



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.02.2023 Bulletin 2023/05

(21) Application number: **21188944.9**

(22) Date of filing: **30.07.2021**

(51) International Patent Classification (IPC):
E06B 1/70 (2006.01) **E06B 5/16** (2006.01)
E06B 9/17 (2006.01) **E06B 1/32** (2006.01)
E06B 1/02 (2006.01) **E06B 1/36** (2006.01)
E06B 1/60 (2006.01)

(52) Cooperative Patent Classification (CPC):
E06B 1/702; E06B 1/02; E06B 1/32; E06B 1/36;
E06B 1/6015; E06B 5/16; E06B 9/17007;
E06B 2001/707

(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
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **Alpac S.r.l.**
36015 Schio (VI) (IT)

(72) Inventor: **DALLA VIA, Luciano**
36015 Schio (VI) (IT)

(74) Representative: **Eccetto, Mauro et al**
Studio Torta S.p.A.
Via Viotti, 9
10121 Torino (IT)

(54) **FRAME STRUCTURE FOR FINISHING AND EQUIPPING AN OPENING OF AN OUTER WALL OF A BUILDING AND METHOD OF INSTALLATION OF SAID FRAME STRUCTURE**

(57) A frame structure for finishing and equipping an opening of an outer wall of a building has a base transverse element (9), which comprises a mat (10) made of a thermally insulating material, a reinforcement panel (11) integral with the mat (10), and a pair of guides (12, 13), each of which is arranged at a respective end of the base transverse element (9); and a pair of lateral elongated elements (14, 15), each of which comprises a mat (16) made of a thermally insulating material and a reinforcement panel (17) integral with the mat (16), and is configured to couple with a respective guide (12, 13) so as to be mounted on the base transverse element (9).

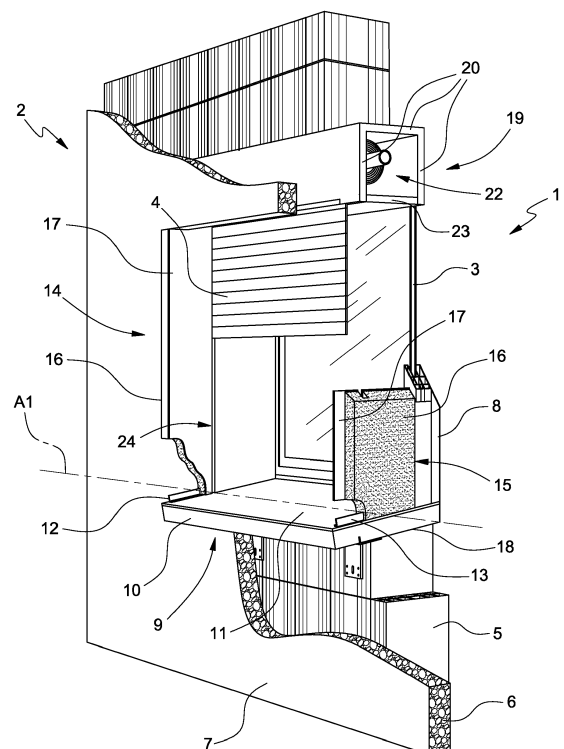


FIG. 1

Description

[0001] The present invention relates to a frame structure for finishing and equipping an opening of an outer wall of a building.

[0002] Furthermore, the present invention relates to a method of installation of said frame structure.

[0003] In particular, the present invention relates to a frame structure, which is inserted within the opening of an outer wall and fixed to the outer wall with the purpose of accommodating and supporting a respective fixture be it a window, a French door or a door. The frame structure defines a made-to-measure accommodation for the respective fixture, bounds the compartment with suitably finished surfaces, thermally and acoustically insulates the fixture from the outer wall and prevents thermal bridges from being created along the outer wall around the fixtures.

[0004] In building renovations of occupied buildings, the need is known to be able to work on the outer façade without accessing the internal spaces of the building, so as to not cause inconveniences to the occupants of the building.

[0005] With the purpose to satisfy such need, scaffolds or lifting platforms are placed at the outer façade of the building to be renovated.

[0006] However, due to the thickness of the outer wall of the building and/or to the bulks of the frame structure, generally the installation of the frame structure within an opening of the outer wall is impracticable with the traditional scaffolds, which are placeable within a maximum distance from the façade of the building to be restored, because of safety reasons.

[0007] Currently, the installation of the frame structure from the outside of the building is carried out only by means of the use of lifting platforms, which however are able to operate up to a maximum given height.

[0008] An object of the present invention is to realise a frame structure of the type identified above which overcomes the drawbacks of the prior art.

[0009] In accordance with the present invention, a frame structure for finishing and equipping an opening of an outer wall of a building is realised, the frame structure comprising:

- a base transverse element, which comprises a mat made of a thermally insulating material, a reinforcement panel integral with the mat, and a pair of guides, each of which is arranged at a respective end of the base transverse element;
- a pair of lateral elongated elements, each of which comprises a mat made of a thermally insulating material and a reinforcement panel integral with the mat, and is configured to couple with a respective guide so as to be mounted on the base transverse element.

[0010] Thanks to the present invention, it is possible to instal in a simple and quick manner the frame structure

within an opening of an outer wall of a building, assembling the frame structure directly in situ, during the step of installation within the opening of the outer wall.

[0011] In this manner, it is possible to reduce the bulks of the frame structure and use scaffolds of traditional type for the installation of said frame structure.

[0012] More specifically, it is possible to mount each lateral elongated element on the base transverse element after the base transverse element has been installed within the opening of the outer wall, so as to prevent the management and the transport of a pre-assembled frame structure.

[0013] The reinforcement panel, which adheres, for example via gluing, to a main face of the mat has the function of defining the outer finishing surface of the compartment of the opening and, in combination with the mat, making the base transverse element and each lateral elongated element self-supporting. The reinforcement panel is generally thin and made of high-density material such as fibre cement and, thus, subject to bend if subjected to a bending moment, whereas the mat is much thicker than the reinforcement panel but has a lower density and thus, it is more deformable. The joining of the mat having high thickness with the reinforcement panel having reduced thickness takes care of the mutual structural weaknesses of the mat and of the reinforcement panel and makes the base transverse element and each lateral elongated element sufficiently self-supporting.

[0014] In particular, each lateral elongated element is configured to be at least partially inserted within the opening of the outer wall of the building, preferably by means of a sliding along the respective guide.

[0015] In this manner, it is possible to slidably insert each lateral elongated element on the base transverse element in a simple and precise manner.

[0016] In particular, the base transverse element extends along a base axis; each guide extending in a direction substantially perpendicular to the base axis.

[0017] In this manner, it is possible to insert each lateral elongated element flush with a lateral edge of the opening of the outer wall.

[0018] In particular, each guide is a profile preferably made of a metallic material or a polymeric material or wood concrete.

[0019] In this manner, the production costs of the guides are limited.

[0020] In particular, each guide comprises a first coupling portion, which is shaped to couple with the respective lateral elongated element; a second coupling portion, which is configured to couple with the base transverse element; and a backing portion, which connects the first and the second coupling portions and is configured to rest on the reinforcement panel of the base transverse element.

[0021] Thanks to the guide, it is possible to slidably couple each lateral elongated element with the base transverse element in a simple manner.

[0022] More specifically, the backing portion is sub-

stantially perpendicular to the first coupling portion and to the second coupling portion, so as to prevent water infiltrations in the outer wall.

[0023] In particular, the mat of each lateral elongated element is provided with a respective first seat shaped to house the first coupling portion and preferably to allow a sliding of the lateral elongated element along the respective guide; in particular, each first seat being notched in the mat of the respective lateral elongated element.

[0024] In this manner, it is possible to form the first seat in a simple and cost-effective manner.

[0025] In particular, the base transverse element is provided with a pair of second seats, each of which is recessed in the reinforcement panel and in the mat and is shaped to house the second coupling portion of a respective guide.

[0026] In accordance with a further embodiment, each guide is arranged flush with a lateral edge of the base transverse element and is preferably in the form of a straight parallelepiped.

[0027] In this manner, it is possible to couple each guide with the respective lateral elongated element in a simple and quick manner.

[0028] In accordance with a further embodiment, each guide comprises a first wall, which, in use, is arranged in contact with a lateral edge of the base transverse element and with a lateral portion of the respective lateral elongated element; and a second wall, which is substantially perpendicular to the first wall, is configured to rest on the reinforcement panel of the base transverse element, and is configured to be arranged in contact with a lower portion of the respective lateral elongated element.

[0029] Practically, the first and the second walls bound an angular accommodation configured to accommodate an edge of the respective lateral elongated element.

[0030] In particular, each lateral elongated element extends along a direction substantially perpendicular to the base axis once said lateral elongated element is mounted on the base transverse element.

[0031] In this manner, the lateral elongated elements constitute the shoulders of the frame structure.

[0032] In particular, the frame structure comprises an upper transverse element, which is supported by the lateral elongated elements in correspondence of their upper ends.

[0033] In this manner, the frame structure comprises an upper crossbeam and defines a frame completely thermally insulated from the outer wall.

[0034] In particular, the upper transverse element comprises a plurality of upper walls, which bound a tunnel configured to accommodate an outer fixture.

[0035] In accordance with a further embodiment, the upper transverse element comprises a single upper wall so as to close at the top the frame structure in case it is not necessary to accommodate the outer fixture.

[0036] More specifically, at least one upper wall comprises a respective mat made of a thermally insulating material, and/or a respective reinforcement panel.

[0037] In this manner, also the upper transverse element is thermally insulated.

[0038] In particular, the frame structure comprises at least one support bracket, which is configured to be fixed to the outer wall of the building and to support the base transverse element.

[0039] In this manner, it is possible to suitably support the base transverse element also when the base transverse element has a width such to protrude towards the outside of the outer wall.

[0040] In particular, each mat is made of an incombustible material, such as mineral wool or fibreglass.

[0041] In this manner, it is possible to satisfy the most restrictive fire prevention regulations. Mineral wool and fibreglass allow classifying the frame structure in high classes of reaction to fire, in particular in classes A1, A2 and B of the European classification EN 13501-1.

[0042] In particular, each reinforcement panel is made of a material selected from fibre cement, magnesium oxide, calcium hydrosilicate, marble, metal sheet, resin, and ceramic.

[0043] The aforementioned materials are incombustible and, besides ensuring a high level of surface finishing, they contribute to giving the frame structure an excellent class of reaction to fire according to the European classification EN 13501-1.

[0044] A further object of the present invention is to provide a method of installation of a frame structure that is devoid of the drawbacks of the prior art.

[0045] In accordance with the present invention, a method of installation of a frame structure for finishing and equipping an opening of an outer wall of a building is provided, the method comprising the steps of:

- fixing at least one support bracket to an outer wall of the building under an opening of said outer wall;
- laying a base transverse element on a lower edge of the opening of the outer wall so that it is supported by the at least one support bracket, wherein the base transverse element comprises a mat made of a thermally insulating material and a reinforcement panel integral with the mat; and
- inserting at least one lateral elongated element into a respective guide of the base transverse element arranged at one end of the base transverse element, wherein the at least one lateral elongated element comprises a mat made of a thermally insulating material and a reinforcement panel integral with the mat.

[0046] Thanks to the present method, it is possible to assemble the various components of the frame structure directly during the installation of the frame structure within an opening of an outer wall of a building, ensuring simultaneously the quickness and a suitable quality of the installation operations.

[0047] More specifically, in the steps of installation it is possible to prevent the bulks of the pre-assembled frame structure, mounting each lateral elongated ele-

ment on the base transverse element after the base transverse element has been laid within the opening of the outer wall.

[0048] Further characteristics and advantages of the present invention will be apparent from the following description of non-limiting example embodiments thereof, with reference to the accompanying figures, wherein:

- Figure 1 is a perspective view, with parts removed for clarity and parts in section, of a frame structure realised in accordance with the present invention and installed within an opening of an outer wall of a building;
- Figures 2, 3 and 4 are views in section and on an enlarged scale of a detail of the frame structure of Figure 1 in accordance with respective embodiments of the present invention; and
- Figures 5, 6, 7 and 8 are perspective views, with parts removed for clarity, of the frame structure of Figure 1 in respective steps of installation.

[0049] With reference to Figure 1, reference numeral 1 indicates, as a whole, a frame structure arranged within an opening of an outer wall 2 of a building. In general, the frame structure 1 has the functions of supporting an inner fixture 3 and an outer or blackout fixture 4, of insulating the fixtures 3 and 4 from the outer wall 2, and of finishing the free surfaces of the outer wall 2.

[0050] In the illustrated case, the outer fixture 4 is defined by a rolling shutter and the frame structure 1 additionally has the functions of guiding the rolling shutter in the opening and closing strokes and of accommodating the outer fixture 4.

[0051] In embodiments not illustrated in the accompanying figures, the inner and outer fixtures are of different type and the frame structure has a configuration designed to support said fixtures without thereby departing from the scope of protection of the present invention. In some cases, the outer fixture 4 is absent.

[0052] In the non-limiting case described and illustrated herein of the present invention, the outer wall 2 comprises a self-supporting wall or panel wall 5; an outer insulating coating 6; an outer finishing layer 7; and an inner finishing layer 8. The stratigraphy of the outer wall 2 illustrated in Figure 1 has a merely exemplifying purpose and, in practice, can assume configurations different from the one illustrated.

[0053] The frame structure 1 comprises a base transverse element 9, which comprises a mat 10 made of a thermally insulating material, a reinforcement panel 11 integral with the mat 10, and a pair of guides 12 and 13, each of which is arranged at a respective end of the base transverse element 9; and a pair of lateral elongated elements 14 and 15, each of which comprises a mat 16 made of a thermally insulating material and a reinforcement panel 17 integral with the mat 16, and is configured to couple with a respective guide 12, 13 so as to be mounted on the base transverse element 9.

[0054] The base transverse element 9 extends along a base axis A1 and is configured to rest on a lower edge 18 of the opening of the outer wall 2. In particular, the mat 10 is configured to be arranged in contact with the lower edge 18.

[0055] Each guide 12, 13 extends in a direction substantially perpendicular to the base axis A1.

[0056] In particular, each guide 12, 13 is a profile preferably made of a metallic material, such as aluminium, or a polymeric material, such as PVC, or wood concrete.

[0057] In the non-limiting case described and illustrated herein of the present invention, each guide 12, 13 is integral with the base transverse element 9. In such configuration, each lateral elongated element 14, 15 is configured to slide along the respective guide 12, 13 so as to be at least partially inserted within the opening of the outer wall 2.

[0058] In accordance with a further embodiment not shown in the accompanying figures, each guide 12, 13 is integral with the respective lateral elongated element 14, 15. In such configuration, each guide 12, 13 is configured to slide together with the respective lateral elongated element 14, 15 along a respective seat recessed in the base transverse element 9 so as to at least partially insert the respective lateral elongated element 14, 15 within the opening of the outer wall 2.

[0059] Furthermore, the frame structure 1 comprises an upper transverse element 19, which rests on the lateral elongated elements 14 and 15 in correspondence of their upper ends and is fixed to the lateral elongated elements 14 and 15.

[0060] In particular, the upper element 19 comprises three upper walls 20, which bound a tunnel 22 configured to accommodate the outer fixture 4.

[0061] In accordance with an embodiment not shown in the accompanying figures, each upper wall 20 comprises a respective mat made of a thermally insulating material, and a respective reinforcement panel integral with the respective mat.

[0062] Furthermore, the upper transverse element 19 comprises a further panel 23, which has the function of closing at the bottom and in part the tunnel 22 leaving a slit for the passing of the outer fixture 4.

[0063] In accordance with a variant not illustrated in the accompanying figures, the upper transverse element 19 comprises a single upper wall 20, which is provided with a respective mat and of a respective reinforcement panel. This simplified solution is adopted when it is not necessary to accommodate the outer fixture 4.

[0064] The frame structure 1 is fixed to the outer wall 2 by means of fixing elements, such as cramps not illustrated in the accompanying figures.

[0065] In particular, the fixing elements can be cemented in the outer wall 2 or can be fixed to the outer wall 2 by means of plugs and coated with the insulating coating 6.

[0066] Each lateral elongated element 14, 15 extends along a direction substantially perpendicular to the base

axis A1 once said lateral elongated element 14, 15 is mounted on the base transverse element 9.

[0067] In other words, each lateral elongated element 14, 15 identifies an angle of about 90° with the base transverse element 9.

[0068] More specifically, the lateral elongated elements 14 and 15, are arranged on the sides of the opening of the outer wall 2 and are parallel to and facing each other.

[0069] Furthermore, each of the lateral elongated elements 14 and 15 has a notch 24, which extends in the respective mat 16 and in the respective reinforcement panel 17 so as to form a U-shaped guide for guiding the outer fixture 4.

[0070] The base transverse element 9 faces and is parallel to the upper transverse element 19 and directly supports the lateral elongated elements 14 and 15.

[0071] Each mat 10, 16, 20 has the form of a parallelepiped and has insulating properties with regard both to the acoustic transmission and the heat transmission and is preferably made of incombustible material. In particular, each mat 10, 16, 20 is made of an insulating and incombustible material selected from fibreglass and mineral wool. The definition "incombustible" refers to the European classification EN 13501-1.

[0072] Each mat 10, 16, 20 is glued along a wide main face of the same to the respective reinforcement panel 11, 17, 21 so as to allow prefabricating the frame structure 1 prior to the installation of the frame structure 1 within the opening of the outer wall 2. In accordance with the tests performed, a satisfying gluing was obtained with a moisture curing polyurethane glue.

[0073] In the case shown in Figure 1, the reinforcement panels 11, 17, 21 are arranged flush with the respective mats 10, 16, 20, it being understood that, in accordance with variants not illustrated, the reinforcement panels 11, 17, 21 can protrude with respect to the respective mats 10, 16, 20.

[0074] Each reinforcement panel 11, 17, 21 has a lesser thickness than the respective mat 10, 16, 20 and is made of a material selected from fiber cement, magnesium oxide, calcium hydrosilicate, metal sheet, marble, and ceramic.

[0075] With reference to Figure 2, each guide 12, 13 comprises a coupling portion 25, which is shaped to couple with the respective lateral elongated element 14, 15; a coupling portion 26, which is configured to couple with the base transverse element 9; and a backing portion 27, which connects the coupling portions 25 and 26 and is configured to rest on the reinforcement panel 11 of the base transverse element 9.

[0076] In particular, the coupling portions 25 and 26 are defined by respective walls 28 and 29, which are parallel to each other. The backing portion 27 is defined by a wall 30, which is substantially perpendicular with respect to the walls 28 and 29. In other words, each guide 12, 13 is Z-shaped.

[0077] The mat 16 of each lateral elongated element

14, 15 is provided with a respective seat 31 shaped to house the coupling portion 25 and allow a sliding of the lateral elongated element 14, 15 along the respective guide 12, 13. In particular, each seat 31 is notched in the mat 10, so as to allow the sliding of the wall 28 therein.

[0078] The base transverse element 9 is provided with a pair of seats 32, each of which is recessed in the reinforcement panel 11 and in the mat 10 and is shaped to house a respective coupling portion 26. In particular, each seat 32 is notched in the reinforcement panel 11 and in the mat 10.

[0079] With reference to Figure 3, a further embodiment of the present invention is shown, wherein the guide 33 is T-shaped.

[0080] In particular, the guide 33 comprises a wall 34, which, in use, is arranged in contact with a lateral edge of the base transverse element 9 and with a lateral portion of the lateral elongated element 14; and a wall 35, which is substantially perpendicular to the wall 34, is configured to rest on the reinforcement panel 11 of the base transverse element 9, and is configured to be in contact with a lower portion of the lateral elongated element 14.

[0081] Practically, the wall 34 and the wall 35 bound an angular housing configured to house an edge of the lateral elongated element 14.

[0082] With reference to Figure 4, a further embodiment of the present invention is shown, wherein the guide 36 is in the form of a straight parallelepiped.

[0083] In particular, in use, the guide 36 is arranged flush with a lateral edge of the base transverse element 9.

[0084] More specifically, the guide 36 is made of wood concrete.

[0085] In the case shown in Figures 2, 3 and 4, each lateral elongated element 14, 15 is coupled with the base transverse element 9 so as to form an interspace for the housing of a cladding panel, not shown in the accompanying figures, between a lower portion of each lateral elongated element 14, 15 and the reinforcement panel 11.

[0086] In use and with reference to Figure 5, two support brackets 37 are fixed to an outer wall 2 of the building under an opening of the outer wall 2. Each support bracket 37 has the function of supporting the base transverse element 9.

[0087] With reference to Figure 6, the base transverse element 9 lays on the lower edge 18 (Figures 1 and 3) of the opening of the outer wall 2 so as to be supported by the support brackets 37 and is subsequently fixed to the support brackets 37.

[0088] At this point, with reference to Figure 7, the lateral elongated element 14 is coupled with the guide 12. In particular, the lateral elongated element 14 is coupled with the coupling portion 25 (Figure 2) so that the wall 28 (Figure 2) is inserted within the seat 31 (Figure 2).

[0089] Subsequently and with reference to Figure 8, the sliding of the lateral elongated element 14 along the guide 12 is carried out until the lateral elongated element 14 reaches the predetermined position, in which the lat-

eral elongated element 14 is at least partially inserted within the opening of the outer wall 2. In such step of installation, the seat 31 (Figure 2) slides along the wall 28 (Figure 2) of the coupling portion 25 (Figure 2).

[0090] The same operations are performed also for the lateral elongated element 15, which is slidingly inserted on the guide 13.

[0091] In accordance with an alternative embodiment, not shown in the accompanying figures, each lateral elongated element 14, 15 can be inserted in the predetermined position within the outer wall 2 by means of a sliding along a direction substantially different from the extension direction of the guides 12 and 13. In particular, the sliding of each lateral elongated element 14, 15 can occur in a direction substantially parallel to the base axis A1. Said alternative embodiment is implementable in the case when the frame structure 1 comprises the guides 33 (Figure 3) or the guides 36 (Figure 4).

[0092] Once each lateral elongated element 14, 15 is inserted in the predetermined position on the respective guide 12, 13, said lateral elongated element 14, 15 is fixed to the outer wall 2 by means of fixing elements, such as cramps not shown in the accompanying figures.

[0093] At this point, the upper transverse element 19 is arranged resting on each lateral elongated element 14, 15 in correspondence of its upper end, so as to define together with the base transverse element 9 and with the lateral elongated elements 14 and 15 a frame completely thermally insulated from the outer wall 2.

[0094] Finally, the frame structure 1 installed is sealed on the outer wall 2.

[0095] It is finally apparent that variations can be made to the present invention with respect to the described embodiment without thereby departing from the scope of protection of the appended claims.

Claims

1. A frame structure for finishing and equipping an opening of an outer wall of a building, the frame structure (1) comprising:

- a base transverse element (9), which comprises a mat (10) made of a thermally insulating material, a reinforcement panel (11) integral with the mat (10), and a pair of guides (12, 13; 33; 36), each of which is arranged at a respective end of the base transverse element (9);
- a pair of lateral elongated elements (14, 15), each of which comprises a mat (16) made of a thermally insulating material and a reinforcement panel (17) integral with the mat (16), and is configured to couple with a respective guide (12, 13; 33; 36) so as to be mounted on the base transverse element (9).

2. The frame structure as claimed in Claim 1, wherein

each lateral elongated element (14, 15) is configured to be at least partially inserted within the opening of the outer wall (2) of the building, preferably by means of a sliding along the respective guide (12, 13).

3. The frame structure as claimed in Claim 1 or 2, wherein the base transverse element (9) extends along a base axis (A1); each guide (12, 13; 33; 36) extending in a direction substantially perpendicular to the base axis (A1).

4. The frame structure as claimed in Claim 3, wherein each guide (12, 13; 33; 36) is a profile preferably made of a metallic material or a polymeric material or wood concrete.

5. The frame structure as claimed in any one of the foregoing Claims, wherein each guide (12, 13) comprises a first coupling portion (25), which is shaped to couple with the respective lateral elongated element (14, 15); a second coupling portion (26), which is configured to couple with the base transverse element (9); and a backing portion (27), which connects the first and the second coupling portions (25, 26) and is configured to rest on the reinforcement panel (11) of the base transverse element (9).

6. The frame structure as claimed in Claim 5, wherein the backing portion (27) is substantially perpendicular to the first coupling portion (25) and to the second coupling portion (26).

7. The frame structure as claimed in Claim 5 or 6, wherein the mat (16) of each lateral elongated element (14, 15) is provided with a respective first seat (31) shaped to house the first coupling portion (25) and preferably to allow a sliding of the lateral elongated element (14, 15) along the respective guide (12, 13); in particular each first seat (31) being notched in the mat (16) of the respective lateral elongated element (14, 15).

8. The frame structure as claimed in any one of Claims 5 to 7, wherein the base transverse element (9) is provided with a pair of second seats (32), each of which is recessed in the reinforcement panel (11) and in the mat (10) and is shaped to house the second coupling portion (26) of a respective guide (12, 13).

9. The frame structure as claimed in any one of Claims 1 to 4, wherein each guide (36) is arranged flush with a lateral edge of the base transverse element (9) and is preferably in the form of a straight parallelepiped.

10. The frame structure as claimed in any one of Claims 1 to 4, wherein each guide (33) comprises a first wall (34), which, in use, is arranged in contact with a lat-

eral edge of the base transverse element (9) and with a lateral portion of the respective lateral elongated element (14, 15); and a second wall (35), which is substantially perpendicular to the first wall (34), is configured to rest on the reinforcement panel (11) of the base transverse element (9), and is configured to be arranged in contact with a lower portion of the respective lateral elongated element (14, 15).

11. The frame structure as claimed in any one of the foregoing Claims, wherein each lateral elongated element (14, 15) extends along a direction substantially perpendicular to the base axis (A1) once said lateral elongated element (14, 15) is mounted on the base transverse element (9).
12. The frame structure as claimed in any one of the foregoing Claims, and comprising an upper transverse element (19), which is supported by the lateral elongated elements (14, 15) in correspondence of their upper ends.
13. The frame structure as claimed in Claim 12, wherein the upper transverse element (19) comprises a plurality of upper walls (20), which bound a tunnel (22) configured to accommodate an outer fixture (4).
14. The frame structure as claimed in Claim 12, wherein the upper transverse element (19) comprises a single upper wall (20).
15. The frame structure as claimed in Claim 13 or 14, wherein at least one upper wall (20) comprises a respective mat made of a thermally insulating material, and/or a respective reinforcement panel.
16. The frame structure as claimed in any one of the foregoing Claims, and comprising at least one support bracket (37), which is configured to be fixed to the outer wall (2) of the building and to support the base transverse element (9).
17. The frame structure as claimed in any one of the foregoing Claims, wherein each mat (10, 16, 20) is made of an incombustible material, such as mineral wool or fibreglass.
18. The frame structure as claimed in any one of the foregoing Claims, wherein each reinforcement panel (11, 17, 21) is made of a material selected from fiber cement, magnesium oxide, calcium hydrosilicate, marble, metal sheet, resin and ceramic.
19. A method of installation of a frame structure for finishing and equipping an opening of an outer wall of a building, the method comprising the steps of:

- fixing at least one support bracket (37) to an

outer wall (2) of the building under an opening of said outer wall (2);

- laying a base transverse element (9) on a lower edge (18) of the opening of the outer wall (2) so that it is supported by the at least one support bracket (37), wherein the base transverse element (9) comprises a mat (10) made of a thermally insulating material and a reinforcement panel (11) integral with the mat (10); and

- inserting at least one lateral elongated element (14, 15) into a respective guide (12, 13; 33; 36) of the base transverse element (9) arranged at one end of the base transverse element (9), wherein the at least one lateral elongated element (14, 15) comprises a mat (16) made of a thermally insulating material and a reinforcement panel (17) integral with the mat (16).

20. The method as claimed in Claim 19, and comprising the step of laying an upper transverse element (19) on each lateral elongated element (14, 15) in correspondence with its upper end, wherein the upper transverse element (19) comprises a plurality of upper walls (20), which bound a tunnel (22) configured to accommodate an outer fixture (4).
21. The method as claimed in Claim 19 or 20, and comprising the step of fixing each lateral elongated element (14, 15) to the outer wall (2) of the building by means of at least one fixing element once said lateral elongated element (14, 15) is inserted into the respective guide (12, 13; 33; 36).
22. The method as claimed in any one of Claims 19 to 21, and comprising the step of sealing the frame structure (1) installed on the outer wall (2).

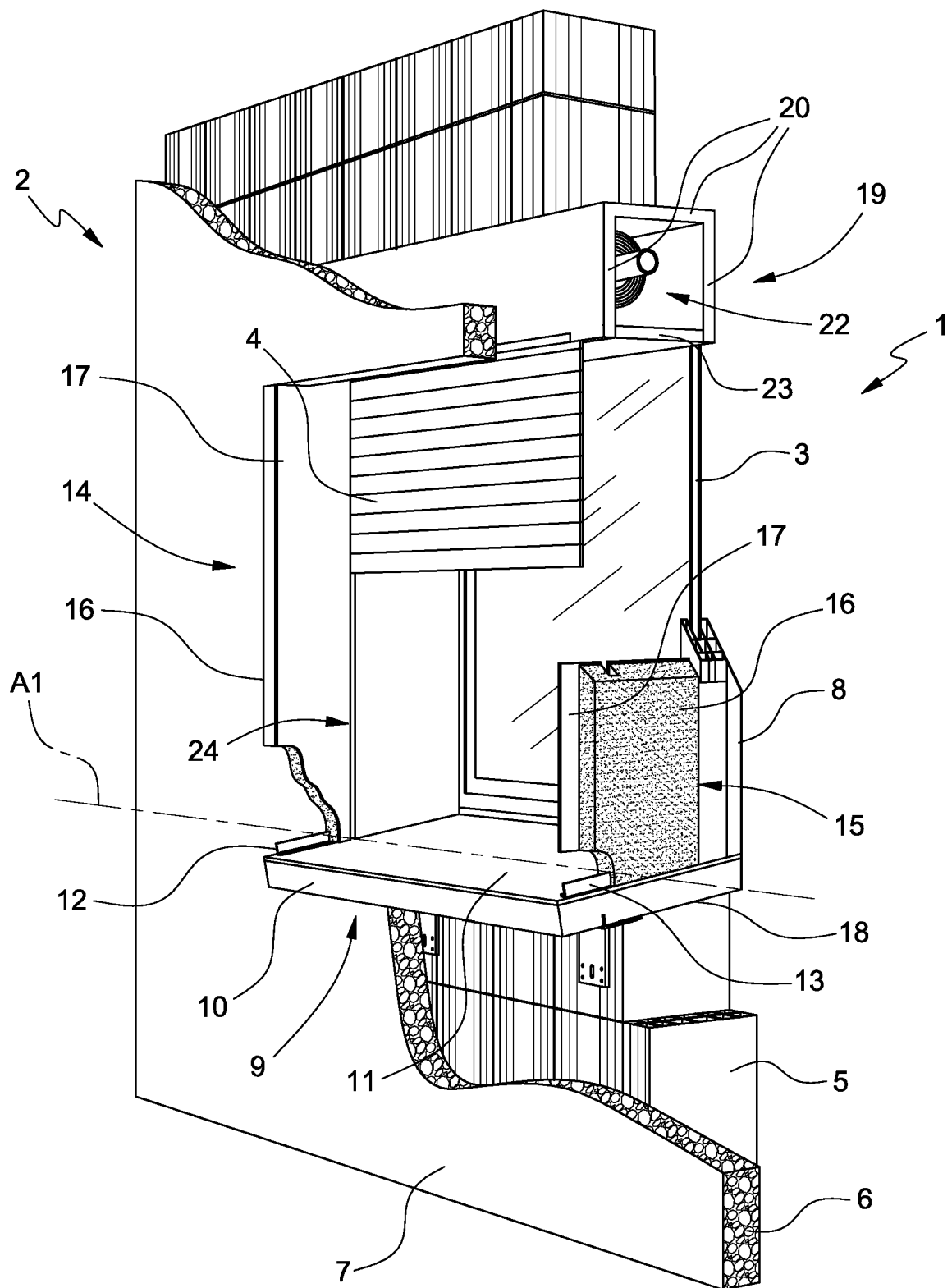


FIG. 1

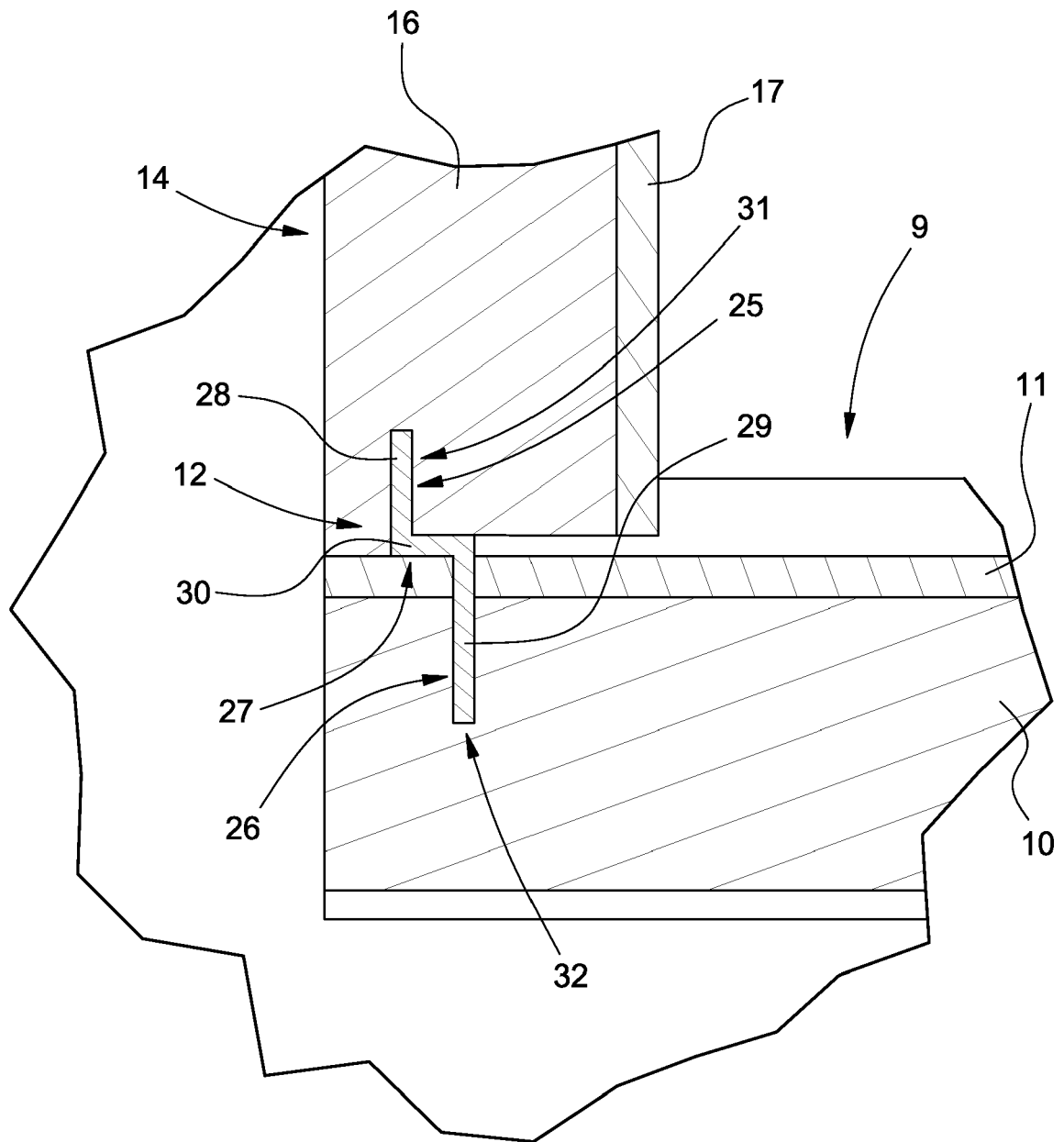


FIG. 2

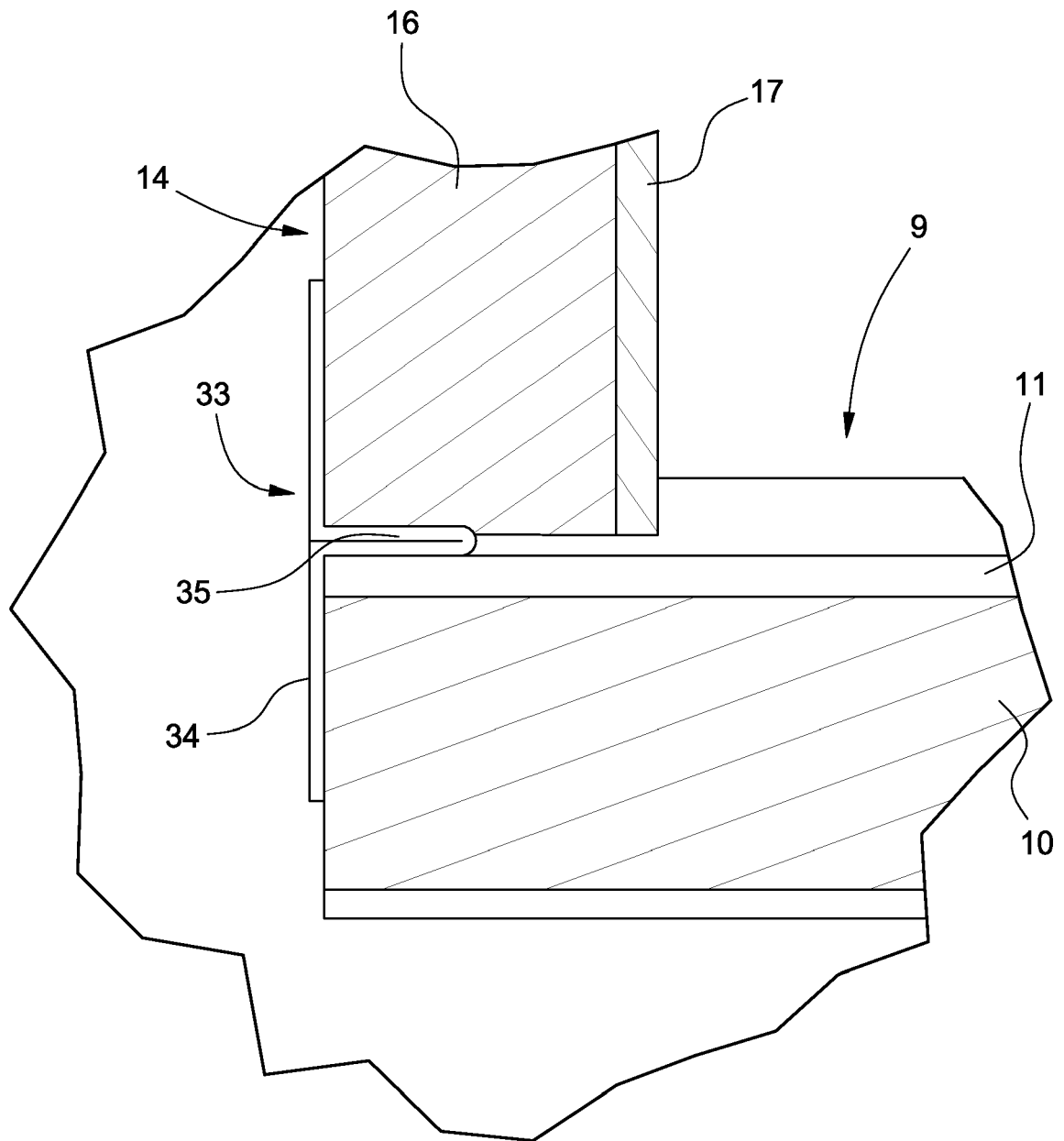


FIG. 3

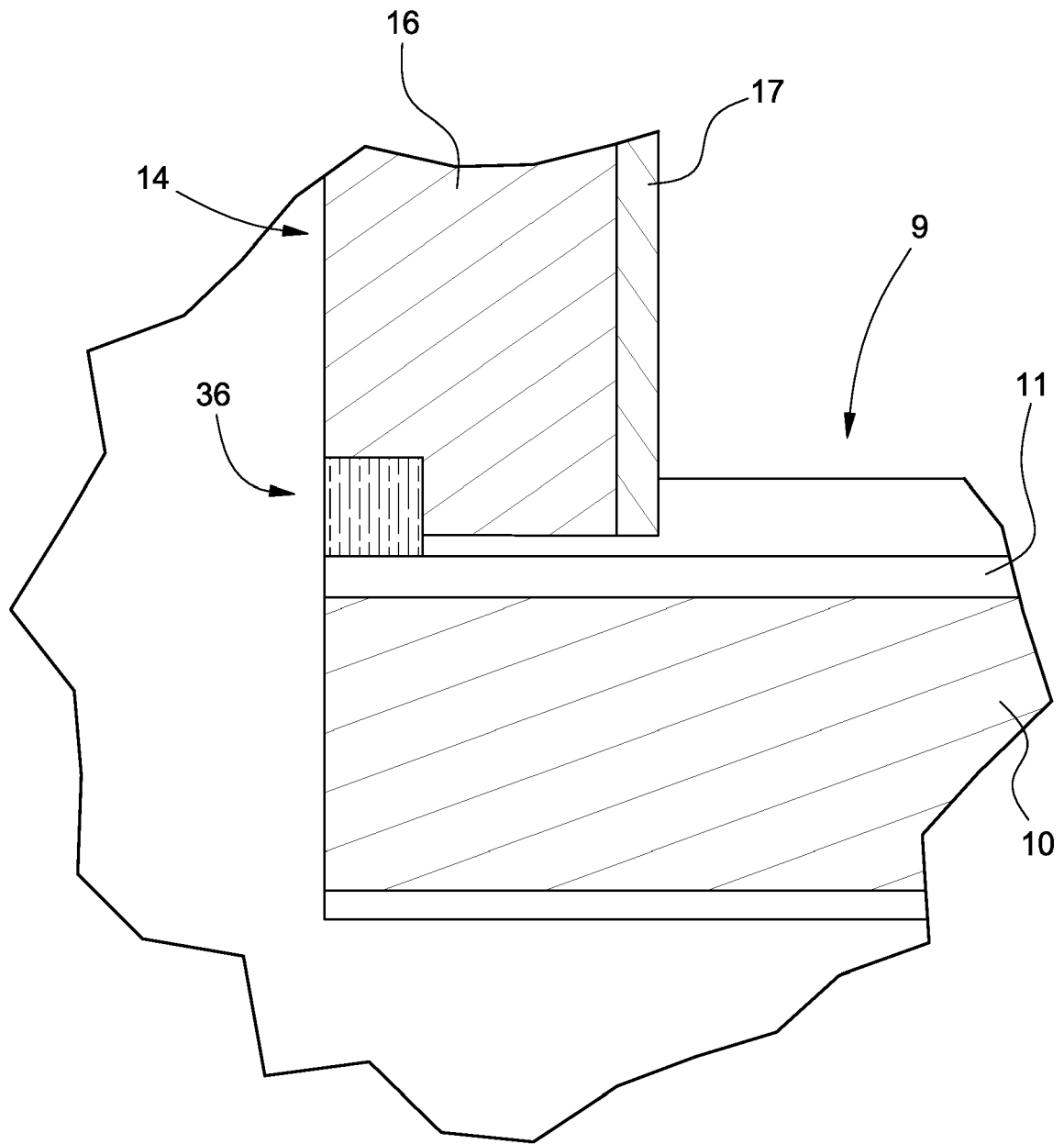


FIG. 4

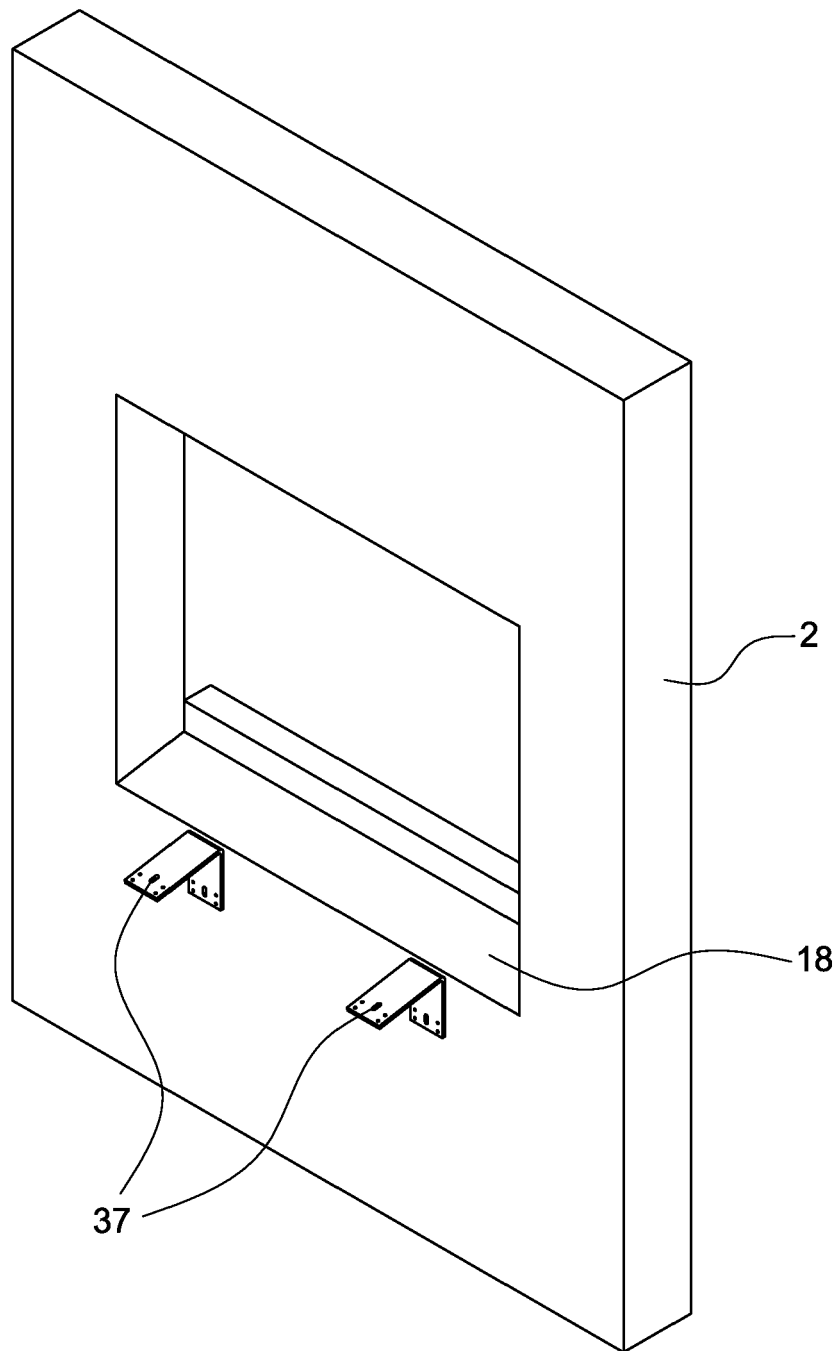


FIG. 5

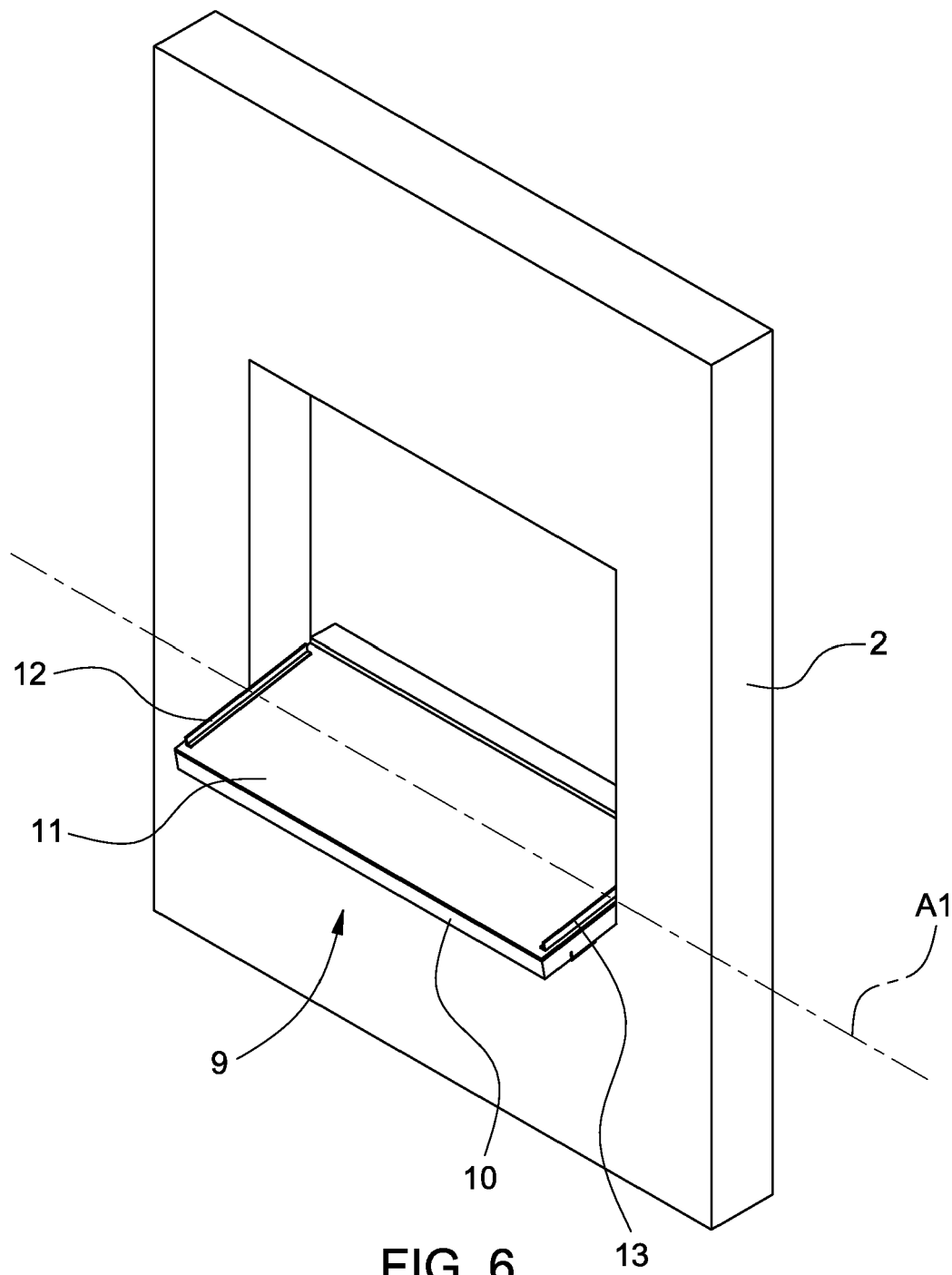


FIG. 6

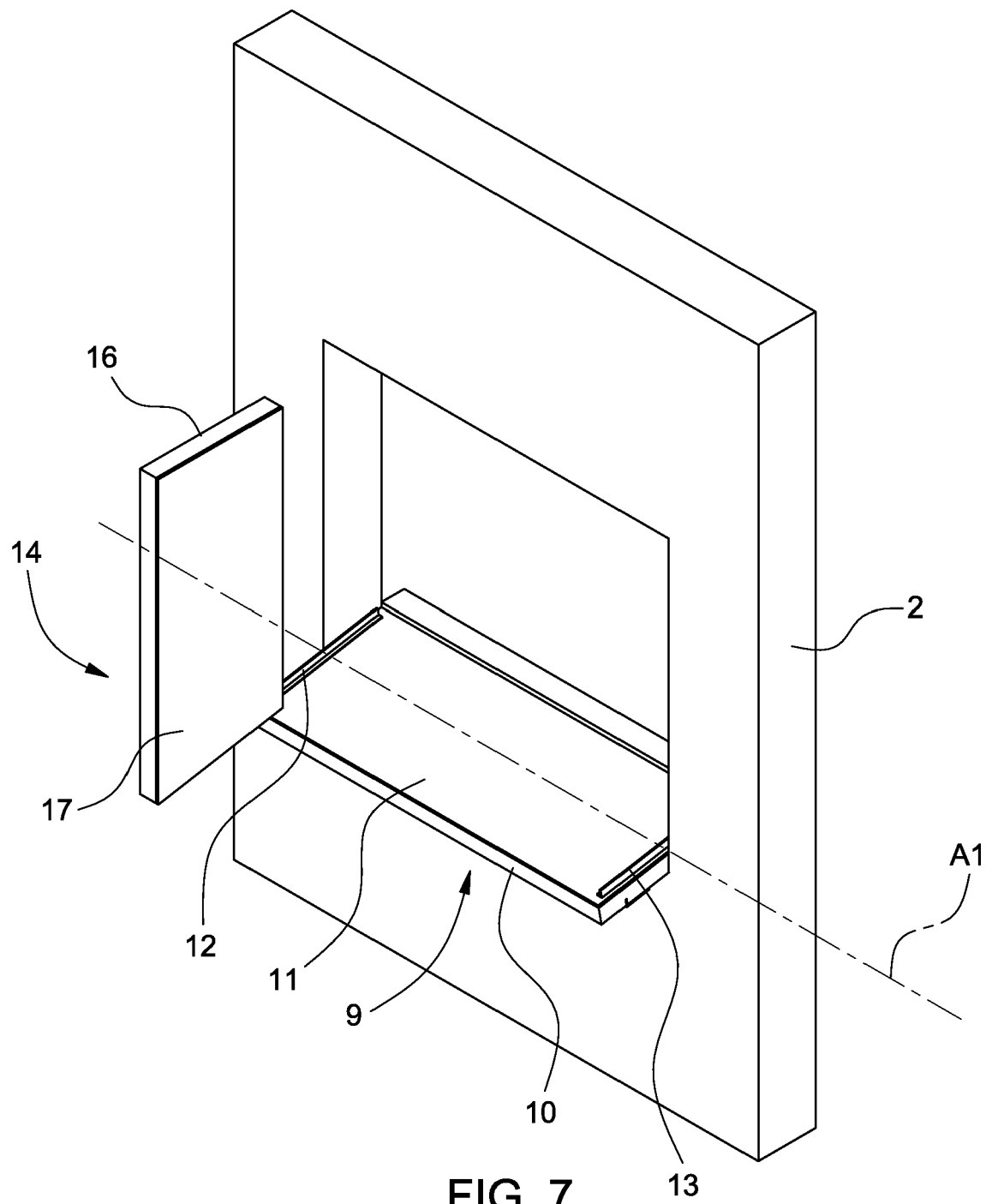


FIG. 7

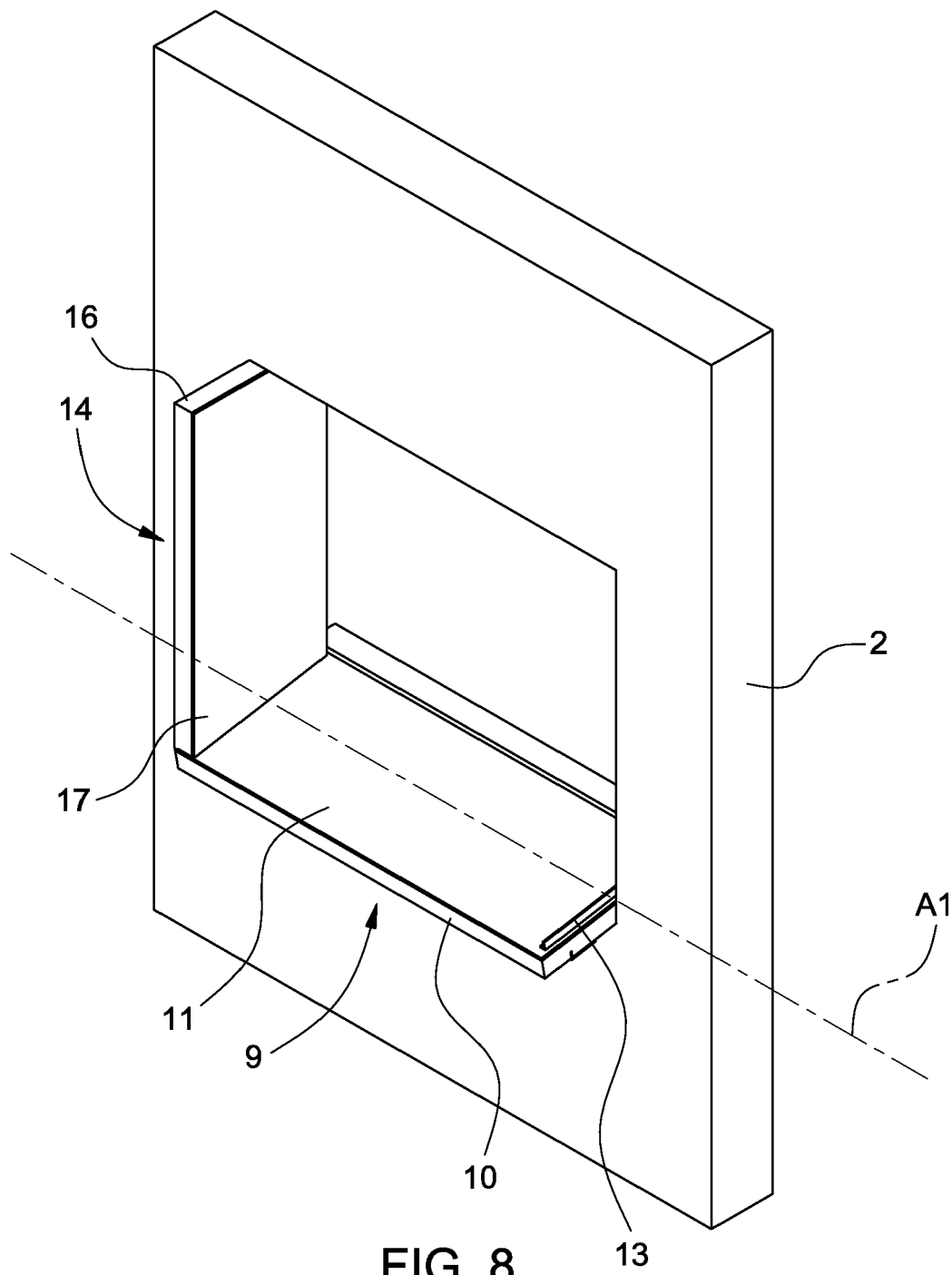


FIG. 8



EUROPEAN SEARCH REPORT

Application Number

EP 21 18 8944

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 2 268 936 A1 (DUMEZ CONST IND [FR]) 21 November 1975 (1975-11-21) * page 3, line 32 - line 40; figures 1-5 *	1-4, 9, 11-22	INV. E06B1/70 E06B5/16 E06B9/17
A	Alpac Srl Unipersonale: "PRESYSTEM integrated window system Archivi - Alpac", / , 17 June 2020 (2020-06-17), XP055867648, Retrieved from the Internet: URL:https://web.archive.org/web/2020061701 3233/https://alpac.it/en/products/presyste m-integrated-window-system/ [retrieved on 2021-11-30] * the whole document *	1, 13, 19, 20	E06B1/32 E06B1/02 E06B1/36 E06B1/60
A	US 2006/156654 A1 (WEISS DAVID J [US]) 20 July 2006 (2006-07-20) * figures 3-5 *	1, 19	
A	DE 196 46 953 A1 (WAGNER SYSTEM GMBH [DE]) 20 May 1998 (1998-05-20) * figure 1 *	1, 19	TECHNICAL FIELDS SEARCHED (IPC)
A	EP 1 391 567 A2 (WIGGENHAUSER PETER [CH]) 25 February 2004 (2004-02-25) * figure 1 *	1, 19	E06B
A	EP 2 479 369 A1 (SUEDTIROL FENSTER S R L [IT]) 25 July 2012 (2012-07-25) * figures 4-6 *	1, 19	
1	The present search report has been drawn up for all claims		

Place of search

The Hague

Date of completion of the search

30 November 2021

Examiner

Crespo Vallejo, D

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
ON EUROPEAN PATENT APPLICATION NO.**

EP 21 18 8944

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-11-2021

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2268936 A1	21-11-1975	NONE	
US 2006156654 A1	20-07-2006	CA 2524843 A1 US 2006156654 A1	20-07-2006 20-07-2006
DE 19646953 A1	20-05-1998	NONE	
EP 1391567 A2	25-02-2004	CH 695781 A5 EP 1391567 A2	31-08-2006 25-02-2004
EP 2479369 A1	25-07-2012	NONE	

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82