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(54) **A STRUCTURE FOR FINISHING AND OUTFITTING AN OPENING IN A PERIMETER WALL OF A BUILDING; A BUILDING AND METHOD FOR INSTALLING SAID STRUCTURE**

(57) A structure (1) for finishing and outfitting an opening in a perimeter wall (2) of a building has two elongated side panels (14), each of which comprises a thermally insulating layer (16) and a reinforcement layer (17) integral with the thermally insulating layer (16) and fixed to the perimeter wall (2) independently of each other; two

side appendages (24), each of which is the partial extension of an elongated side panel (14) upwards; and two first support elements (30) to support an external rolling or packable shutter (4), each support element (30) being fixed to the corresponding side appendage (24).

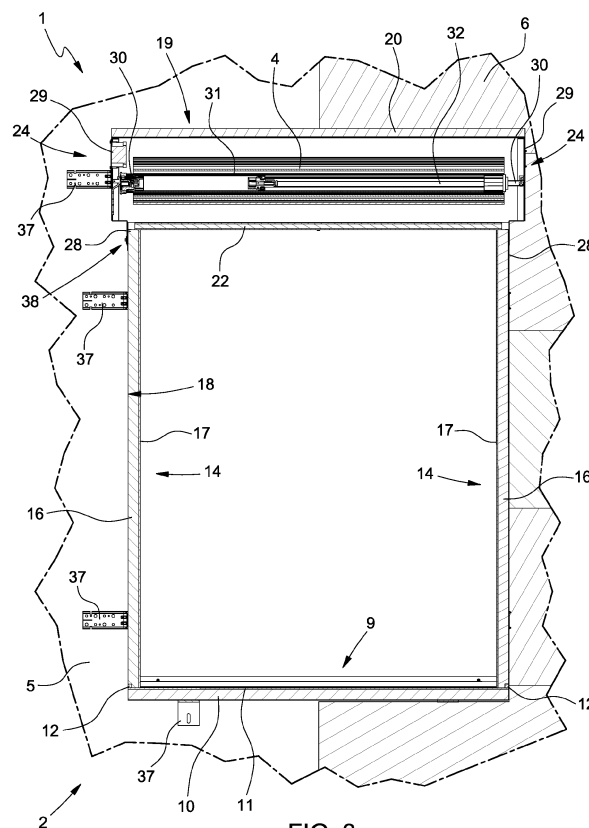


FIG. 3

Description

TECHNICAL FIELD OF THE INVENTION

[0001] This invention relates to a structure for finishing and outfitting an opening in a perimeter wall of a building.

[0002] In particular, this invention relates to a structure, which is inserted in the opening of a perimeter wall and fixed to the perimeter wall with the purpose of housing and supporting a respective shutter, whether a window, a door window, or a door. The structure defines a housing sized for the corresponding shutter, delimits the opening with appropriately finished surfaces, thermally and acoustically insulates the shutter from the perimeter wall, and avoids creating thermal bridges along the perimeter wall around the shutters.

STATE OF THE ART

[0003] In renovating residential buildings, the need to be able to work on the external façade without accessing the internal spaces of the building, so as not to create discomfort for the residents of the building, is known.

[0004] In order to satisfy this need, scaffolds or lifting platforms are arranged on the external façade of the building to be renovated.

[0005] In any case, due to the thickness of the perimeter wall of the building and/or the dimensions of the structure, generally the installation of the structure in an opening in the perimeter wall is difficult to carry out with conventional scaffolds, which cannot be positioned within a maximum distance from the façade of the building to be renovated, determined by safety reasons. In addition, assembling the external shutters, whether they are rolling or packable shade systems, and the corresponding box shutters and the wiring of the motorised systems are difficult to implement without internal access to the building.

[0006] One purpose of this invention is to produce a structure of the type identified above that overcomes the drawbacks of the prior art.

SUBJECT AND SUMMARY OF THE INVENTION

[0007] In accordance with this invention a structure for finishing and outfitting an opening in a perimeter wall of a building is provided, the structure comprising:

- two elongated side panels, each of which comprises a thermally insulating layer and a reinforcement layer integral with the thermally insulating layer and fixed to a wall of the perimeter wall independently of each other;
- two side appendages, each of which is the partial extension of an elongated side panel upwards; and
- first support elements to support an external rolling or packable shutter, each support element being fixed to the corresponding side appendage.

[0008] Thanks to this solution, it is possible to assemble the structure directly in the opening, so that it is only necessary to transport and manipulate components that are relatively light and small on the scaffolding. In addition, the external shutter can be installed before installing the box shutter, so that the wiring of the motorised systems can also be freely installed from outside the building.

[0009] In particular, the structure comprises brackets for fixing the side appendages to a wall of the perimeter wall so as to define a precise position for the side appendages to guarantee the successful operation of the external shutter.

[0010] In particular, the structure comprises a pair of clamping devices, each of which is configured to fix a corresponding side appendage to the upper end of a corresponding elongated panel.

[0011] Each side appendage is fixed both to the wall and to a corresponding panel so as to support the weight of the external shutter.

[0012] In particular, the structure comprises a box shutter configured to house the external rolling or packable shutter, said side appendages defining the side walls of said box shutter. In this way, the side appendages have the function of supporting and infilling.

[0013] In particular, the box shutter is free of the wall facing inside the building, said box shutter being placed against the wall of the perimeter wall so that the structure is simplified.

[0014] In particular, the box shutter comprises an upper wall; a front wall; and a lower wall, in particular the upper wall and the front wall can be mounted from outside and the lower wall being selectively removable both from inside and from outside the building so as to enable the assembly from outside and the maintenance operations from inside the building.

[0015] In particular, the upper wall, the front wall, and the lower wall are insulated so as to limit, as much as possible, thermal transmission.

[0016] In accordance with one embodiment of this invention, the structure comprises second support elements mounted on the box shutter that extend from inside the box shutter to the outside of the box shutter to support a solar panel.

[0017] In this way, it is possible to directly power the motorised external shutters without the need for installing power supply wires.

[0018] In particular, the structure comprises third support elements arranged inside the box shutter to support an electricity storage unit so as to have enough energy available even when the solar panel is not able to provide the necessary power for handling the external shutter.

[0019] In particular, the structure comprises two guide grooves to guide the external shutter along the two elongated side panels and a transverse element that is arranged opposite the side appendages and connects the upper ends of the elongated side panels.

[0020] In this way, it is possible to define a certain position of the external shutter for any degree of its opening.

[0021] In particular, the structure comprises a base transverse panel comprising a thermally insulating layer and a reinforcement layer that is integral with the thermally insulating layer and has the function of a sill; said base transverse panel comprises two guides for attaching the two elongated side panels to the base.

[0022] Another purpose of this invention is to provide a building that is free of the drawbacks of the prior art.

[0023] In accordance with this invention, a building designed for residence is provided, the building comprising:

- at least one perimeter wall;
- at least one through opening in the perimeter wall;
- a structure for finishing said opening in the perimeter wall in accordance with any of the preceding claims, wherein said structure is assembled in situ in the through opening.

[0024] In this way, the transport of the material and the assembly of the latter, without accessing the inside of the building, is made easier.

[0025] In particular, the perimeter wall comprises a load-bearing or infill wall; and an insulating cladding along the outer face of the wall, said elongated side panels extending across the thickness of the wall and of the insulating cladding, said appendages extending across the thickness of said insulating cladding.

[0026] In this way, the wall itself defines a thermal barrier at the appendages, which, in fact, define part of the box shutter.

[0027] Another purpose of this invention is to provide a method that is free of the drawbacks of the prior art.

[0028] In accordance with this invention, a method for installing a structure for finishing and outfitting an opening in a perimeter wall of a building is provided, the method comprising:

- fixing a pair of elongated side panels to a wall of the perimeter wall independently of each other, each elongated side panel comprising a thermally insulating layer and a reinforcement layer that is integral with the thermally insulating layer and fixed; and
- assembling a pair of side appendages, each of which is the partial extension of an elongated side panel upwards and comprises first support elements;
- assembling an external rolling or packable shutter on said first support elements; and
- assembling, in situ, a box shutter at the upper ends of the pair of elongated side panels around the appendages.

[0029] In this way, the transport of the materials on the scaffolding and the installation of wiring is made easier.

[0030] In particular, assembling the external shutter comprises inserting the external shutter into the guide grooves and assembling, in situ, the box shutter comprises placing an upper wall of the box shutter against the external façade of the wall and fixing the upper wall

and a front wall to the side appendages.

[0031] In particular, the method involves assembling an electrical box on an appendage before assembling the box shutter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] Additional features and advantages of this invention will be clear from the description that follows of its nonlimiting embodiments, with reference to the attached figures, wherein:

- Figure 1 is a perspective view, with parts removed for clarity and parts in cross-section, of a structure produced in accordance with this invention and installed in an opening of a perimeter wall of a building;
- Figure 2 is a perspective view, on an enlarged scale and with parts removed for clarity, of the structure in Figure 1;
- Figure 3 is a cross-section view, on an enlarged scale and with parts removed for clarity, of the structure in Figure 1; and
- Figure 4 is a cross-section view, on an enlarged scale and with parts removed for clarity, of a detail of the structure in Figure 1.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0033] With reference to Figure 1, the reference number 1 indicates, as a whole, a structure configured to be arranged in an opening of a perimeter wall 2 of a building. In general, the structure 1 performs the functions of insulating an internal shutter 3 and an external or shading shutter 4 from the perimeter wall 2 and of finishing the free surfaces of the perimeter wall 2.

[0034] In the example illustrated, the external shutter 4 is defined by a rolling shutter and the structure 1 also performs the functions of supporting and guiding the external shutter 4 in opening and closing strokes and of housing the external shutter 4, when rolled up.

[0035] In the case described and illustrated here, which does not limit the invention, the perimeter wall 2 comprises a load-bearing wall 5; an external insulating cladding 6; an external finishing layer 7; and an internal finishing layer 8. The layering of the perimeter wall 2 illustrated in Figure 1 is merely provided as an example and, in practice, may assume configurations other than that illustrated.

[0036] With reference to Figure 2, the structure 1 comprises a base transverse panel 9, which comprises a thermally insulating layer 10, a reinforcement layer 11 that is integral with the thermally insulating layer 10, two guides 12, each of which is arranged at a corresponding end of the base transverse panel 9; and a pair of elongated side panels 14, each of which comprises a thermally insulating layer 16 and a reinforcement layer 17 that is integral with the thermally insulating layer 16, and

is configured to be coupled with a respective guide 12 so as to be attached to the base transverse panel 9.

[0037] With reference to Figure 3, the opening in the perimeter wall 2 is delimited by a surface defined as the soffit 18. The base transverse panel 9 is configured to rest on a lower edge of the soffit 18. In particular, the thermally insulating layer 10 is configured to be arranged in contact with the lower part of the soffit 18.

[0038] Each guide 12 is a section preferably made of metal, such as, for example, aluminium, or of a polymer material, such as, for example, PVC, or cement wood. In the case described and illustrated here, each guide 12 is integral with the base transverse panel 9. In this configuration, each elongated side panel 14 is configured to engage the corresponding guide 12.

[0039] The structure 1 comprises a box shutter 19, which rests on the elongated side panels 14 at their upper ends and is fixed to the elongated side panels 14.

[0040] With reference to Figure 2, the box shutter 19 comprises an upper wall 20, a front wall 21, and a lower wall 22, which delimit an opening configured for housing the external shutter 4. The box shutter 19 is delimited by two side appendages 24, which define an extension upwards of the corresponding elongated side panels 14 and the side walls of the box shutter 19.

[0041] The structure 1 comprises two guide grooves 26, which are, at least in part, incorporated into the respective elongated side panels 14 and have the function of housing and guiding the side ends of the external shutter 4 that, in this case, is a rolling shade shutter. The structure 1 also comprises a transverse element 27 that joins the upper ends of the elongated side panels 14 and forms, with the lower wall 22 of the box shutter 19, a groove that is engaged by the rolling shade shutter according to what is better illustrated in Figure 4.

[0042] Each side appendage 24 is fixed to a corresponding elongated side panel 14. In the case illustrated, each side appendage 24 comprises a lower plate 28 that is integral with the corresponding elongated side panel 14 and an electrical box 29 that is laterally staggered compared to the lower plate 28 so that the distance between the elongated side panels 14 facing each other is less than the distance between the side appendages 24 facing each other, according to what is better illustrated in Figure 3.

[0043] With reference to Figure 3, each side appendage 24 supports a support element 30, in this case a pivot pin, around which a drum 31 is mounted, so that it can rotate, the drum housing inside an actuator 32 and around which the external shutter 4 can be selectively rolled and unrolled.

[0044] With reference to Figure 4, the structure 1 comprises support elements 33 that extend from inside the box shutter 19 and outside the box shutter 19 to support a solar panel 34 that extends along the external façade of the front wall 21.

[0045] The structure 1 comprises support elements 35 arranged inside the box shutter 19 to support an electric-

ity storage unit 36.

[0046] As far as regards assembly, the base transverse panel 9 and two elongated side panels 14 cover three faces of the soffit 18 and are fixed to the wall 5 using brackets 37.

[0047] The assembly of the elongated side panels requires, preferably, the use of spacers 39, the ends of which are fixed to two elongated side panels 14 facing each other as shown in Figure 1.

[0048] The appendages 24 are similarly fixed to the wall 5 using the brackets 37 and are fixed to the corresponding elongated side panels 14 using clamping devices 38, each of which is configured to fix one of the side appendages 24 to the upper end of a corresponding elongated panel 14 according to what is shown in Figure 2.

[0049] In accordance with one embodiment not illustrated in the attached figures, the appendages are integral with the corresponding elongated side panels.

[0050] With reference to Figure 3, the assembly sequence involves assembling, first of all, the base transverse panel 9; subsequently, the elongated side panels 14 are assembled by engaging the lower ends of the elongated side panels 14 in the guides 12 of the base transverse panel 9. Once the elongated side panels 14 are fixed to the wall 5, using the brackets 37, the external shutter 4 is installed, which is inserted inside the guide grooves 26.

[0051] Subsequently, the appendages 24 are assembled at the upper ends of the corresponding elongated side panels 14 using the corresponding clamping devices 38. The appendages 24 are fixed to the wall 5 using the brackets 37 and to the corresponding elongated side panels 14 using the clamping devices 38.

[0052] The transverse element 27 (Fig. 4) is fixed to the two elongated side panels 14 so as to stabilise the structure 1 during manufacturing.

[0053] Subsequently, the electrical part comprising the electrical box 29, the electricity storage unit 36, and the related support element 35, the solar panel 34, and the related support 33 is assembled and the wiring, not illustrated in the attached figures, is installed.

[0054] The drum 31 is mounted so that it can rotate around the support elements 30 and the external shade shutter 4 is connected to the drum 31.

[0055] In sequence, the upper wall 20, the front part 21, and the lower part 22 of the box shutter 19 are assembled.

[0056] Once the structure 1 is assembled, the insulating cladding 6 is installed along the wall 5, as well as the external finishing layer 8 (Figure 1).

[0057] Finally, it is clear that, variations can be made to this invention in relation to the embodiment described without, however, departing from the scope of protection of the attached claims.

[0058] For example, in accordance with a variant not illustrated, the external shutters are packable instead of rolling.

Claims

1. A structure for finishing and outfitting an opening in a perimeter wall (2) of a building, the structure (1) comprising:
 - two elongated side panels (14), each of which comprises a thermally insulating layer (16) and a reinforcement layer (17) integral with the thermally insulating layer (16) and fixed to a wall (5) of the perimeter wall (2) independently of each other;
 - two side appendages (24), each of which is the partial extension of an elongated side panel (14) upwards; and
 - first support elements (30) to support an external rolling or packable shutter (4), each support element (30) being fixed to the corresponding side appendage (24, 25).
2. The structure, as claimed in claim 1, and comprising brackets (37) to fix the side appendages (24) to a wall (5) of the perimeter wall (2).
3. The structure, as claimed in claim 1 or 2, and comprising a pair of clamping devices (38), each of which is configured to fix a corresponding side appendage (24) to the upper end of a corresponding elongated panel (14).
4. The structure as claimed in any of the preceding claims, and comprising a box shutter (19) configured to house the external rolling or packable shutter (4), said side appendages (24) being the side walls of said box shutter (19).
5. The structure, as claimed in claim 4, wherein said box shutter (19) is without the wall facing inward the building, said box shutter (19) being placed against the wall (5) of the perimeter wall (2).
6. The structure as claimed in claim 4 or 5, wherein the box shutter (19) comprises an upper wall (20); a front wall (21); and a lower wall (22), in particular the upper wall (20) and the front wall (21) can be mounted from outside the building and the lower wall (22) being selectively removable both from inside and from outside building.
7. The structure as claimed in claim 6, wherein the upper wall (20), the front wall (21), and the lower wall (22) are insulated.
8. The structure as claimed in one of the claims from 4 to 7, and comprises second support elements (33) extending from inside the box shutter (19) to outside the box shutter (19) to support a solar panel (34).
9. The structure as claimed in any of the claims from 4 to 8, and comprising third support elements (35) arranged inside the box shutter (19) to support an electricity storage unit (36).
10. The structure as claimed in any of the claims from 1 to 9, and comprising two guide grooves (26) to guide an external shutter along the two elongated side panels (14) and a transverse element (27) that is arranged opposite the side appendages (24) and connects the upper ends of the elongated side panels (14).
11. The structure as claimed in any of the claims from 1 to 10, and comprising a base transverse panel (9) comprising a thermally insulating layer (10) and a reinforcement layer (11) that is integral with the thermally insulating layer (10) and has the function of a sill; said base transverse panel (9) comprises two guides (12) for attaching the elongated side panels to the base.
12. A residential building, the building comprising:
 - at least one perimeter wall (2);
 - at least one through opening in the perimeter wall (2) ;
 - a structure (1) for finishing said opening in the perimeter wall (2) in accordance with any of the preceding claims, wherein said structure (1) is assembled in situ in the through opening.
13. The building as claimed in claim 12, wherein the perimeter wall (2) comprises a load-bearing or infill wall (5); and an insulating cladding (6) along the external face of the wall (5), said elongated side panels (14) extending across the thickness of the wall (5) and of the insulating cladding (6), said appendages extending across the thickness of said insulating cladding (6).
14. A method for installing a structure for finishing and outfitting an opening in a perimeter wall of a building, the method comprising:
 - fixing a pair of elongated side panels (14, 15) to a wall (5) of the perimeter wall (2) independently of each other, each elongated side panel (14) comprising a thermally insulating layer (16) and a reinforcement layer (17) that is integral with the thermally insulating layer (16) and fixed to the wall (5) independently of each other;
 - assembling a pair of side appendages (24), each of which is the partial extension of an elongated side panel (14) upwards and comprises first support elements (30);
 - assembling an external rolling or packable shutter (4) on said first support elements (30);

and

- assembling, in situ, a box shutter (19) at the upper ends of the pair of elongated side panels (14) around the appendages (24).

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- 15.** The method as claimed in claim 14, wherein assembling the shutter (4) comprises inserting the external shutter (4) into the guide grooves.

- 16.** The method as claimed in claim 14 or 15, wherein assembling the box shutter (19) in situ comprises placing an upper wall (20) of the box shutter (19) against the external face of the wall (5) and fixing the upper wall (20) and a front wall (21) to the side appendages (14).

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- 17.** The method as claimed in any of the claims from 14 to 16, and comprising assembling an electrical box (29) on an appendage (24) before assembling the box shutter (19).

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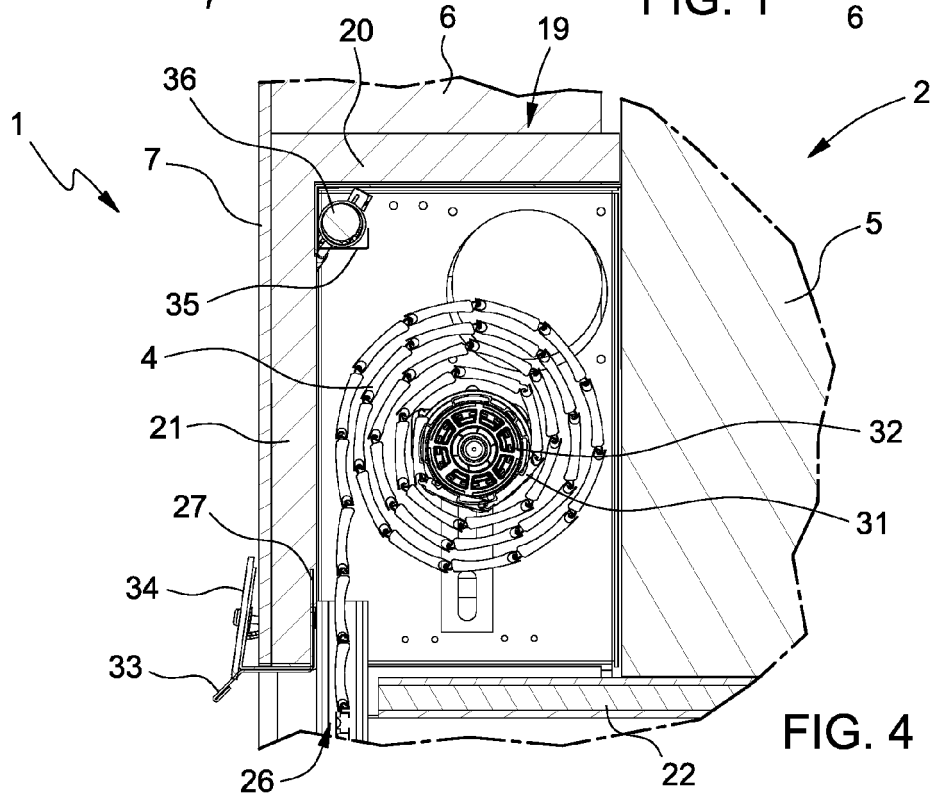
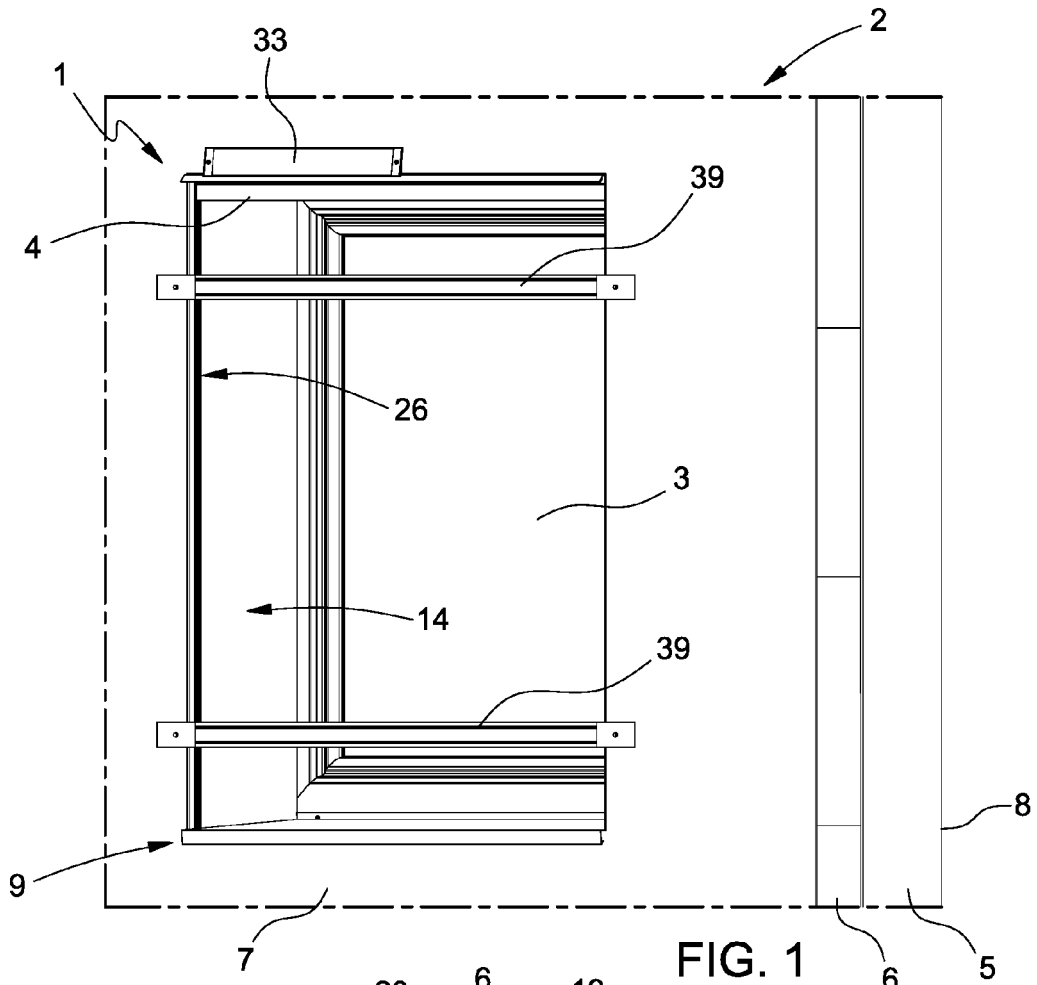
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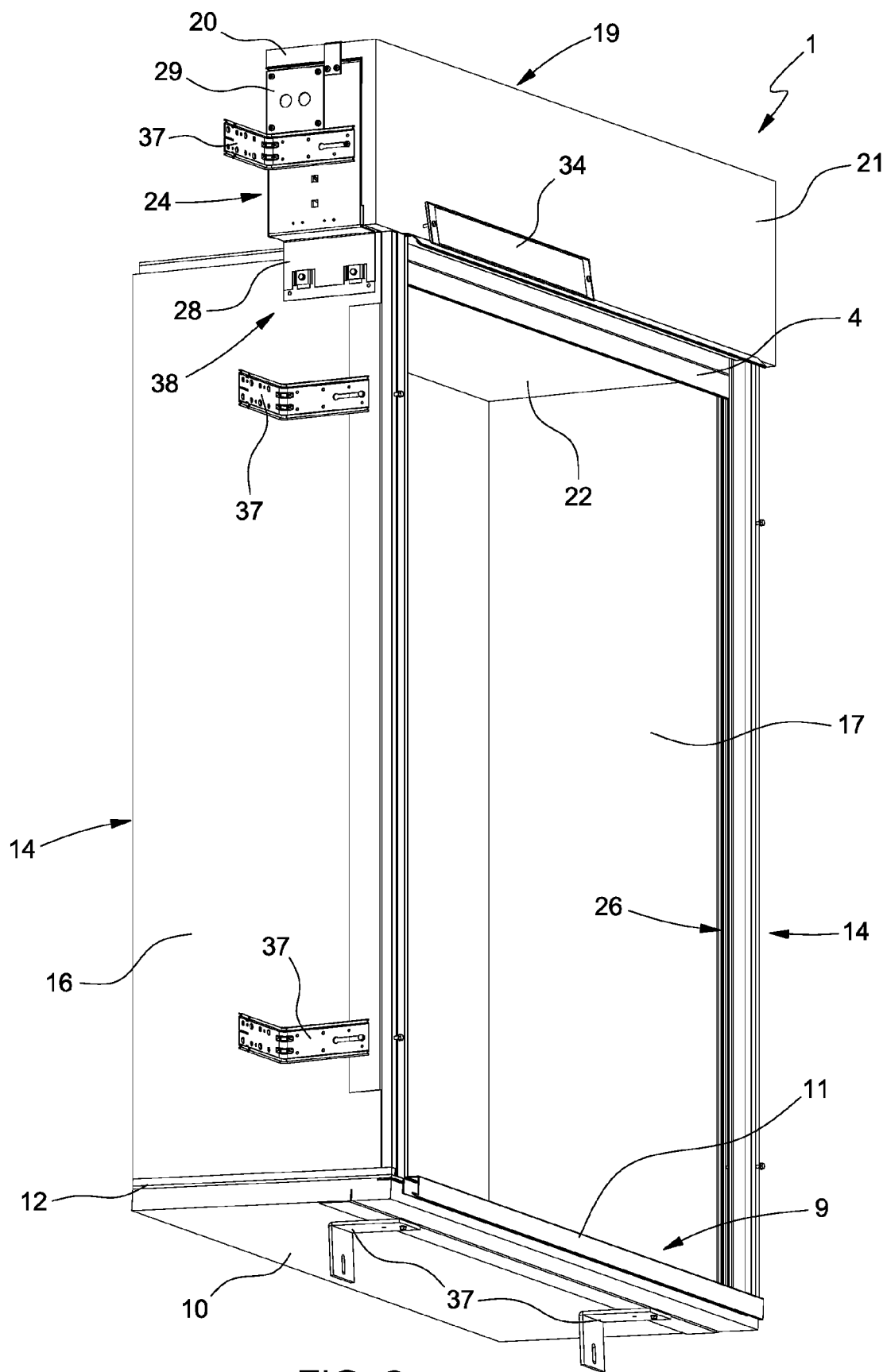
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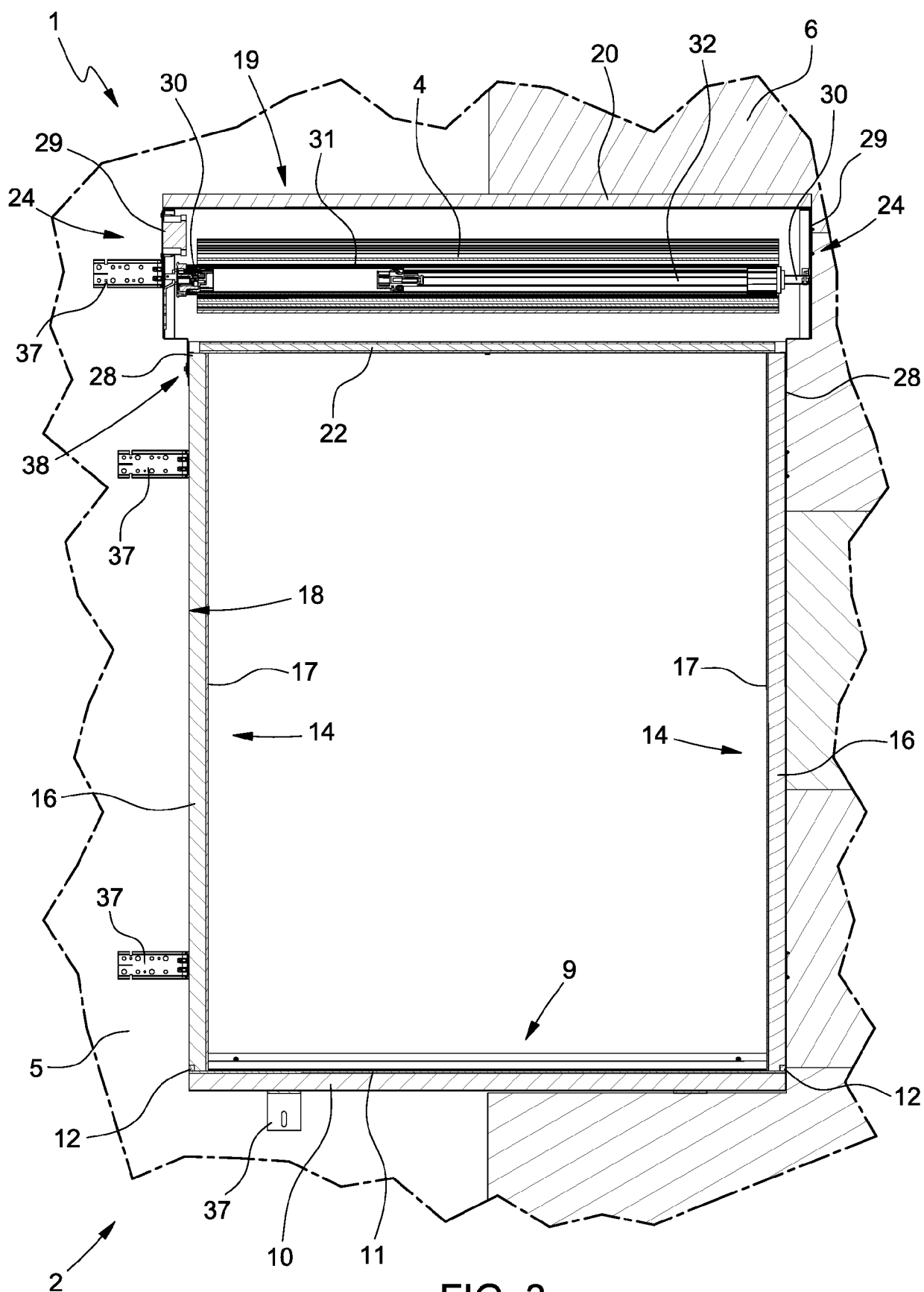


FIG. 3



EUROPEAN SEARCH REPORT

Application Number

EP 22 17 4086

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	IT 2019 0002 0642 A1 (SIAL S R L [IT]) 8 May 2021 (2021-05-08)	1, 4, 5, 10-12	INV. E06B9/17
Y	* paragraphs [0016], [0019], [0043],	8, 9	E06B1/04
A	[0047], [0070]; figures 1, 2, 4A, 4B * -----	14-17	
X	FR 3 017 646 A1 (ENTPR RHODANIEENNE DES BOIS [FR]) 21 August 2015 (2015-08-21) * page 1, line 38; figures 1, 2 * -----	1, 2, 4, 12	
X	DE 92 16 407 U1 (ANNA IZZO) 28 January 1993 (1993-01-28) * figures 1, .3 * -----	1, 3-5, 12	
Y	DE 10 2010 004254 A1 (TROCHA JOCHEN [DE]) 14 July 2011 (2011-07-14)	8, 9	
A	* figure 5 * -----	1	
A	FR 3 043 120 A1 (DELPHIA [FR]) 5 May 2017 (2017-05-05) * the whole document * -----	1-17	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
Place of search			Examiner
Munich			Bourgoin, J
Date of completion of the search			
11 November 2022			
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
IT 201900020642 A1	08-05-2021	NONE	
FR 3017646 A1	21-08-2015	NONE	
DE 9216407 U1	28-01-1993	NONE	
DE 102010004254 A1	14-07-2011	NONE	
FR 3043120 A1	05-05-2017	NONE	

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