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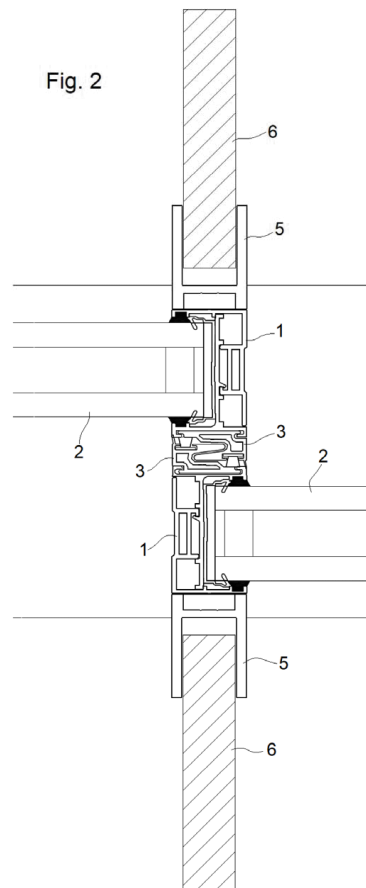
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(54) **REINFORCEMENT FOR SLIDING WINDOWS OR DOORS AND CURTAIN WALLS**

(57) The present invention relates to a reinforcement for sliding windows or doors and curtain walls, intended to reinforce the structure of the joint between two sliding panels (2), in the area in which they overlap when closed, which is formed by a vertical profile (5), to which a reinforcement element is coupled, which is characterised in that said element is made up of a transparent sheet (6), attached on said profile (5), orthogonally with respect to the sliding panels (2) or the curtain wall.

Fig. 2



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Description

Technical field

[0001] The invention falls within the sector of metal, PVC or wood carpentry; specifically in the manufacture of attached and mobile window frames, gate leaves, curtain walls or similar elements for closing openings and more specifically carpentry in which at least two sliding panels move laterally within rigid outer frames.

State of the art

[0002] The object of the invention is a window or sliding door or curtain wall type carpentry, preferably made of aluminium and of the so-called minimalist type, an option that consists of a modern and functional design carpentry, especially intended for homes, which is characterised by having discreet frame and opening mechanisms, allowing the glass to be the centrepiece of the design. Therefore, the design of minimalist carpentry is based on the removal of unnecessary elements, keeping only the essential ones. In general, this carpentry is of the sliding type and uses glass and aluminium as materials, which allows for structural solutions with a minimal frame, so that the entry of natural light is as great as possible. In addition, its airtight design helps reduce air leaks, which contributes to better thermal and acoustic insulation. This type of carpentry can be installed in a wide variety of homes, such as villas, detached houses, apartments, flats, modern buildings and contemporary design homes.

[0003] Given their design, minimalist carpentry has the problem that it offers less resistance to the wind than traditional carpentry, particularly when it forms a frontal obstacle to the wind, so that strong gusts can overcome its resistance and even cause it to deform, which could lead to its partial or total destruction. This problem is greater and therefore precautionary measures must be taken when the door or window has a height or width greater than 1.8 metres. To avoid this problem, one or more vertical reinforcements are fitted, normally located both on the outside and the inside of the sliding panel, coinciding with the overlap area between two panels when closed, in order to prevent this area from moving in a frontal direction inwards or outwards of the opening it closes and therefore prevent the carpentry from moving.

[0004] The reinforcements currently fitted to alleviate this problem are vertical aluminium profiles, attached to both sliding panels coinciding with the overlap area between two panels, or to the frame of a curtain wall. These profiles are deep enough in the direction of incidence of the wind to withstand its onslaught effectively. However, these reinforcements must have considerable dimensions, particularly in the direction of incidence of the wind, or perpendicular to the sliding panel, and therefore do not meet the objective of a minim-

alist design according to the aforementioned specifications. Furthermore, as they are metal elements, they are opaque and therefore entail a black spot that prevents the entry of as much light as possible from the outside through this area and reduces visibility to the outside.

Description of the invention

[0005] Based on the prior art, an objective of the present invention is to provide a reinforcement for curtain walls and sliding windows or doors, especially for minimalist carpentry, which, by forming an intermediate frame that is as strong as or stronger than a conventional one, is transparent so that it allows light to pass through freely and does not create any visual obstacle from inside the opening to be closed, making it ultra-minimalist.

[0006] In order to achieve the proposed objectives, mentioned in the previous section, the invention proposes a reinforcement for sliding windows or doors, which has the features of claim 1.

[0007] The reinforcement for curtain walls or sliding doors of the invention, intended to reinforce the structure of the joint between two sliding panels in the area in which they overlap when closing the opening, comprises vertically, on at least one of the faces of the sliding panel:

- A small profile which defines on its outer face a channel for coupling or attaching a reinforcement element; and
- A reinforcement element made up of a transparent sheet, preferably of tempered glass, attached on said profile orthogonally with respect to the sliding panels.

[0008] The transparent sheet forms a strut that is as resistant to the effect of frontal or lateral wind on said sliding panels as a conventional metal profile, with the advantage that, as it is a transparent element, it does not reduce the minimalist effect of the carpentry in the slightest. Furthermore, this sheet, whether made of glass, tempered glass, methacrylate or any other transparent plastic material, can be supplied to the carpentry fitter, or the fitter can simply cut it to size according to the needs of the installation, so it is not strictly necessary to have this product in stock.

Description of the drawings

[0009] As a complement to the description provided herein, and for the purpose of helping to make the features of the invention more readily understandable, the present specification is accompanied by a set of drawings which, by way of illustration and not limitation, represent the following:

Figure 1 shows a view of an embodiment according to the prior art, in cross section along a horizontal plane, of a minimalist carpentry provided with a vertical reinforcement profile (4) facing both sides of the sliding panels (2) in the area where they overlap when closed.

Fig. 2 is a cross section equivalent to that of Fig. 1, of an embodiment according to the invention.

Embodiment of the invention

[0010] As can be seen in the referenced figures, the invention relates to a reinforcement for curtain walls or sliding panels (2) of doors or windows, preferably of a minimalist type, intended to reinforce the structure of the joint between two sliding panels (2), in the area in which they overlap when they close the opening, preventing the sliding panel from being affected by the pressure exerted by the wind, particularly inwards of the opening closed by the same.

[0011] Figure 1 shows two sliding panels (2), fitted with metal profiles (1), preferably made of aluminium, which have, coinciding with the vertical line on which said sliding panels (2) face each other when closed, two weather strips (3), which overlap when the sliding panel is closed and sometimes connect to each other, closing the joint in the two consecutive sliding panels (2). On at least one of the faces of the sliding door, a vertical reinforcement profile (4) is arranged facing both faces of the sliding panels (2), in the area where they overlap when closed, which in the prior art is made up of an aluminium metal profile (4) that forms a double vertical upright on either side of the sliding door.

[0012] Fig. 2 shows the solution proposed by the invention applied to a sliding door, in which the aluminium profile (4) by way of a strut has been replaced by a small vertical profile (5), which defines on its outer face a channel for coupling or attaching a transparent sheet (6) located orthogonally with respect to the curtain wall or the sliding panels (2), making up a strut by itself which is equally resistant to the effect of frontal or lateral wind on said sliding panel.

[0013] The transparent sheet (6) in a preferred embodiment is made of glass, particularly tempered glass, although other transparent plastic materials such as methacrylate or polycarbonate can be used for the same purpose. In any of these materials, the sheet (6) can be supplied to the carpentry installer with standard measurements, or the installer can simply cut it to size depending on the requirements of each installation, so that creating a stock catalogue of this type is not necessary. In fact, the transparent sheet (6) could be made up vertically of two or more pieces, glued or overlapping each other.

[0014] The attachment of the transparent sheet (6) to the profile (5) can be carried out by any known means, for example by means of adhesives, screws, both, etc.

[0015] The configuration of the profile (5) also has hardly any requirements. It generally has a U-shaped recess on the outside, inside of which the sheet (6) fits, and preferably has an H-shaped configuration which, in the recess opposite the one in which said sheet (6) is coupled, has a metal reinforcement and/or a weather strip facing the corresponding sliding panel (2).

[0016] It is hereby stated for all appropriate purposes that the materials, shape, size, and arrangement of the described elements can be modified, provided that this does not entail altering the essential features of the invention claimed below:

Claims

1. A reinforcement for sliding windows or doors and curtain walls, intended to reinforce the structure of a curtain wall or the joint between two sliding panels (2), in the area in which they overlap in the closed position, **which comprises** vertically, on at least one of the faces of the sliding panel or curtain wall:

- a small vertical profile (5) which defines on its outer face a channel for coupling or attaching a reinforcement element,
- a reinforcement element consisting of at least one transparent sheet (6), attached on said profile (5), orthogonally with respect to the sliding panels (2).

2. The reinforcement according to claim 1, wherein the transparent sheet (6) is made of glass.

3. The reinforcement according to claim 2, wherein the transparent sheet (6) is made of tempered glass.

4. The reinforcement, according to any of the preceding claims, wherein the transparent sheet (6) is attached to the profile (5) by means of adhesives.

5. The reinforcement, according to any of the preceding claims, wherein the transparent sheet (6) is attached to the profile (5) by means of screws.

6. The reinforcement, according to any of the preceding claims, wherein the profile (5) has a U-shaped recess on the outside, inside of which the transparent sheet (6) fits.

7. The reinforcement, according to any of the preceding claims, wherein the profile (5) inside of which the transparent sheet (6) fits has an H-shaped configuration in the outward U-shaped recess of which the transparent sheet (6) fits, while the recess defined towards the curtain wall or the sliding panels

(2) has a metal reinforcement and/or a weather strip facing the corresponding sliding panel (2).

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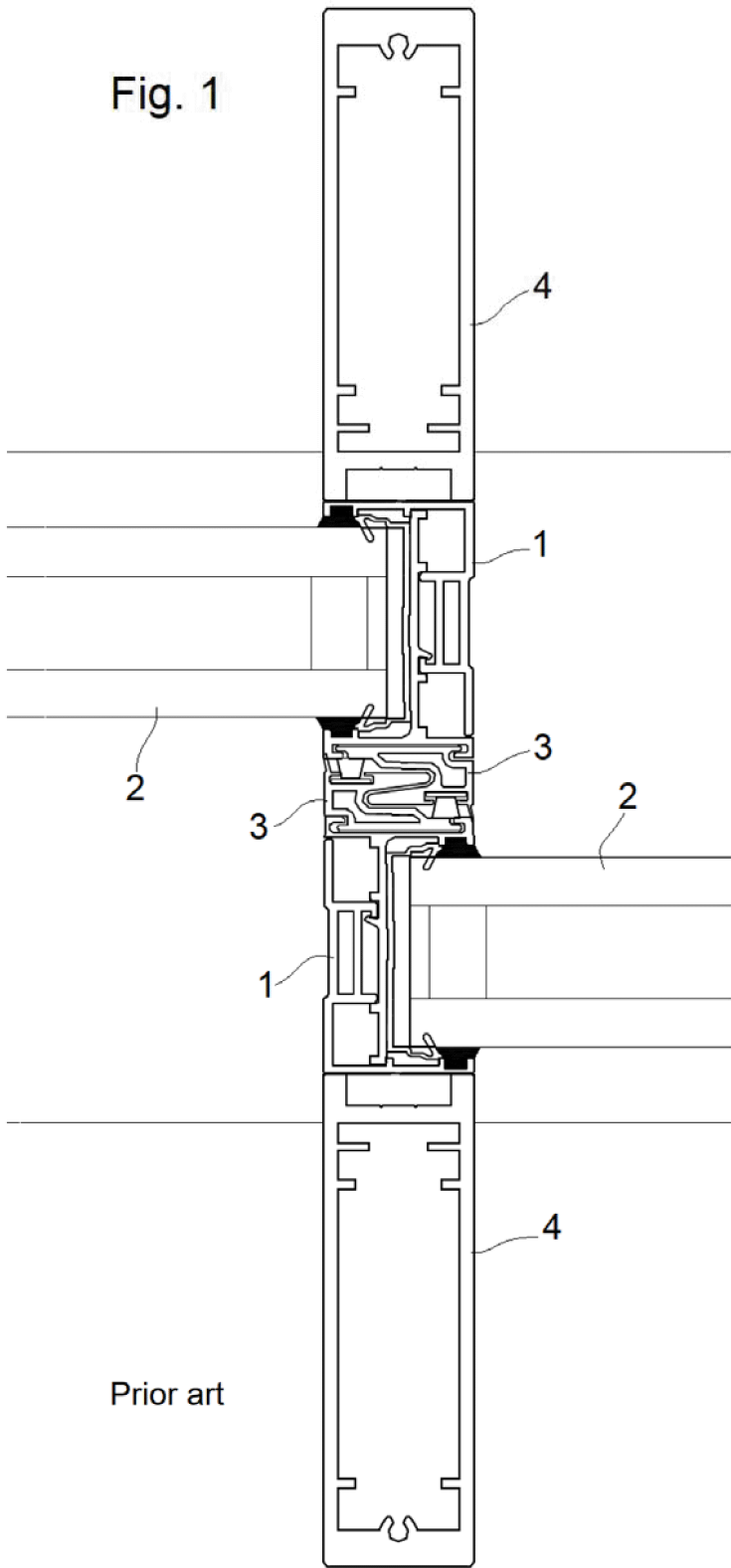
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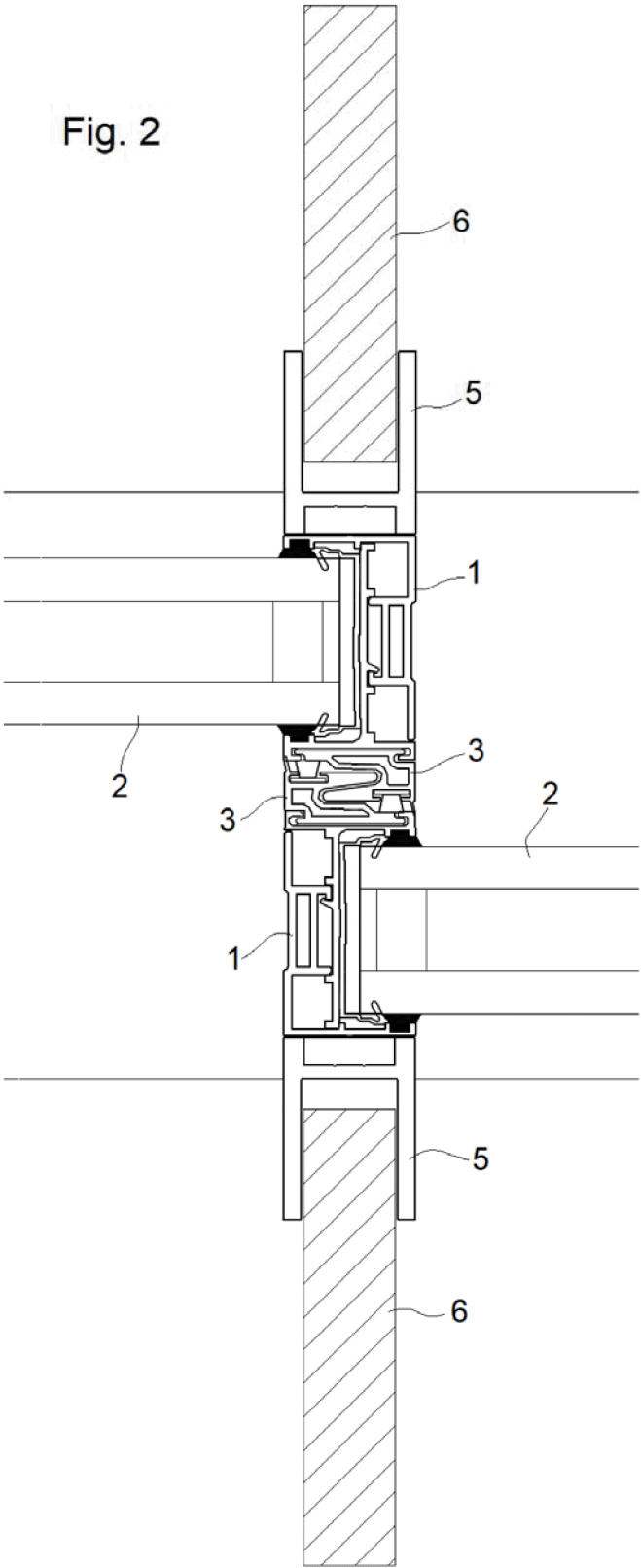
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Fig. 1



Prior art

Fig. 2



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2023/070748

A. CLASSIFICATION OF SUBJECT MATTER

E06B3/46 (2006.01)

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E06B

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

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

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1239094 A1 (LEVOLUX AT LTD) 11/09/2002, Paragraphs [0007 - 0022]; figures.	1-7
A	US 10900273 B1 (SALVONI BRUNO) 26/01/2021, column 1, line 29 - column 2, line 55; column 5, line 33 - column 6, line 37; column 7, lines 53 - 58; column 11, lines 43 - 51; figures.	1-7
A	WO 2019224433 A1 (KAWNEER FRANCE) 28/11/2019, the whole document.	1-7
A	US 2017058538 A1 (ZAHNER L WILIAM ET AL.) 02/03/2017, the whole document.	1-7
A	US 2019271155 A1 (GILBERTSON NATHAN ET AL.) 05/09/2019, the whole document.	1-7

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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"E" earlier document but published on or after the international filing date

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document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

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18/07/2024

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Information on patent family members

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