (A1) opposite the lower square edge or frame (A2) is provided with two support and containment attachments (A4) between which a connection attachment (A3) is provided.

Both the connection attachments (A3) and the support and containment attachments (A4) are generically plane, facing towards the outside, orthogonal to

the vertical wall (A1) and parallel to said lower square edge or frame (A2).

Each connection attachment (A3) is arranged at the centre of the edge of the vertical wall (A1).

5 In particular, each connection attachment (A3) is provided with a notch, slit or groove (A3.1) parallel to the surface of the adjacent vertical wall (A1).

Each support and containment attachment (A4) is arranged on the edge of the vertical wall, beside the connection attachment (A3).

10 Each support and containment attachment (A4) has a generically L-shaped cross section and comprises a first plane horizontal portion (A4.1) facing towards the outside, orthogonal to the vertical wall (A1) and parallel to said lower square edge or frame (A2), and a second vertical portion (A4.2) facing upwards and parallel to the vertical wall (A1).

15 In particular, the width of said first horizontal portion (A4.1) is equal to the distance between the notch, slit or groove (A3.1) of the connection attachment (A3) and the vertical wall (A1), in such a way that said second vertical portion (A4.2) is aligned with said notch, slit or groove (A3.1) of said connection attachment (A3).

The first horizontal portion (A4.1) of the support and containment attachment (A4) constitutes the supporting surface of the upper treading panel (P).

20 The second vertical portion (A4.2) of the support and containment attachment (A4) constitutes the side stop edge, that is, the containment edge of the upper treading panel (P).

There is a strip or portion (A5) that extends between two opposite sides of said lower edge or frame (A2), provided with a generically central vertical projection (A5') whose upper edge (A5'') is bent horizontally.

25 The height of said vertical projection (A5') is such that its horizontal upper edge (A5'') is at the same height as the first horizontal portions (A4.1) of the support and containment attachments (A4).

The second modular element (B) has a square shape in plan view.

The second modular element (B) comprises:

- an upper horizontal square edge or frame (B2);
- lower vertical walls (B1) joined to the external sides of said square edge or frame (B2) and facing downwards;
- 5 - vertical connection attachments (B3) joined to the external sides of said square edge or frame (B2).

10 The length of each side of the square edge or frame (B2) of the second modular element (B) is equal to the distance between the second vertical portions (A4.2) of two opposite support and containment attachments (A4) of a first modular element (A).

On each side of the square edge or frame (B2) of the second modular element (B2) there are two vertical walls (B1) between which there is a connection attachment (B3).

15 Each connection attachment (B3) is generically rectangular in shape, is arranged at the centre of each side of the square edge or frame (B2), faces downwards and is as wide as or smaller than the notch, slit or groove (A3.1) of each connection attachment (A3) of the first modular element (A).

20 At the two sides of each connection attachment (B3) there are said two lower vertical walls (B1). In particular, said two lower vertical walls (B1) of said second modular element (B) are separated from said connection attachment (B3) at least by a space corresponding to the distance between the end of the notch, slit or groove (A3.1) of each connection attachment (A3) and the side edge of the same connection attachment (A3) of the first modular element (A).

25 Each vertical wall (B1) is provided with holes or openings (B1.1) for the passage of cables, ducts and pipes that need to be laid under the floor covering platform or raised floor.

The lower edge (B1.2) of each vertical wall (B1) of the second modular element (B) is bent horizontally towards the inside of the second modular element (B) itself,

in such a way as to provide a supporting base for said modular element (B).

There is a strip or portion (B4) that extends between two opposite sides of said upper square edge or frame (B2).

According to the invention, said first (A) and second (B) modular elements are provided with generically central supports or elements (A6, B5) suited to fix and support a lighting body and each upper treading panel (P) is translucent. In this way it is possible to obtain floor covering platforms with internal illumination through a simple and quick process, with no hindrances for the passage of cables.

Two or more modular elements (A, B) made up as described above can be coupled together to make floor covering platforms or raised floors.

Figures 3a and 3b respectively show a plan view and an axonometric view of some first and second modular elements (A, B) assembled together, while Figure 3c shows in detail the connection between a first modular element (A) and a second modular element (B).

The various modular elements (A, B) are positioned side by side and connected to one another in such a way that the connection attachment (B3) of each second modular element (B) is inserted in the notch, slit or groove (A3.1) of the connection attachment (A3) of the adjacent first modular element (A), as shown in detail in Figure 3c.

By arranging the first modular elements (A) and the second modular elements (B) alternately, both in rows and in columns, it is possible to obtain a rectangular or square matrix, or in any case a cell matrix, on which the upper plane panels (P) can be rested.

Each first (A) or second (B) modular element is substantially provided with horizontal upper surfaces constituted by the upper square edge or frame (B2) of a second modular element (B) or by the first plane horizontal portion (A4.1) of the support and containment attachment (A4) of a first modular element (A), suited to provide a support for each upper plane panel (P).

All of the second vertical portions (A4.2) of the support and containment attachments (A4) of each first modular element (A) constitute lateral containment elements for the various upper plane panels (P), thus preventing the same upper plane panels (P) from translating laterally.

5 Connection elements (R), illustrated in Figure 4, are provided between the existing floor and said upper plane panels (P).

Said connection elements (R) are in the shape of a parallelepiped with right triangular cross section.

10 In particular, said triangular cross section of the connection elements (R) has a side whose size is equal to the overall height of the side walls (A1) of the first modular elements (A) plus the thickness of the upper plane panels (P).

Said connection elements (R) are conveniently placed side by side and joined to the modular elements (A, B) in such a way that the two orthogonal sides of their triangular cross section are adherent respectively to the existing floor and to the
15 vertical walls (A1, B1) of the first (A) and of the second (B) modular elements. Consequently, the third side of the triangular cross section of the connection elements is inclined between the existing floor and the upper surface of the upper plane panels (P), thus creating a ramp or ascending slope from the existing floor to the upper surface of the upper plane panels (P).

20 According to the invention, the connection elements (R) corresponding to the corners of the assembled platform have their oblique end at 45° with respect to the longitudinal direction, so as to ensure continuity with the connection element (R) of the adjacent side of the platform.

Said connection elements (R) can have, on their visible inclined side, advertising
25 messages, or direction signs for the toilets, specific structures or shops.

Said connection elements (R) can have a transparent visible inclined side and can accommodate programmable LED advertising panels or backlit decals behind said transparent side.

The new complementary modular elements for making floor covering platforms as described above offer considerable advantages.

The new modular elements make it possible to provide floor covering platforms with no need to fix objects or elements to the existing floor.

5 The new modular elements make it possible to rapidly and correctly assemble the various parts that make up the platform. In fact, it is sufficient to lay each modular element (A, B) on the existing floor connecting each connection attachment (A3, B3) to the corresponding connection attachments (B3, A3) of the adjacent modular elements (B, A).

10 The new modular elements make it possible to provide floor covering platforms with no need to use any tools or instruments.

Therefore, with reference to the above description and the attached drawings, the following claims are expressed.

CLAIMS

1. Modular elements for making floor covering platforms, **characterized in that** they comprise:

- four vertical walls (A1, B1) arranged so as to form a square, each wall (A1, B1) being orthogonal to the adjacent walls, and each of them being provided with one or more openings (A1.1, B1.1);
- lower surfaces (A2, B1.2) for resting on the floor, arranged along the lower edges of said vertical walls (A1, B1);
- upper surfaces (A4.1, A5", B2) suited to support upper treading panels (P), arranged along the upper edges of said vertical walls (A1, B1);
- lateral connection attachments (A3, B3) suitable for the mutual connection of modular elements (A, B) positioned side by side,

and wherein at least one type of modular elements (A) is provided at the top with projecting elements, walls (A4.1) or other elements suited to prevent the lateral translation of the upper treading panels (P).

2. Modular elements for making floor covering platforms according to claim 1, **characterized in that** they comprise a first modular element (A) having vertical walls (A1) in the same width, and having, at the level of the upper edge of each vertical wall (A1):

- a horizontal square or rectangular edge or frame (A2) joined to the lower edge of said vertical walls (A1) and suited to be placed in contact with the existing floor;
- a horizontal connection attachment (A3) arranged at the centre of the edge of the vertical wall (A1), orthogonal to the vertical wall (A1), said connection attachment (A3) being provided with a notch, slit or groove (A3.1) that is substantially linear and parallel to the surface of the adjacent vertical wall (A1);
- one or more L-shaped support and containment attachments (A4) arranged

on the edge of the vertical wall (A1) beside the connection attachment (A3), and wherein said support and containment attachment (A4) comprises a first horizontal plane portion (A4.1) facing towards the outside, orthogonal to the vertical wall (A1) and parallel to said lower square edge or frame (A2), and a second vertical portion (A4.2) facing upwards and parallel to the vertical wall (A1).

3. Modular elements for making floor covering platforms according to claim 2, **characterized in that** the width of said first horizontal portion (A4.1) of said support and containment attachment (A4) is equal to the distance between the notch, slit or groove (A3.1) of the connection attachment (A3) and the vertical wall (A1).

4. Modular elements for making floor covering platforms according to claim 1, **characterized in that** they comprise a second modular element (B) having:

- an upper horizontal square or rectangular edge or frame (B2) whose dimensions are equal to the distances between the second vertical portions (A4.2) of two opposite support and containment attachments (A4) of a first modular element (A) according to claim 2;
- two lower vertical walls (B1) joined to each outer side of said edge or frame (B2), facing downwards and arranged in proximity to the corners of said edge or frame (B2), having the same height as the vertical walls (A1) of said first modular element (A);
- a vertical connection attachment (B3) joined to each outer side of said edge or frame (B2), at the centre of said outer side of said square edge or frame (B2), the width of said connection attachment being equal to or smaller than the length of the notch, slit or groove (A3.1) of each connection attachment (A3) of the first modular element (A).

5. Modular elements for making floor covering platforms according to claim 4, **characterized in that** the lower edge (B1.2) of each vertical wall (B1) of the

second modular element (B) is bent horizontally towards the inside of the second modular element (B) itself, in such a way as to constitute a supporting base for said modular element (B).

- 5 6. Modular elements for making floor covering platforms according to claim 4,
characterized in that said first modular element (A) and/or said second modular element (B) is/are provided with generically central supports or elements (A6, B5) suitable for fixing and supporting a lighting body.
- 10 7. Modular elements for making floor covering platforms according to the preceding claims, **characterized in that** they comprise upper treading panels (P), and wherein said upper treading panels (P) are translucent or opalescent.
- 15 8. Modular elements for making floor covering platforms according to the preceding claims, **characterized in that** they comprise elements (R) providing connection between the existing floor and the upper plane panels (P) laid on said modular elements (A, B), in the shape of a parallelepiped with right triangular cross section, and wherein the size of at least one of the two sides forming the right angle of said right triangular cross section corresponds to the overall height of the side walls (A1) of the first modular elements (A) plus the thickness of the upper plane panels (P).
- 20 9. Modular elements for making floor covering platforms according to claim 8, **characterized in that** said connection elements (R) have their exposed inclined side that is transparent, and wherein said connection elements (R) have, on the inside of said exposed inclined side, supports for translucent panels, decals and/or luminous panels with varying messages or images.
- 25 10. Modular elements for making floor covering platforms according to claim 8, **characterized in that** inside said connection elements (R) there are supports or elements suitable for fixing and supporting lighting bodies.

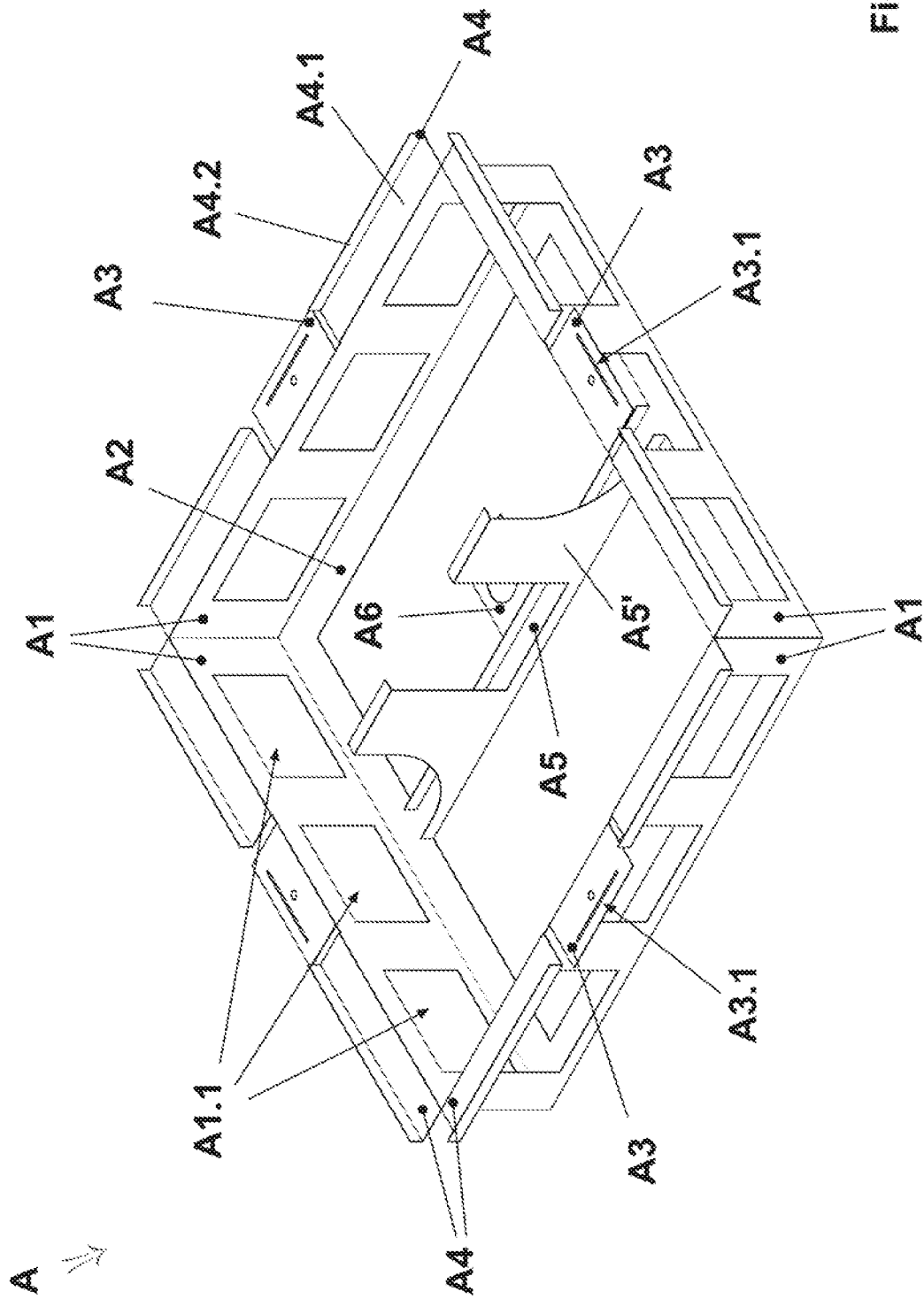


Fig. 1a

A ↗

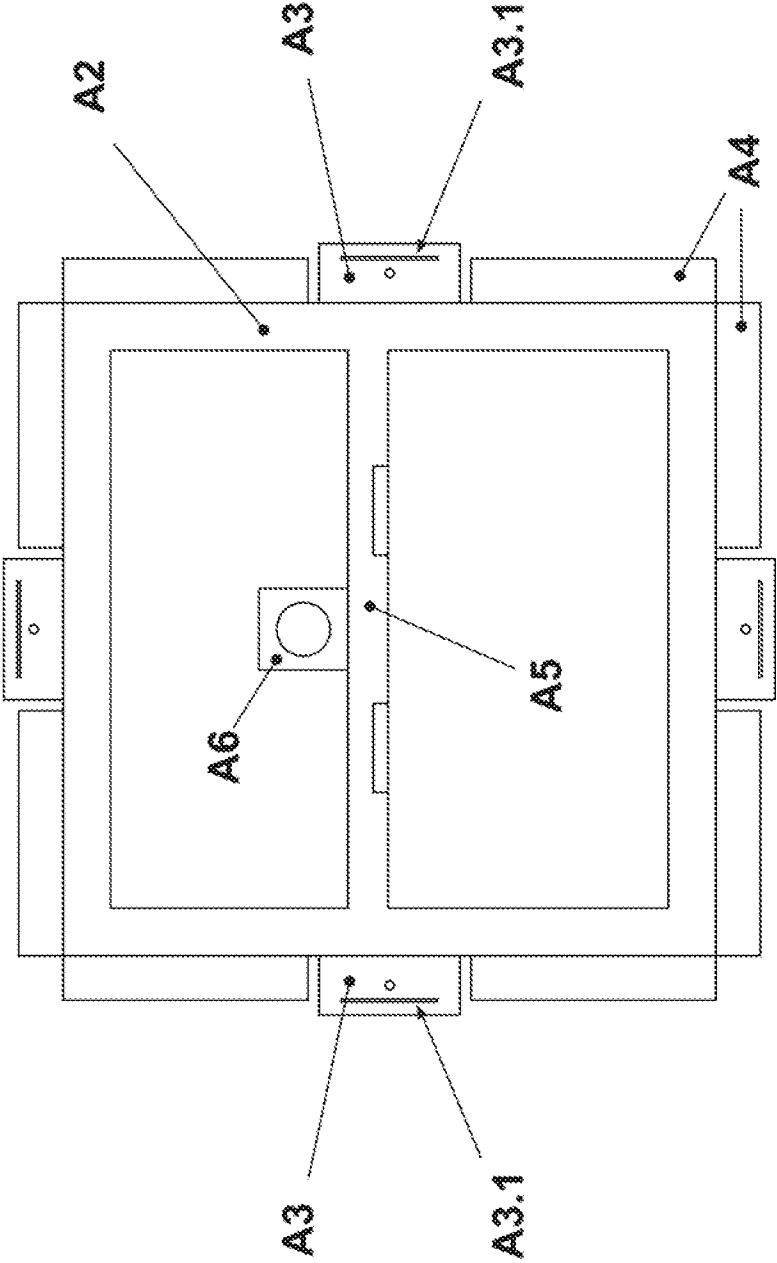


Fig. 1b

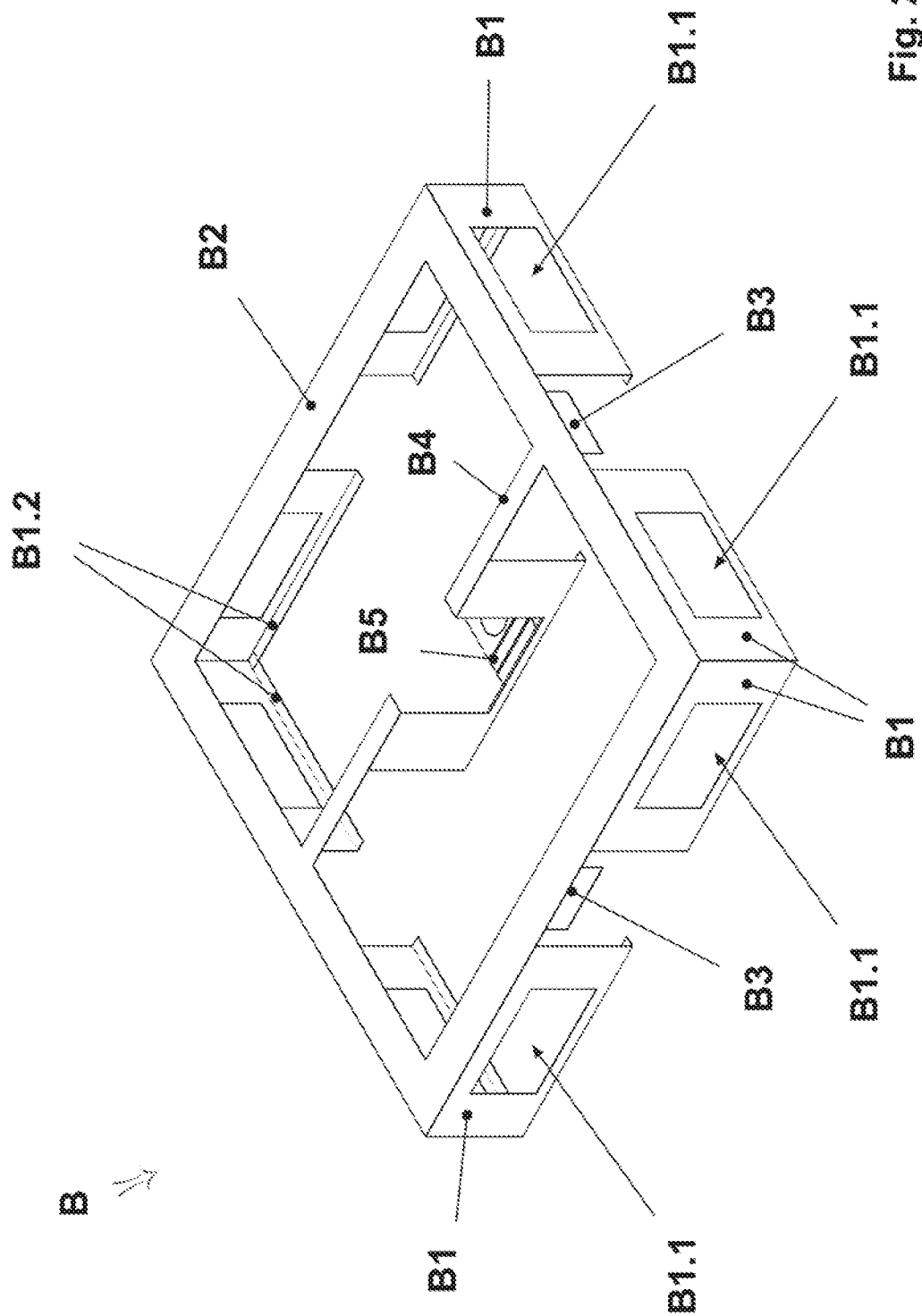


Fig. 2a

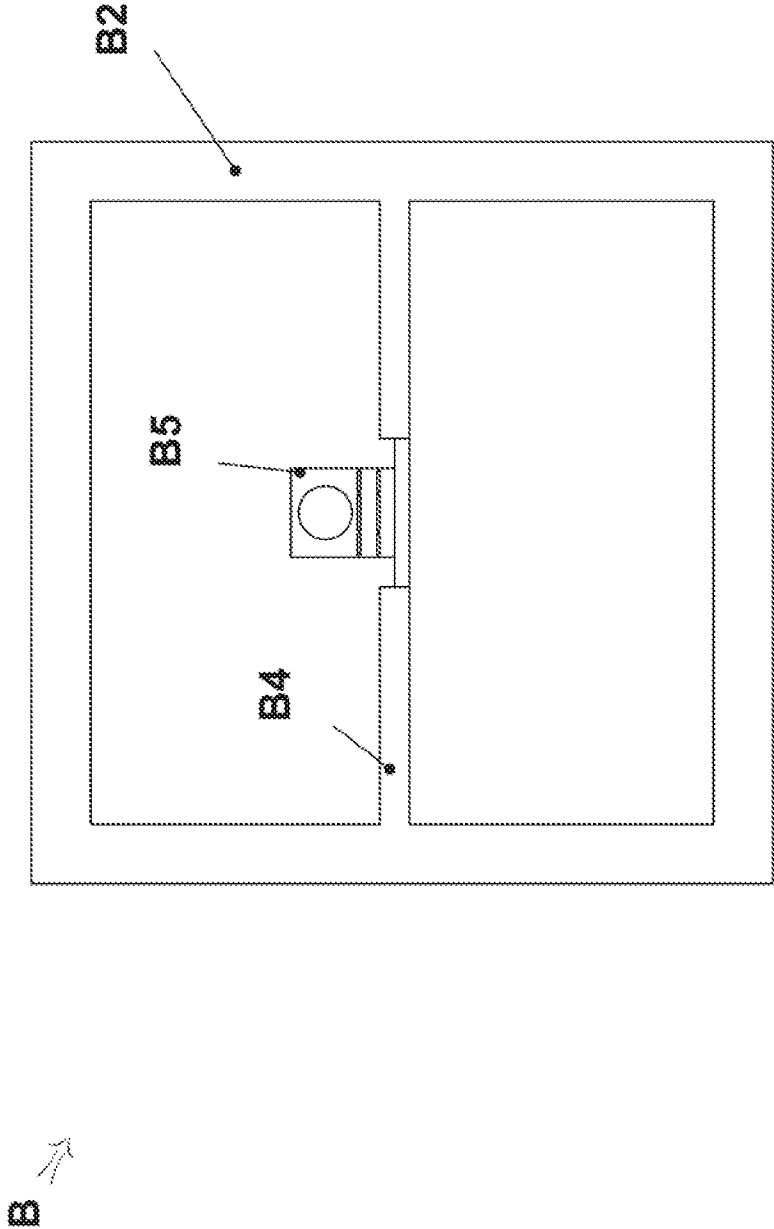


Fig. 2b

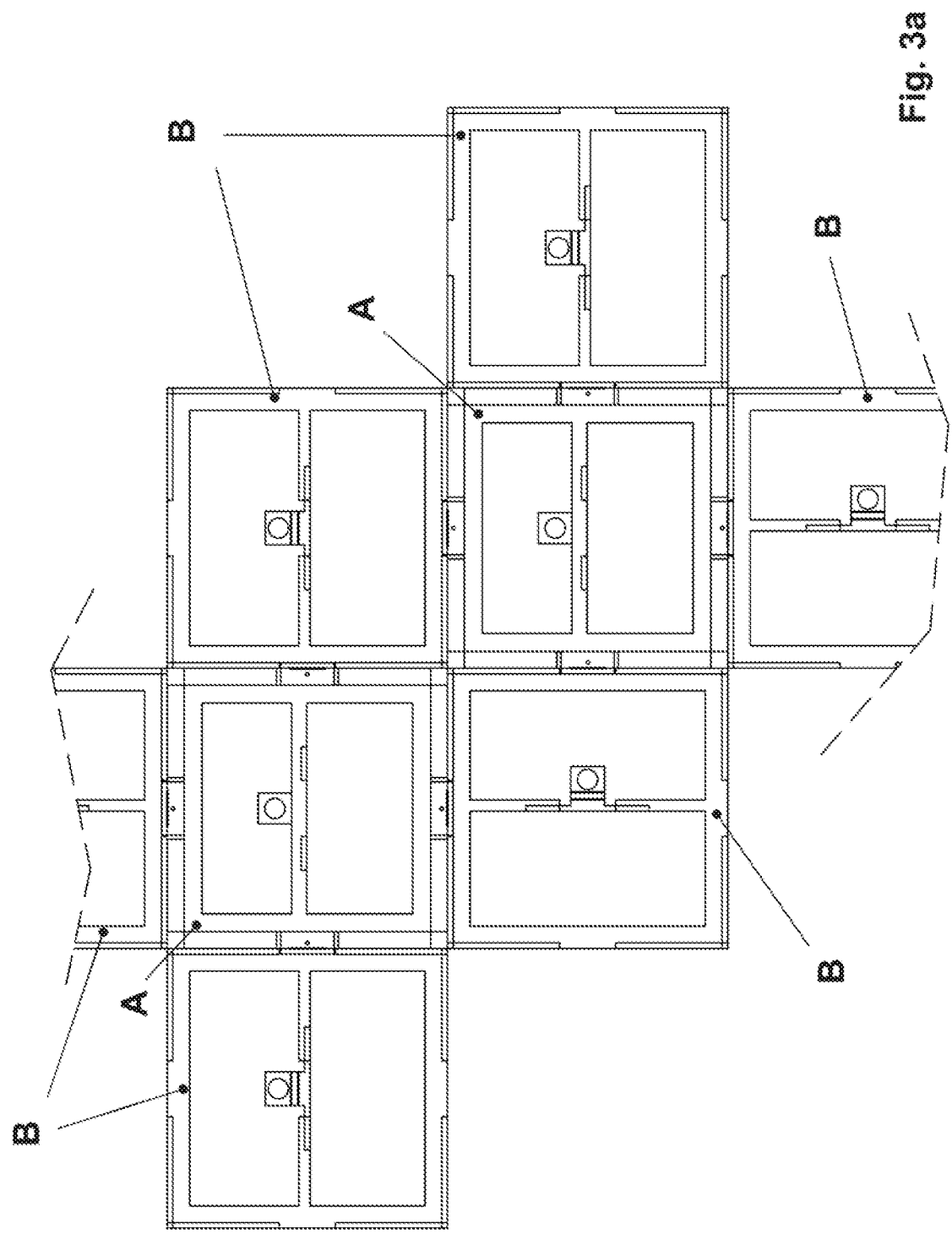


Fig. 3a

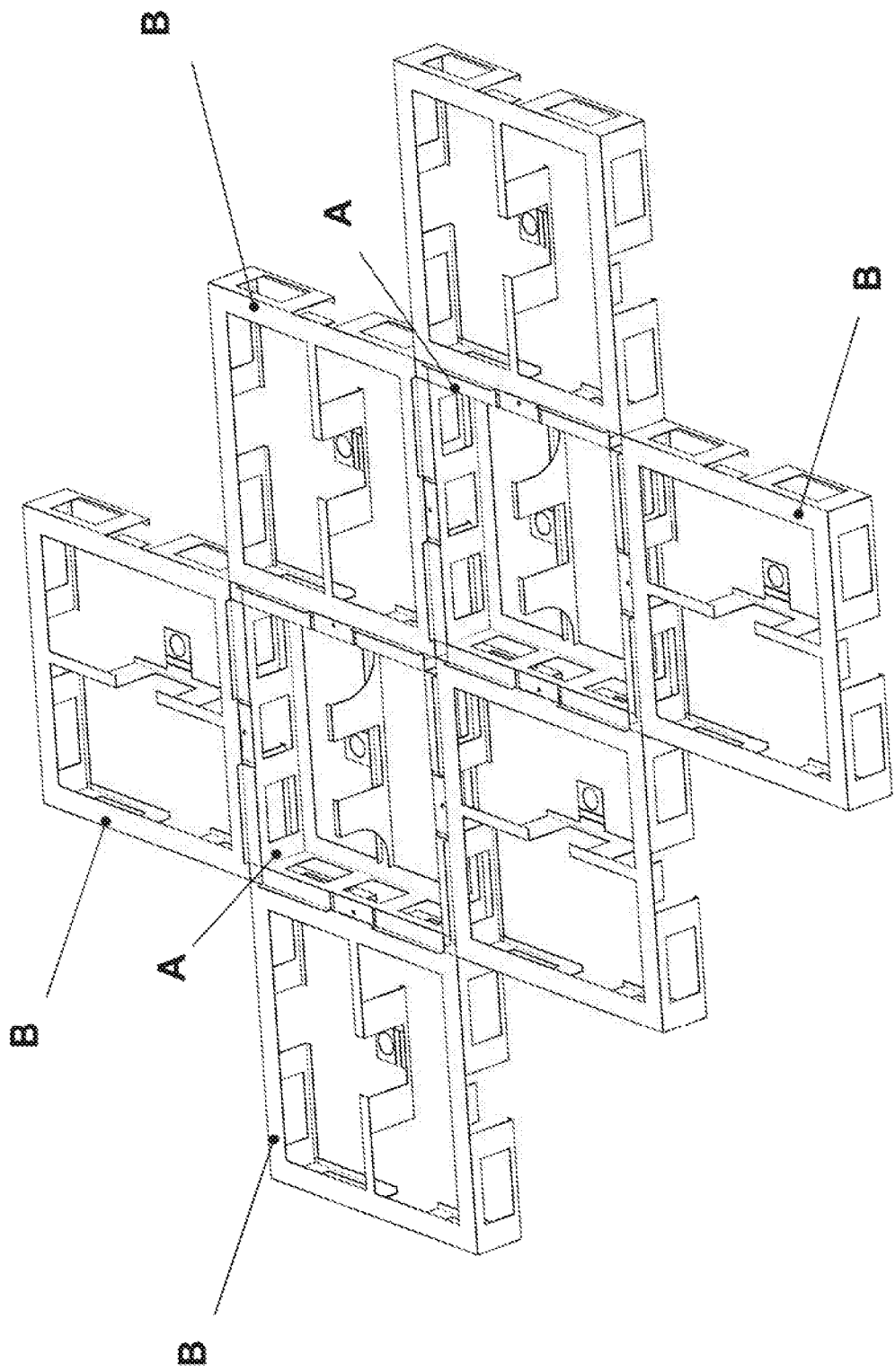


Fig. 3b

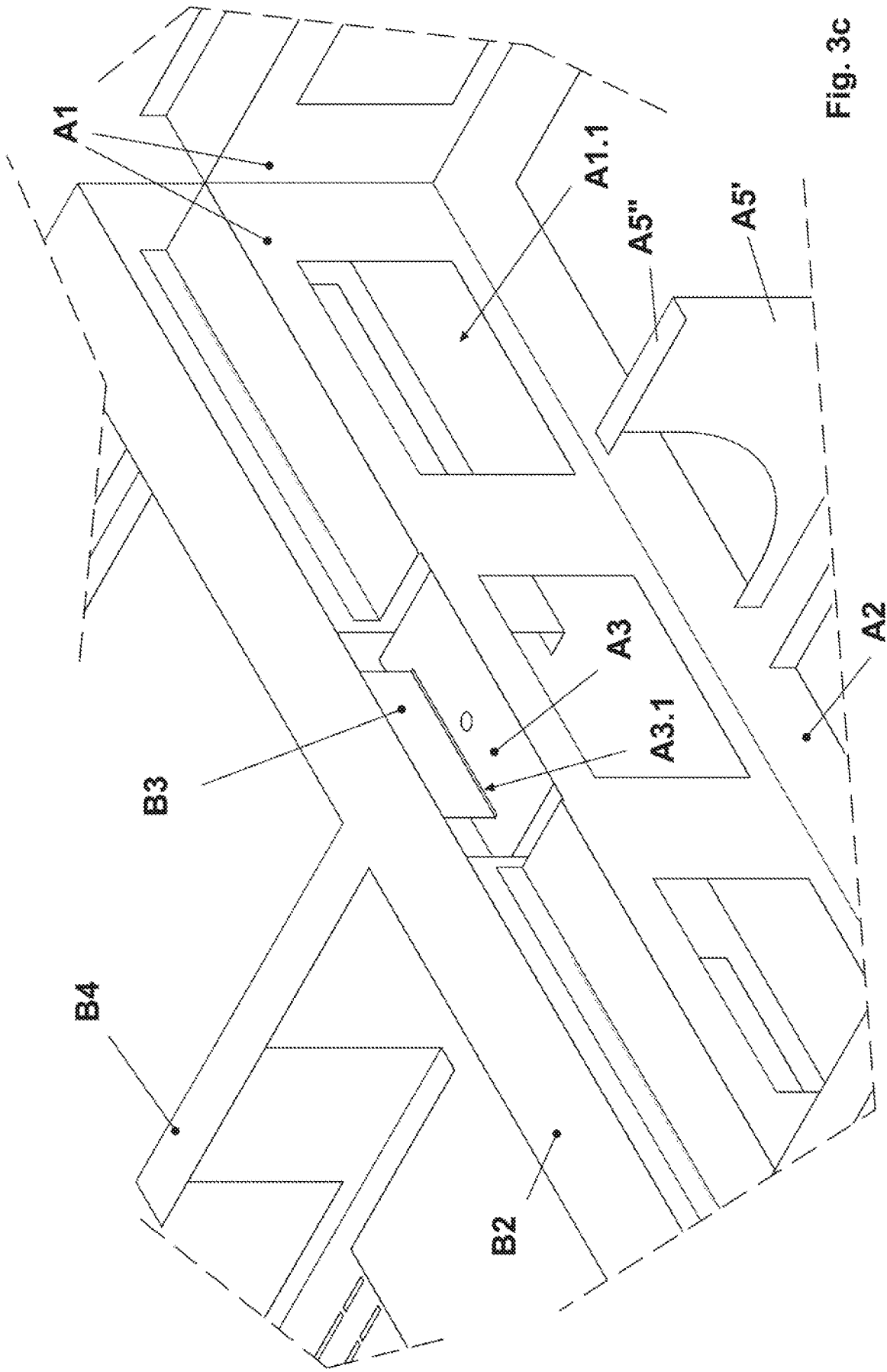


Fig. 3c

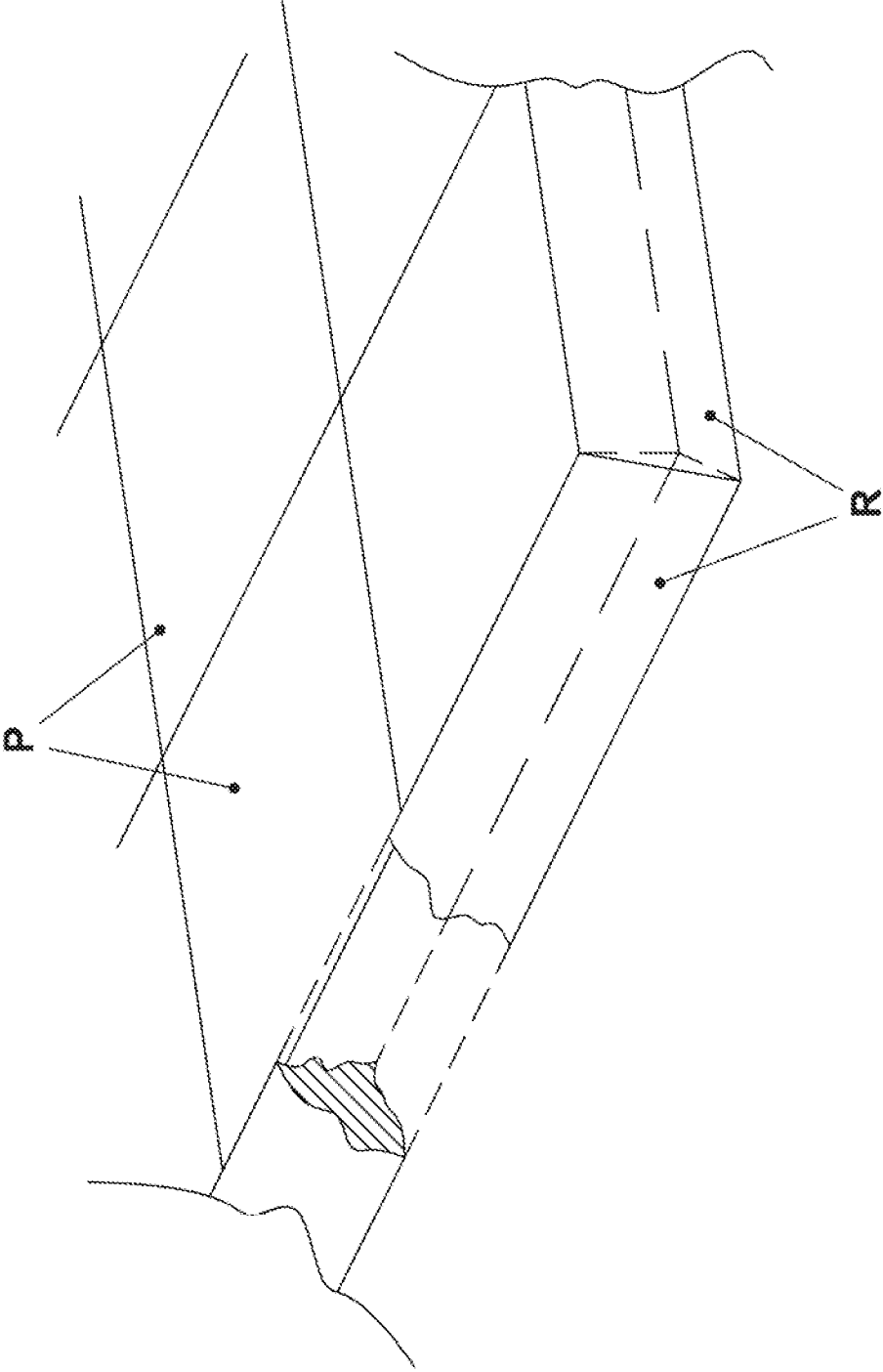


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2015/052670

A. CLASSIFICATION OF SUBJECT MATTER
INV. E04F15/024 E04F15/06 F21V33/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E04F F21V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 299 819 A (CAVENEY THOMAS MATTHEW [GB]; MARTIN ROBERT JOHN [GB] CAVENEY THOMAS MA) 16 October 1996 (1996-10-16)	1-6
Y	figures 1, 2 -----	7,8,10
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A	figures 12-14 -----	9
Y	WO 02/095287 A1 (RUSSELL MICHAEL GULVIN [GB]; RUSSELL MICHELLE EVELYN [GB]) 28 November 2002 (2002-11-28)	7
	figures 1, 2 -----	

☐

Further documents are listed in the continuation of Box C.

☒

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search

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Date of mailing of the international search report

04/08/2015

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2015/052670

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