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The references to the drawing(s) no. 4 + 5 are deemed to be deleted (Rule 56(4) EPC).

**(54) Wall panel for a system wall**

(57) The invention relates to a system wall comprising a wall panel (2,2') having an outer panel face (O) providing a wall surface of said system wall and an inner panel face (I), and a support profile (3) for positioning said wall panel, wherein said wall panel is provided with at least one coupling component for fixing said wall panel to said support profile, said coupling component com-

prises at least one flange (9) which is formed from a bend edge of said wall panel and which flange juts out from said wall panel toward said inner panel face and which flange has an abutment (10) on its inner face for snapping said flange with said abutment into a clamping part (21) of said support profile (3).

## Description

### Background

**[0001]** The present invention relates to a wall panel for a system wall, and to a system wall comprising the wall panel.

**[0002]** EP-921245 discloses a wall panel for a system wall, wherein the wall panel is provided on at least one of its side edges with at least one coupling element by means of which the wall panel can be coupled to a vertical profile of the system wall. The coupling element can be bent round from a transport position, in which the coupling element extends along the side edge and is overlapped by the side edge, to a coupling position in which the coupling element juts out from the wall panel. The coupling element has a lip joined to the wall panel along a fold line, which lip can be brought from the transport position into the coupling position by folding around said fold line. The fold line can have been provided with one or more attenuations, such as cut-outs. The lip has engaging projections. The lips are inserted into seating openings in the vertical support profile. The wall panels are subsequently coupled to the vertical support profile using a profile strip which is inserted between the lips of two subsequent wall panels.

**[0003]** Furthermore, wall panels provided with coupling components for system walls are also known in a variety of designs. In general, a wall panel is clamped between a floor section and a ceiling section by its edges which are horizontal in the assembled state. In order to counteract bulging and/or rattling of the wall panel clamped in this way, a wall panel of this type is fixed to vertical supporting sections by its edges which are vertical in the assembled state. In this context with the one type of wall use is made of coupling components provided on the wall panel and with the other type of wall use is made of separate coupling components which can be fixed/coupled in some way or other to the vertical supporting sections.

**[0004]** Coupling components of this type can in general jut out from the wall panel or can be used as separate coupling/clamping components. In the case of components fixed to the wall panel beforehand, this can lead to problems during transport of the wall panels. This leads to problems when transporting the wall panels since it makes it more difficult to stack the wall panels on top of one another or to set them down next to one another. The coupling components can be in the form of a coupling component to be fixed separately over the position where the system wall has to be erected. However, this entails assembly work where the panels are to be installed and also introduces the risk that the coupling components are not fixed in the correct position.

**[0005]** In known system walls, often a seam, a joint or an interspace is visible between subsequent wall panels.

### Summary of the Invention

**[0006]** The invention aims to improve a wall panel with which provides an aesthetic system wall.

**[0007]** Another object of the invention is to provide a wall panel which allows a system wall with a minimal joint between subsequent wall panels.

**[0008]** Yet another or alternative object of the invention is to provide a wall panel which can be easily mounted in a system wall.

**[0009]** According to a first aspect of the invention this is realized with a system wall comprising a wall panel having an outer panel face providing a wall surface of said system wall and an inner panel face, and a support profile for positioning said wall panel, wherein said wall panel is provided with at least one coupling component for fixing said wall panel to said support profile, said coupling component comprises at least one flange which is formed from a bend edge of said wall panel and which

20 flange juts out from said wall panel toward said inner panel face and which flange has an abutment on its inner face for snapping said flange with said abutment into a clamping part of said support profile.

**[0010]** The wall panel with flange provide a simple and cheap way for attaching the wall panels to the rest of the system wall. Furthermore, a joint between two wall panels can be minimized.

**[0011]** In an embodiment, the abutment comprises a groove in longitudinal direction of said flange on said inner panel surface side.

**[0012]** In an embodiment, at least two of said wall panels are mounted with their flanges against one another and with their abutments aligned, and wherein said clamping part clamps said flanges together. This provides a simple and sure attachment of the wall panels.

**[0013]** In an embodiment, said clamping part comprises clamping faces for engaging behind said abutments.

**[0014]** In an embodiment, said wall panel comprises two opposite edge sections bend in inner face direction

**[0015]** In an embodiment, the wall panel comprises a thermoplastic core. This can facilitate the insertion of the flanges in the clamping part of the vertical support profiles.

**[0016]** In an embodiment, at least the outer surface of the wall panel is provided with a laminated layer on said thermoplastic layer. In an embodiment, said laminated layer comprises an aluminium layer. This layer can be about 0.1-1 mm thick. For further aesthetic or functional purposes, it can be coated with a polymer coating layer.

**[0017]** These wall panels are relatively cheap to produce. Furthermore, due to the thermoplastic core, it is easy to produce the flanges. The outer layer provides the possibility to adapt the appearance easily.

**[0018]** In an embodiment, said flange is obtained by taking out a groove parallel to one side of said panel from the inner panel surface at a flange width distance from said side for defining a folding line, bending said flange along said folding line, and adhering said core material

at said groove, preferably by heating said thermoplastic core material at the location of said groove. The heating can take place before or during bending in order to facilitate bending and later adherence. The thermoplastic material can be heated to above its softening temperature. This makes bending easier. Said groove can be wedge-shaped. In another embodiment, the groove is substantially rectangular. It can have a depth of about halve the thickness of the thermoplastic layer and a width of about twice the thickness. Thus, when heating the thermoplastic material will allow easy bending to a 90 degrees angle without additional thermoplastic material bulging out at the inner face. When wedge shaped, its width and depth can be chosen such as to prevent material from bulging out.

**[0018]** The invention further pertains to a wall panel, in particular for a system wall described above, wherein said wall panel has an edge section folded along a fold line, providing a flange, and provided with an attenuation on said flange.

**[0019]** The invention further pertains to an apparatus comprising one or more of the characterising features described in the description and/or shown in the attached drawings. The invention further pertains to method comprising one or more of the characterising features described in the description and/or shown in the attached drawings.

**[0020]** The various aspects discussed in this patent can be combined in order to provide additional advantages.

### Description of the Drawings

**[0021]** The present invention will now be explained in more detail with reference to illustrative embodiments shown in the drawings. In the drawing is shown in:

- Figure 1 diagrammatically, a front view of a system wall;
- Figure 2 a cross sectional view of a part of a wall system with two adjacent wall panels snapped onto a vertical support profile;
- Figure 3 a cross sectional view of a vertical support profile;
- Figure 4 a detail of a ceiling profile in cross section;
- Figure 5 a detail of a floor profile in cross section.

### Detailed Description of Embodiments

**[0022]** Figure 1 shows a diagrammatic and front view of a system wall 1 with wall panels 2. The system wall 1 comprises in this embodiment a ceiling profile 4, a floor profile 5, a vertical support profile 3 and wall panels 2.

**[0023]** The wall panels 2 are fixed, suspended or clamped between the ceiling profile 4, which in turn is fixed to the ceiling. Furthermore, the wall panels 2 are fixed, suspended or clamped between the floor profile 3, which in turn is fixed to the floor. Finally, the wall panels

2 are snapped onto the vertical support profiles 3.

**[0024]** In general, the system wall 1 will be mirror-symmetrical with respect to a mirror surface parallel to and situated in said wall system. Usually, the system wall 1 forms a partition between two rooms, the partition between the rooms having its own wall panels 2 on each side. The wall panels 2 of the adjoining rooms are installed with a gap or interspacing between them and, as a result of this gap, the resulting cavity can be filled with insulating material, such as mineral wool. In order to prevent bulging of the wall panels 2 in any direction, the vertical support profiles 3 are placed in the cavities which are optionally filled with insulating material. In fact, the vertical support profiles 3 are connected to and between the ceiling profile 4 and the floor profile 5. With this arrangement, said vertical support profiles 3 are in particular positioned at the vertical side edges of the wall panels 2. In order to prevent the wall panels 2 from bulging outwards in the direction of the visible face, the wall panels 2 are usually secured/fixed to the vertical support profiles 3. This is, for example, also disclosed in NL 92.02034, and in EP 921 245. Flapping and/or rattling effects, which could occur, for example, when doors are slammed, can also be counteracted in this way.

**[0025]** Depicted in figure 2 is a cross sectional view of two adjacent wall panels 2 snapped into a clamping part of a vertical support profile 3 as indicated in figure 1. Usually, the system wall 1 is mirror-symmetrical about line m.

**[0026]** In this embodiment, two wall panels 2, 2' are adjacent mounted. Both wall panels 2, 2' have an inner panel face I and an outer panel face O. In this embodiment, the panels comprise a laminate comprising a core layer 8, an outer layer 6 and an inner layer 7. The core layer can be a thermoplastic layer, for instance polyethylene (PE), polypropylene (PP) or polyester like PET. In an embodiment, the outer layer 6 and the inner layer 7 are aluminium, in an embodiment coated using a paint or other well known material which provides a thin polymer layer. The aluminium layer will usually be about 0.1-2 mm thick. The core material will be between about 1-10 mm thick. A very suited material for the wall panels can be obtained under the trade name ALCOM®.

**[0027]** In this embodiment, the wall panels 2, 2' have an edge section (or rim or border) which is bent in the inner face direction in order to provide flanges 9. These flanges 9 thus jut out from said wall panels. In order to provide an abutment for the clamping part of the vertical support panel, the inner face of the flanges has been provided with a groove 10. Here, this groove 10 runs parallel to the edge of the wall panel 2. Alternatively, the edge of the flange 9 may be bent or folded once more in order to provide an abutment. Groove 10 is rectangular, thus providing an abutment in the normal direction of the wall panel. In order to provide a clamping of the wall panels in such a way that flapping or rattling of the panels is minimized, the flanges run along almost the entire edge of the wall panels 2. In yet a further embodiment, the clamping part of the vertical support profile 3 also extends

along at least almost the entire length of the vertical support profile 3. In order to facilitate insertion of the flanges 9 in the clamping part of vertical support profile 3, the ends of the flanges 9 have a shaped end face 13 to further facilitate insertion in the clamping part 21 (figure 3). The end face 13 can be bevelled or slanted. It may also be possible to round off that end.

**[0028]** In this embodiment, the wall system is provided with plasterboard panels 11 against the inner face 1 of the wall panels 2. In an embodiment, these plasterboard panels can be glued onto the wall panels 2. Thus, panels 2 and plasterboard panels 11 in this embodiment in fact form the wall panels. In this way, a better sound absorption can be provided. Furthermore, in this embodiment additional plasterboard panels 11a are provided between holding arrangements 16, 17 on the vertical support profile 3. Thus, an even better sound insulation can be achieved. Finally, an insulating panel, for instance rock wool, is placed between holding arrangements 17 of the vertical support profile 3.

**[0029]** In figure 3, an embodiment of vertical support profile 3 is depicted in cross sectional view. As such, the support profile as such is known from EP-921 245. In this embodiment, the support profile 3 is made from two elongated profiled steel or iron plates which are attached to one another. These parts may be welded or glued to one another. In another embodiment, these parts may be provided with cooperating snap parts for snapping the parts together. The two parts can also be fixed together using a technique called "krallen" in German: two layers of material are stacked, a lip is punched out of the two layers and folded back to hold the two layers together.

**[0030]** The support profiles 3 have clamping parts 21. In an embodiment, the cooperating parts of the clamping parts 21 are flexible, resilient, in order to be able to clamp the flanges 9 of the wall panels 2. The clamping parts 21 have a passage 18 for allowing the abutment of the flanges 9 to enter into the clamping part 21. Clamping part 21 further has cooperating clamping faces 15. These can be designed to work together with groove 10 to provide better abutment. In an embodiment, the groove 10 has a rectangular bottom corresponding to the shape of the clamping faces 15. Clamping part 21 furthermore has a receiving space 14 for receiving the abutment of flanges 9. This width is here at least twice the thickness or the flange 9. The two flanges 9 of adjacent wall panels 2 with their grooves 10 aligned form a neck, which is clamped by the clamping faces 15 of clamping part 21. In particular, the wall panels comprising a thermoplastic core in combination with the flexible, springy clamping parts 21 allow a fast and sure attachment of the wall panels.

**[0031]** In operation, the floor profiles and ceiling profiles are arranged in the known way. Next, the vertical support profiles are arranged between the floor and ceiling profiles. Then, if needed the insulation panels and additional plasterboard panels are installed. Finally, the wall panels 2 are installed. First, one wall panel with flanges 9 at opposite ends is arranged with its flanges in the

clamping part 21. Next, a second wall panel 2' is installed. One flange 9 of this wall panel 2' is arranged next to the flange 9 of the first wall panel 2 in the way shown in figure 2. The relative thicker part before groove 10 is pushed past clamping faces 15. Next, the other flange 9 is inserted in the clamping part 21 of a next vertical supporting profile 2. Further wall panels are added next to one another.

**[0032]** It will also be clear that the above description and drawings are included to illustrate some embodiments of the invention, and not to limit the scope of protection. Starting from this disclosure, many more embodiments will be evident to a skilled person which are within the scope of protection and the essence of this invention and which are obvious combinations of prior art techniques and the disclosure of this patent.

## Claims

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1. A system wall comprising a wall panel having an outer panel face providing a wall surface of said system wall and an inner panel face, and a support profile for positioning said wall panel, wherein said wall panel is provided with at least one coupling component for fixing said wall panel to said support profile, said coupling component comprises at least one flange which is formed from a bend edge of said wall panel and which flange juts out from said wall panel toward said inner panel face and which flange has an abutment on its inner face for snapping said flange with said abutment into a clamping part of said support profile.

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2. The system wall of claim 1, wherein the abutment comprises a groove in longitudinal direction of said flange on said inner panel surface side.

3. The system wall according to claim 1 or 2, wherein at least two of said wall panels are mounted with their flanges against one another and with their abutments aligned, and wherein said clamping part clamps said flanges together.

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4. The system wall according to claim 3, wherein said clamping part comprises clamping faces for engaging behind said abutments.

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5. The system wall according to any one of the preceding claims, wherein said wall panel comprises two opposite edge sections bent in inner face direction

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6. The system wall according to any one of the preceding claims, wherein the wall panel comprises a thermoplastic core.

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7. The system wall according to claim 6, wherein at least the outer surface of the wall panel is provided

with a laminated layer on said thermoplastic layer,  
said laminated layer preferably comprising an alu-  
minium layer, about 0.1-1 mm thick, preferably coat-  
ed with a polymer coating layer.

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8. The system wall according to any one of the preceding claims, wherein said flange is obtained by taking out a groove parallel to one side of said panel from the inner panel surface at a flange width distance from said side for defining a folding line, bending said flange along said folding line, and adhering said core material at said groove, preferably by heating said thermoplastic core material before or during bending at the location of said groove. 10
9. A wall panel for a system wall according to any one of the preceding claims, wherein said wall panel has an edge section folded along a fold line, providing a flange, and provided with an attenuation on said flange. 15 20

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Fig 1

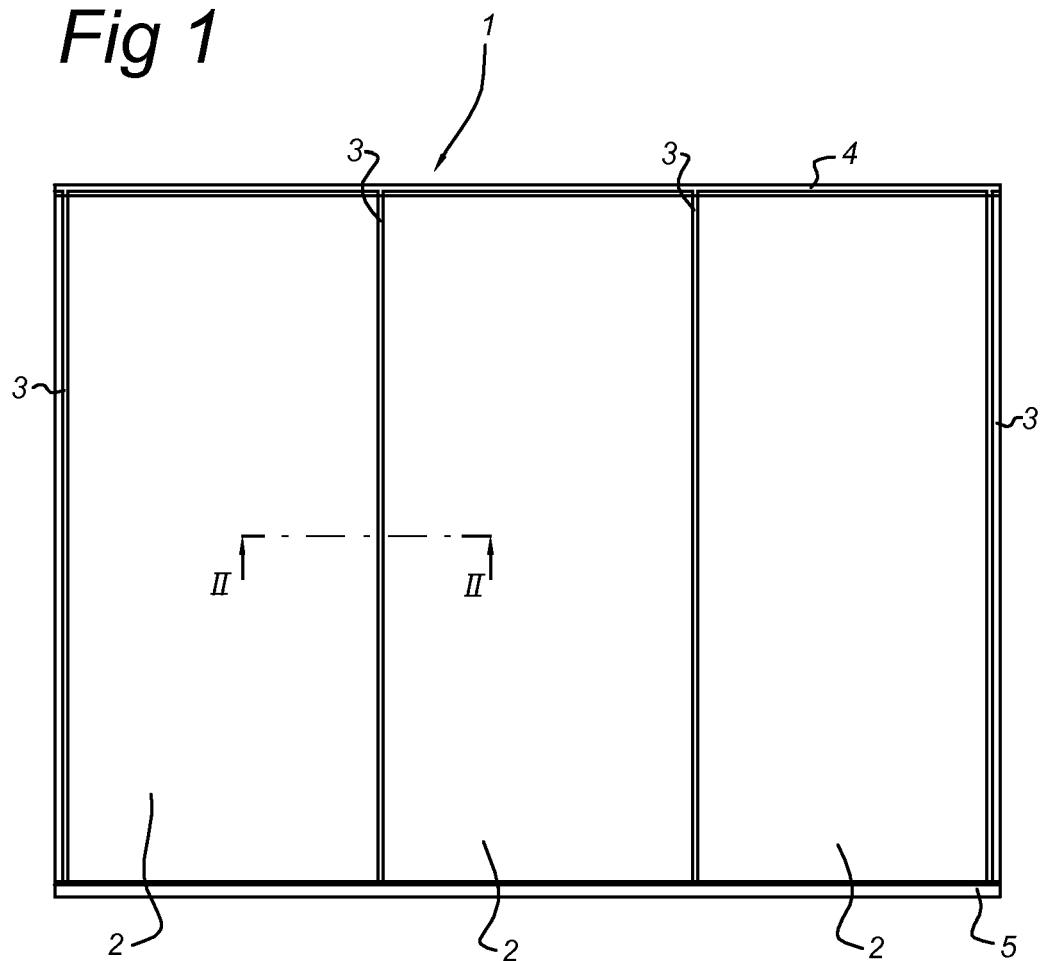
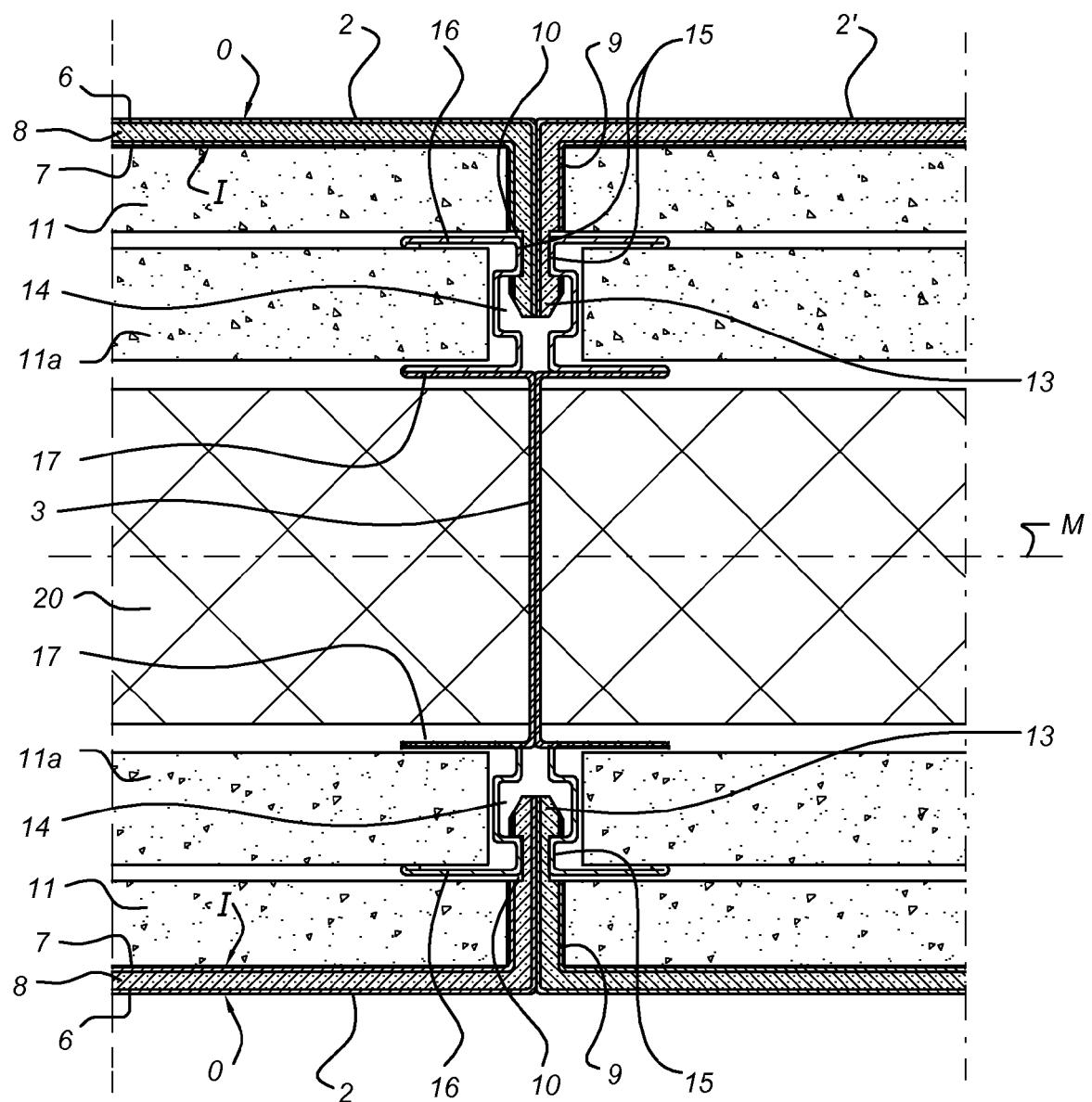
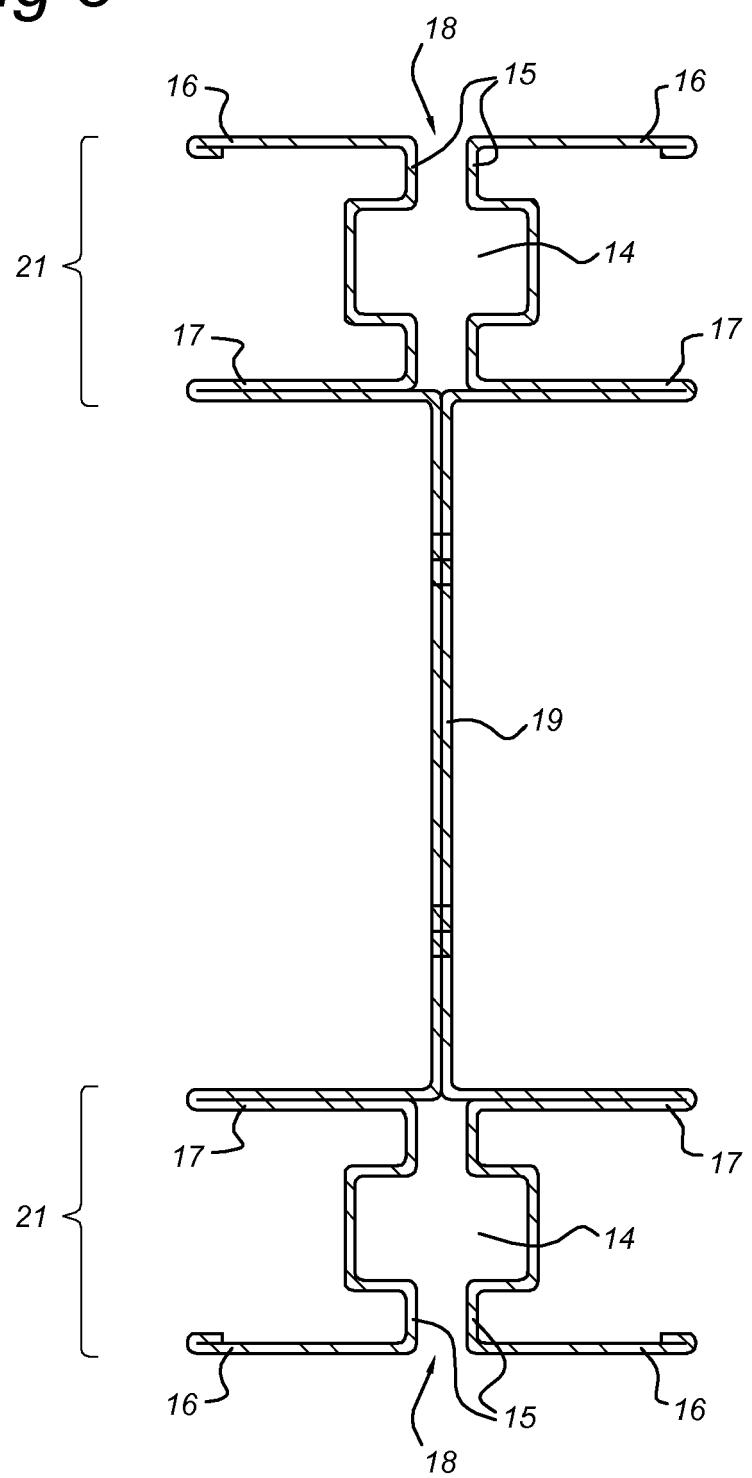


Fig 2



*Fig 3*





## EUROPEAN SEARCH REPORT

Application Number  
EP 08 16 7078

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
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A	US 5 111 579 A (ANDERSEN CARL W [US]) 12 May 1992 (1992-05-12) * column 4, line 65 - column 5, line 3; figure 11 * -----	6-7	
A	DE 40 35 159 A1 (BLOHM VOSS AG [DE]) 7 May 1992 (1992-05-07) * figure 5 * -----	8	TECHNICAL FIELDS SEARCHED (IPC) E04B
The present search report has been drawn up for all claims			
1	Place of search Munich	Date of completion of the search 13 July 2009	Examiner Rosborough, John
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			

ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 08 16 7078

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