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(54) Modular cardboard panel for partition walls

(57) The present invention relates to a modular cardboard panel that comprises a spaced side-by-side pair of cardboard sheets (1 and 2) with vertical edges (1a, 2a) folded by 180° inwards, in such manner to form two thickened edges (B) acting as stiffening element for the panel (A) and as spacers between the two cardboard sheets (1 and 2), leaving an air space (3) that houses a wooden frame (T) formed of four wooden sticks, of which two vertical sticks (4) are positioned against said thickened edges (B) of the two cardboard sheets (1 and 2), and two horizontal sticks (5) run along the lower edge (B1) and the upper edge (B2) of the panel (A), respectively.

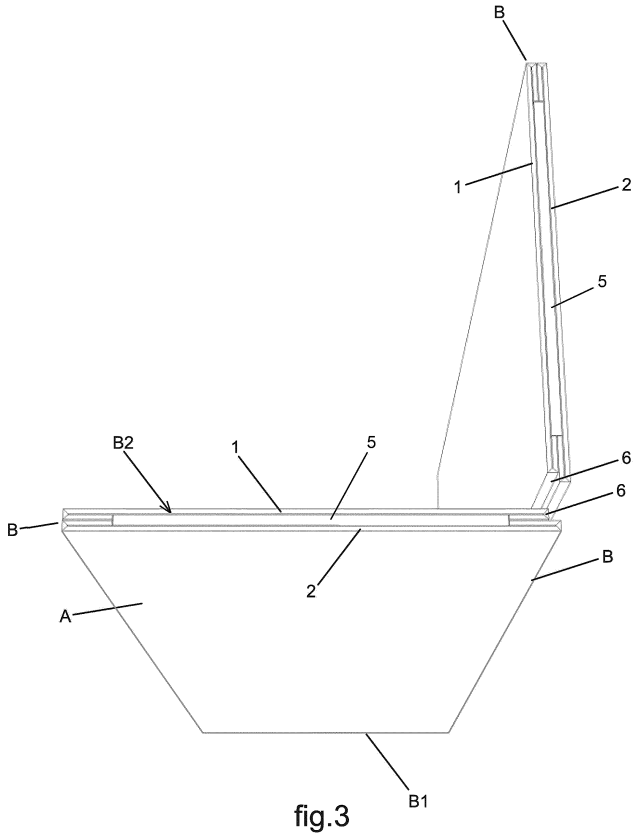


fig.3

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Description

[0001] The present invention relates to a modular cardboard panel for partition walls.

[0002] As it is known, the materials that are commonly used to make screening or partition walls are sheets made of wood, glass, metal, fiberglass or other artificial materials characterized by good mechanical resistance and rigidity properties.

[0003] Till now the use of cardboard has not been considered because of its modest mechanical properties although its low specific weight can be advantageous for products in which lightness is an important requirement.

[0004] As a matter of fact lightness would be a much appreciated feature in case of partition walls, given the fact that these structures are conceived with the main purpose of being mounted, dismounted or displaced easily and rapidly in order to create a different layout.

[0005] DE9213493 discloses a wall or ceiling surface element comprising a honeycomb core.

[0006] In view of the above the main purpose of the present invention is to devise a panel for screening or partition walls, which is light and sufficiently rigid, resistant and self-supporting.

[0007] Because of its low weight the panel of the invention is easy to transport, in benefit of the operators in charge of loading and unloading the vehicles used to transfer the panels from the manufacturing plant to the building yard, as well as in benefit of the operators in charge of handling the panels in the building yard to mount or dismount the partition wall. Another purpose of the present invention is to provide a panel for partition walls with a low manufacturing cost and good acoustic and thermal insulation properties.

[0008] The aforementioned purposes have been achieved by the innovative modular cardboard panel of the invention, the improved mechanical rigidity and resistance properties of which are obtained by introducing some technical devices in the cardboard processing technique and with the use of low-weight wooden inserts.

[0009] The peculiar characteristics of the structural configuration of the panel according to the present invention are illustrated in the claims attached to the present description.

[0010] The modular panel of the invention comprises a spaced side-by-side pair of cardboard sheets glued on the vertical edges that are folded inwards to form two thickened edges acting as stiffening element for the panel and as spacers between the two cardboard sheets.

[0011] A rectangular frame is contained in the air space of the modular panel, being formed of four wooden sticks, of which two vertical sticks are positioned against said thickened edges of the two cardboard sheets, and two horizontal sticks run along the lower edge and the upper edge of the panel, respectively.

[0012] If necessary, the two horizontal wooden sticks can be provided with ordinary adjustable feet to engage and stabilize the modular panel between ceiling and floor.

[0013] For an improved edge finish the modular panel of the invention can be provided with four sections, preferably made of aluminum, which cover the four edges of the cardboard panel on both sides of the panel.

[0014] In case of two or more panels in coplanar side-by-side position that are used to make a wall, aluminum sections are used, having a suitable length to cover and finish the entire lower and upper edge of the wall uninterruptedly, as illustrated in detail below.

[0015] It must be noted that the provision of an aluminum section on the two vertical edges of the panel allows for coupling the cardboard panel of the invention with modular parts of different type, such as glass panels or doors.

[0016] For explanatory reasons the description of the invention continues with reference to attached drawings, which only have an illustrative, not limiting value, wherein:

- Fig. 1 is a diagrammatic axonometric view of a partition wall obtained with the modular panel of the invention;
- Fig. 2 is an exploded axonometric view of the modular panel of the invention;
- Fig. 3 is a perspective view of a side-by-side pair of modular panels of the invention in square direction;
- Fig. 4 is a sectional view cut with a vertical plane of the upper and lower edges of the panel of the invention;
- Fig. 5 shows a screening wall obtained with the modular panel of the invention;
- Fig. 6 is an exploded axonometric top view of the modular panel of the invention;
- Fig. 7 is an exploded axonometric bottom view of the modular panel of the invention;
- Fig. 8 is a diagrammatic axonometric view of a partition wall obtained with the modular panel of the invention.

[0017] With reference to Fig. 2, according to its simplest and most essential embodiment, the modular panel (A) of the invention comprises a spaced side-by-side pair of cardboard sheets (1 and 2), the vertical edges (1 a and 2a) of which are folded by 180° inwards, in such manner to form two thickened edges (B) acting as stiffening element for the panel (A) and as spacers between the two cardboard sheets (1 and 2).

[0018] The inward-folded vertical edges (1 a and 2a) are engaged one against the other and glued, as shown in Fig. 3, in such manner that the panel (A) has an air space (3) with width basically identical to the sum of the thicknesses of the two cardboard sheets (1 and 2).

[0019] A rectangular frame (T) is contained and glued in the air space (3) of the modular panel (A), being formed of four wooden sticks, of which two vertical sticks (4) are positioned against said thickened edges of the two cardboard sheets, and two horizontal sticks (5) run along the lower edge (B1) and the upper edge (B2) of the panel

(A), respectively.

[0020] When two panels (A) are coupled in square direction, as shown in Fig. 3, one of the two cardboard sheets (1 and 2) is slightly wider than the other one, in such manner that a step (6) is formed in the panel (A) in correspondence of only one of said thickened edges (B), said step (6) being adapted to be coupled with the step (6) of a second panel (A) in square direction to a first panel (A).

[0021] If necessary, the two horizontal wooden sticks (5) can be provided with ordinary adjustable feet (7) used to engage and stabilize the modular panel between ceiling and floor, as shown in Figs. 6 and 7.

[0022] More precisely, each foot (7) is provided with a threaded stem (7a) that is screwed into a threaded bush (8) recessed into a hole (9) obtained in the horizontal wooden sticks (5).

[0023] For an improved edge finish the modular panel (A) is provided with four aluminum sections that cover the four edges (B,B1 ,B2) of the cardboard panel on both sides of the panel.

[0024] The aluminum sections can have a different configuration according to the specific requirements.

[0025] Figs. 4 and 5 show a first type (P1) of said aluminum profiles, which consists in a box bar with U-shaped section, in the cavity of which the edges (B,B1 and B2) of the panel (A) are inserted.

[0026] In case of two or more panels in coplanar side-by-side position that are used to obtain a wall (PA) like the one shown in Fig. 5, aluminum sections (P1) are used, having a suitable length to cover and finish the entire lower edge (B1) and upper edge (B2) of the wall (PA) uninterruptedly.

[0027] The provision of the aluminum section (P1) on the two vertical edges (B) of the panel (A) allows for coupling the cardboard panel of the invention with other modular elements of different type, such as glass panels (PV) or doors (P), as shown in Fig. 1.

[0028] Moreover, the panel (A) can be provided with housings for hinges and/or hinges on one of the vertical edges (B) in order to be used as door panel or door.

[0029] Fig. 7 shows a second type (P2) of aluminum sections, consisting in a strip with T-shaped section overturned by 90° in such manner that the horizontal wing of the T-shaped section is disposed on a vertical plane and is engaged against the edges (B1, B2) of the panel (A) or the wall (PA).

[0030] The section (P2) can be fixed to the panel (A) by means of gluing or, when the panel (A) is provided with feet (7), by means of ordinary elastic clamps (not shown in the figures) applied to the section (P2) to get hold of the stem (7a) of the feet (7).

[0031] In order to improve the sound absorbent properties of the panel (A) the cardboard sheets (1 and 2) are provided with a set of surface grooves (10) on the two external sides of the panel (A), as shown in Fig. 7 and 8. Still in order to improve the sound absorbent and thermal insulation properties of the panel (A), the air space (3) is filled with sound absorbent and/or thermal-insulation materials, such as for example rock wool.

Claims

1. A modular cardboard panel comprising a spaced side-by-side pair of cardboard sheets (1, 2), with vertical edges (1a, 2a) folded by 180° inwards, in such manner to form two thickened edges (B) acting as stiffening element for the panel (A);
   characterized in that
   said two thickened edges (B) are adapted to space the two cardboard sheets (1, 2) in such manner that the two cardboard sheets (1, 2) are separated by an air space (3) with width basically identical to the sum of the thicknesses of the two cardboard sheets (1, 2).

2. The modular panel of the preceding claim, comprising a rectangular frame (T) disposed in said air space (3) and formed of four wooden sticks, of which two vertical sticks (4) positioned against said thickened edges (B) of the two cardboard sheets (1 and 2), and two horizontal sticks (5) respectively running along the lower edge (B1) and the upper edge (B2) of the panel (A).

3. The modular panel of one of the preceding claims, wherein said air space (3) is filled with sound absorbent and/or thermal-insulation materials.

4. The modular panel of one of the preceding claims, wherein one of the two cardboard sheets (1 and 2) is slightly wider than the other one, in such manner that a step (6) is formed in the panel (A), in correspondence of only one of said thickened edges (B), said step (6) being adapted to be coupled with the step (6) of a second panel (A) in square direction to a first panel (A).

5. The modular panel of one of the preceding claims, comprising a section (P1 or P2) that covers one or more of said edges (B,B1,B2) of the cardboard panel (A) on both sides of the panel (A).

6. The modular panel of the preceding claim, comprising a section (P1) consisting in a box bar with U-shaped section, in the cavity of which the edges (B, B1 and B2) of the panel (A) are inserted.

7. The modular panel of claim 5, comprising a section (P2) consisting in a strip with T-shaped section overturned by 90° in such manner that the horizontal wing of the T-shaped section is disposed on a vertical plane and is engaged against the lower and upper edges of the panel (A) or of a wall (PA) made of multiple coplanar panels (A).

8. The modular panel of claim 2, wherein the two horizontal wooden sticks (5) have traditional adjustable feet (7), each of them being provided with a threaded stem (7a) screwed onto a threaded bush (8) recessed into a hole (9) provided in said horizontal wooden sticks (5).

9. The modular panel of claims 7 and 8, wherein said section (P2) is provided with elastic clamps of known type to get hold of the stem (7a) of the feet (7).

10. The modular panel of claim 5, wherein said sections (P1 and P2) are made of aluminum.

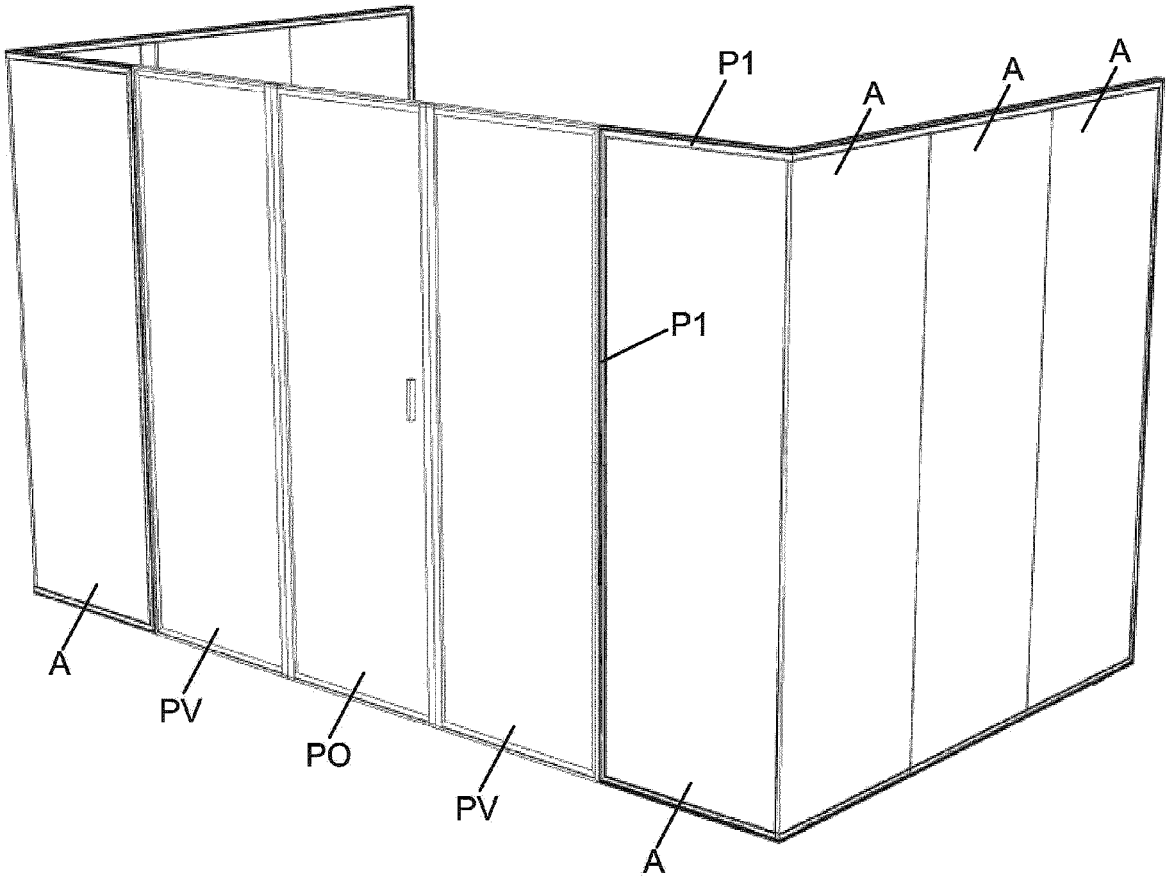


fig.1

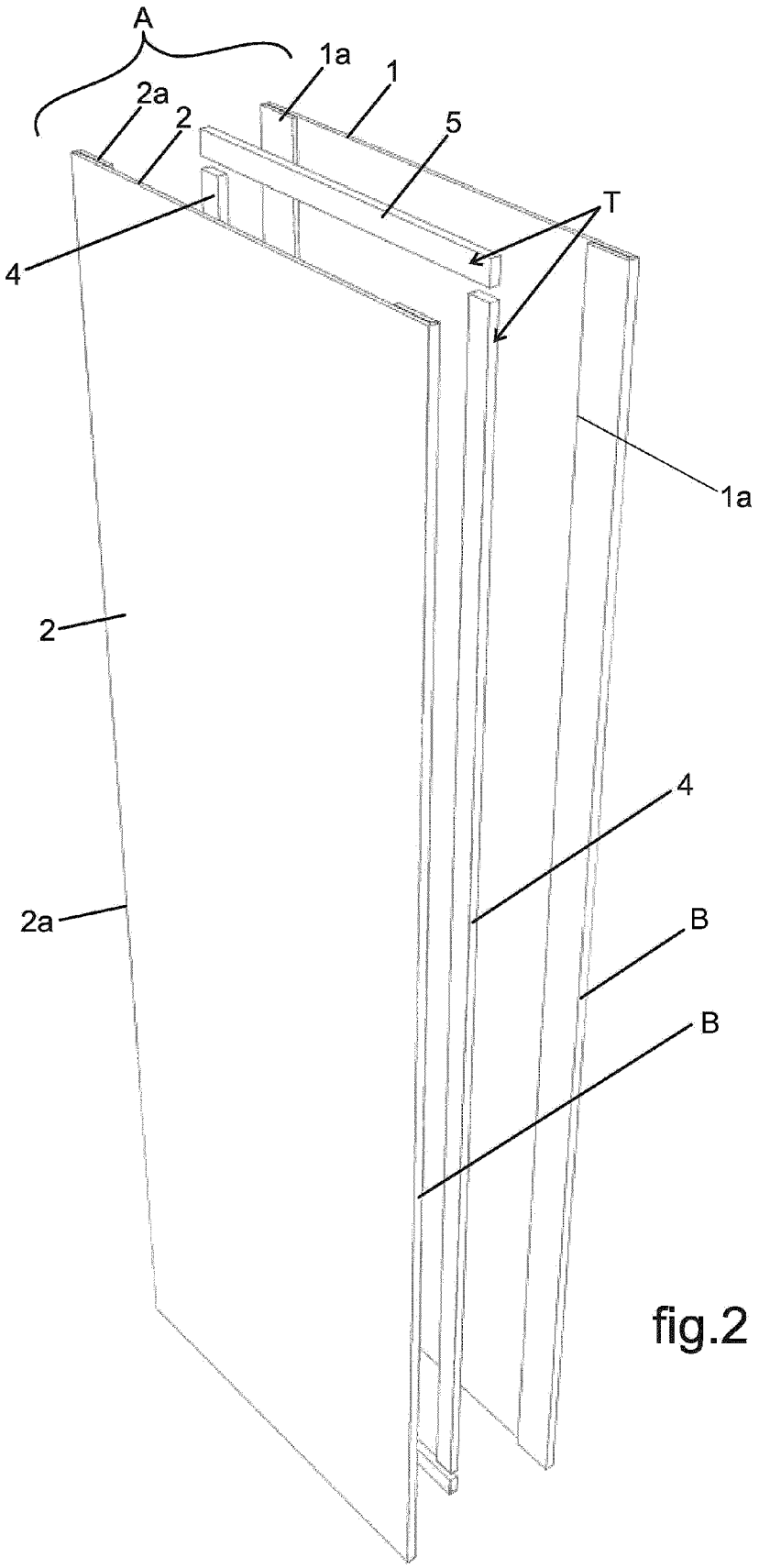


fig.2

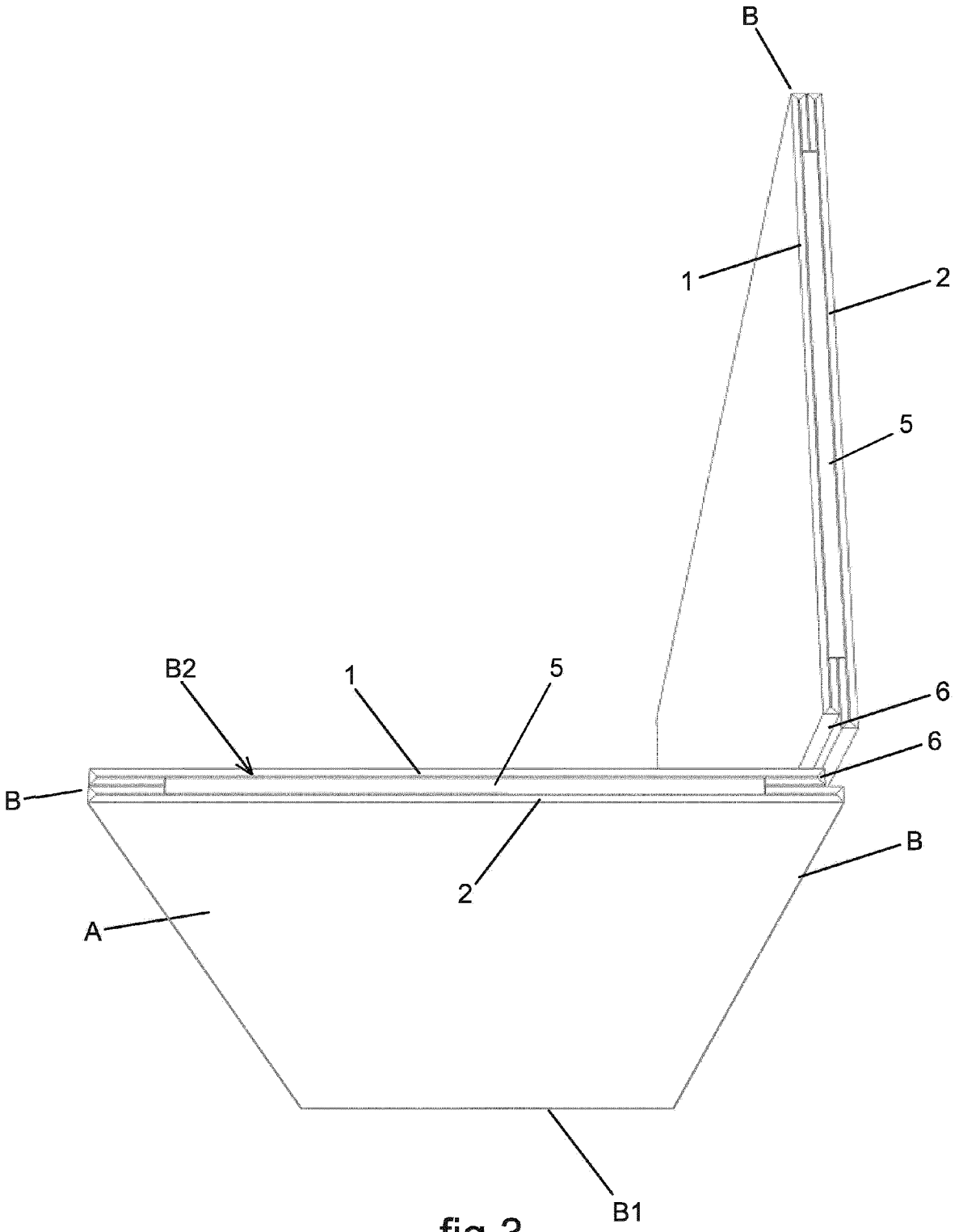


fig.3

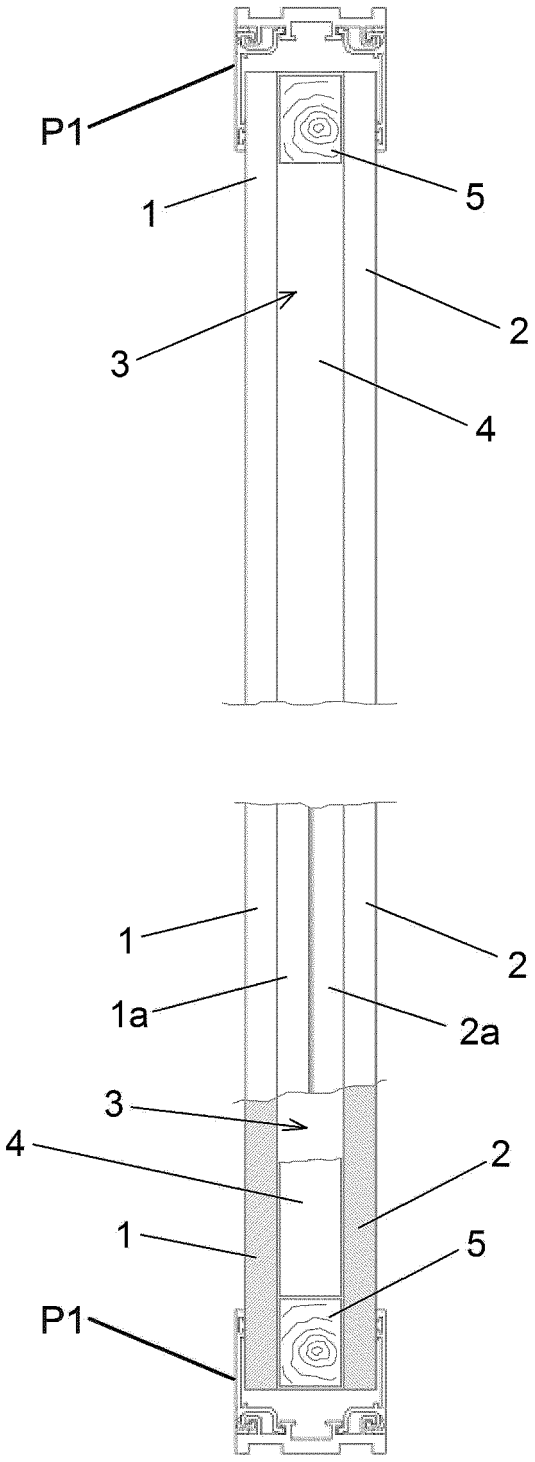


fig.4

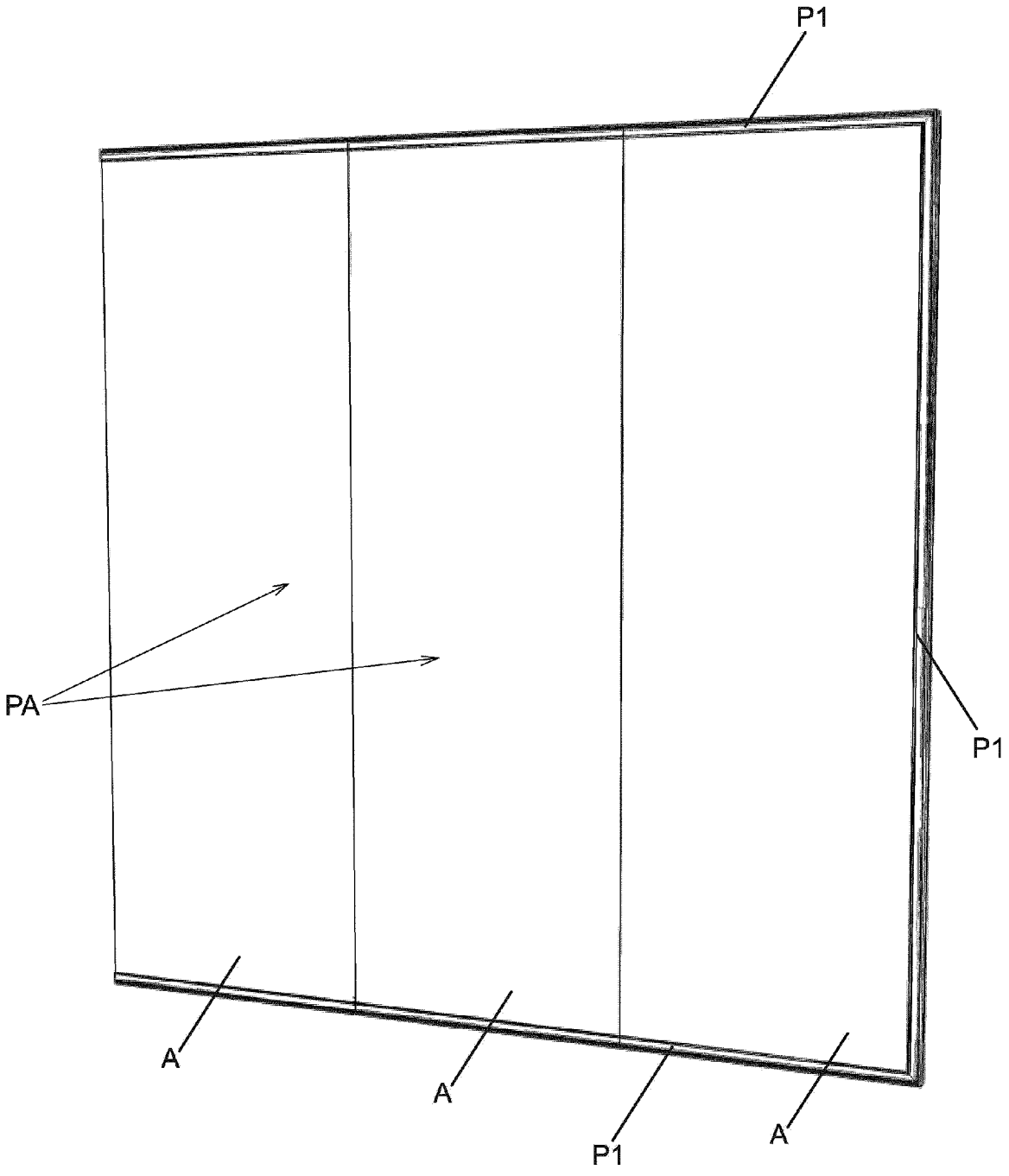


fig.5

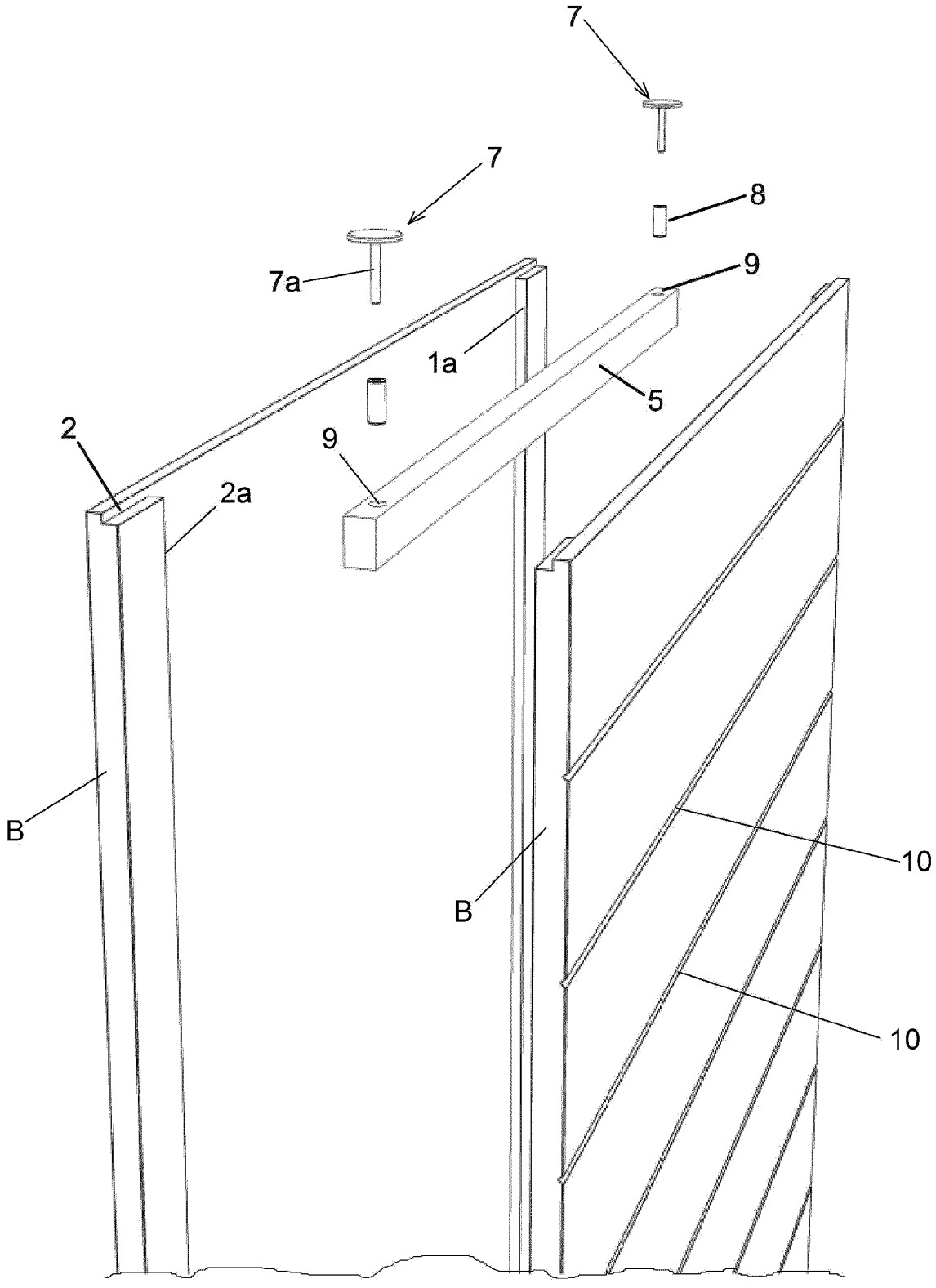


fig.6

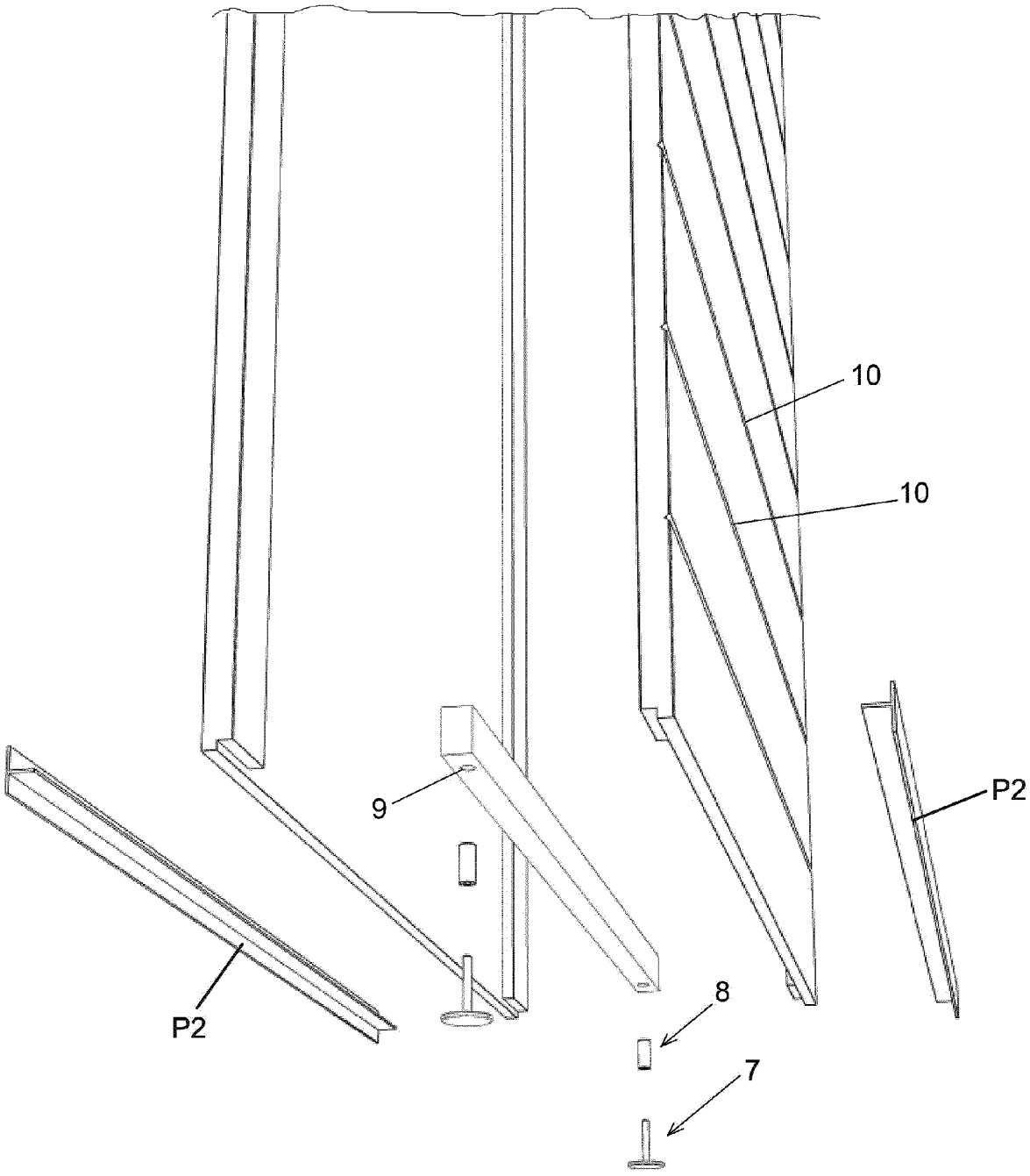


fig.7

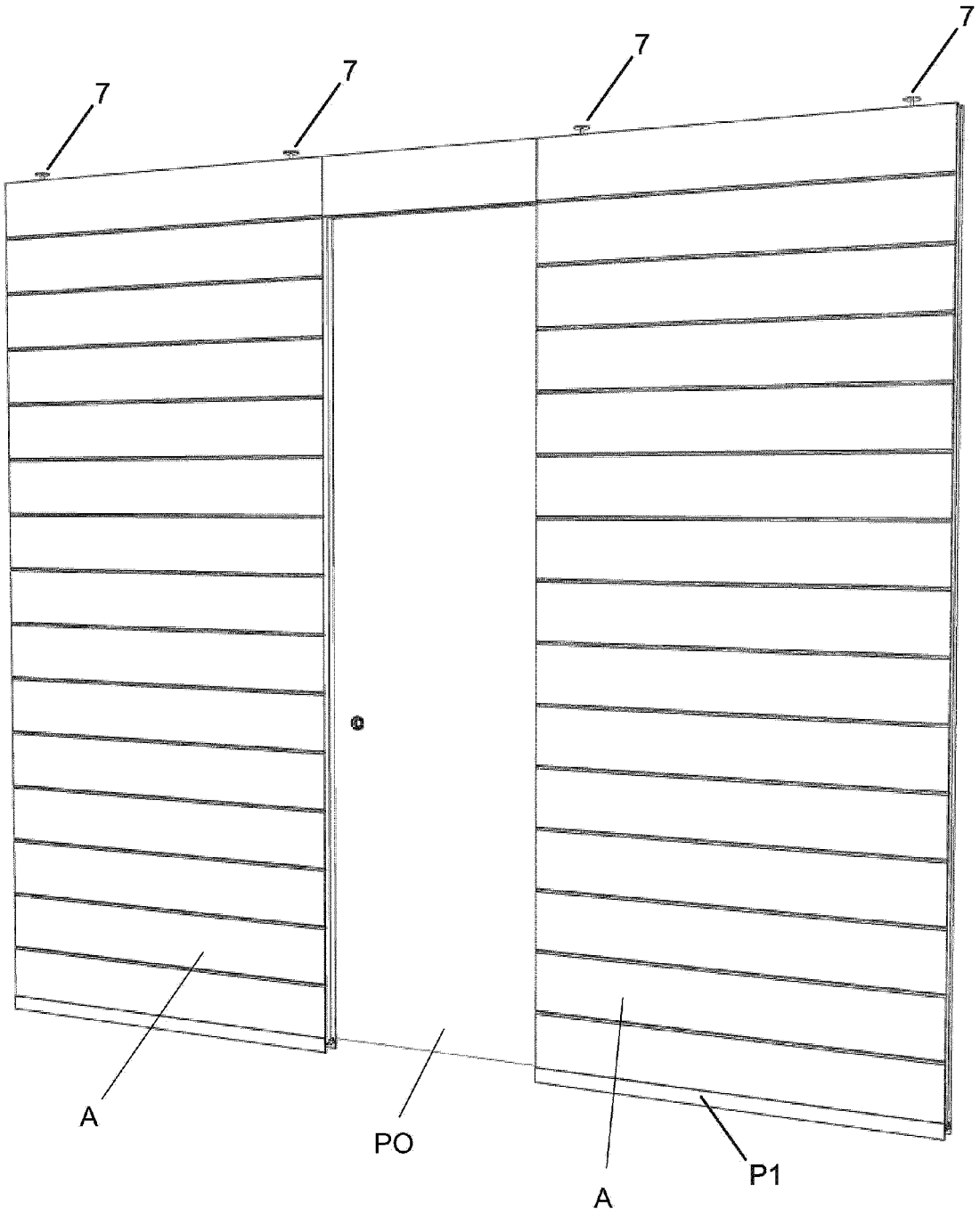


fig.8

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EUROPEAN SEARCH REPORT

Application Number
EP 14 17 9765

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	17 September 2014	Vratsanou, Violandi

CATEGORY OF CITED DOCUMENTS

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17-09-2014

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