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(54) **SUPPORT STRUCTURE FOR ROTATING SHUTTERS**

TRÄGERSTRUKTUR FÜR EINEN ROLLADEN

STRUCTURE DE SUPPORT PERMETTANT DE FAIRE TOURNER DES VOLETS

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Description

[0001] The present invention relates to a support structure for rotating shutters in accordance with the preamble of Claim 1, such as, for example, leaf shutters or shutters of the Vicenza or Padova type and the like.

[0002] In the construction sector it is known to use shutters and the like which are applied to the structure of a building in order to cover/protect the openings of windows or doors. Among the various types of shutters leaf shutters are very common, these being supported by means of hinges such as to allow the shutter to rotate between an open position and a closed contact position where they perform the abovementioned function of covering/protecting the window or door openings.

[0003] The use of rotating shutters of the leaf, Vicenza or Padova type is particularly advantageous owing to their limited impact on aesthetics and also in terms of installation, since it is not required to use sliding rails and the like.

[0004] It should be pointed out, however, that, in order to install the shutters correctly, said installation operation must be performed very carefully, in particular as regards correct fixing of the fixed hinge part to the structure of the building in the vicinity of the window or door openings. As a result, there exists a very pressing need to be able to perform correct and precise installation of the shutters simply and rapidly, avoiding the risk of imprecise positioning.

[0005] With reference to the shutters there is also a very pressing need to be able to automate the opening/closing operation of the shutters so as to avoid having to lean outside the building in order to perform this operation. In this connection it should be pointed out that the automation of leaf shutters is nowadays performed using actuating means which necessarily envisage the presence of complex hinged lever mechanisms able to follow the rotating movement of the shutters between the closed position and open position. According to a further aspect there is therefore also a very pressing need to be able to automate in a simple manner the leaf shutters of the type considered above. Moreover, during mounting of the abovementioned frame, the problems associated with seating and inserting upper cross-beams or casing in the wall, as is usual practice nowadays, are avoided.

[0006] Document FR-A-2 807 781 discloses a support structure for leaf shutters comprising a frame to which the leaf shutters are directly pivoted and actuating means integrated in the frame in order to act the leaf shutters from opening and closing configuration. The rotation shafts of said actuating means being positioned between the hinging axis of the leaf shutters in order to avoid the need of pulling arms to act on the leaf shutters.

[0007] The technical problem underlying the present invention is to devise and provide a support structure for leaf shutters which has structural and functional characteristics such as to satisfy the abovementioned requirements, overcoming at the same time the drawbacks of

the teaching mentioned above with reference to the prior art.

[0008] According to the invention, this technical problem is solved by a support structure for leaf shutters in accordance with Claim 1.

[0009] With the support structure for leaf shutters according to the present invention, it is possible to perform installation of the shutters in a simple and precise manner, allowing at the same time automation of the opening/closing movement of the leaf shutters without having to provide complex and aesthetically unattractive hinged lever systems. Moreover, with this structure, it is possible to achieve much more efficient insulation during closure compared to conventional installations and, as will emerge more clearly from the remainder of the description, the more set-back position when closed ensures a lesser degree of exposure to adverse weather conditions.

[0010] The characteristic features and further advantages of the support structure for leaf shutters according to the present invention will emerge from the following description of some preferred embodiments thereof, provided by way of a non-limiting example, with reference to the accompanying figures, in which:

- Figure 1 shows a schematic front view, from the outer side, of the support structure for shutters according to the invention and a twin-leaf shutter supported by it in the closed position;
- Figure 2 shows a schematic front view, from the inner side, of the support structure and the twin-leaf shutter according to Figure 1;
- Figure 3 shows a perspective view of a detail according to Figure 1 with a leaf in a partially open configuration, viewed from the outer side;
- Figure 4 shows the detail of Figure 3, without the casing of the upper cross-member;
- Figure 5 shows the detail of Figure 3, viewed from the inner side;
- Figure 6 shows a partially sectioned plan view of a detail of Figure 1;
- Figure 7 shows a simplified view, with parts separated, of the support structure and twin-leaf shutter according to Figure 1;
- Figure 8 shows a perspective view of a detail of a shutter support structure according to the invention applied to a Vicenza type shutter shown in the partially open configuration.

[0011] With reference to Figures 1 to 7, 1 denotes overall a support structure for a leaf shutter 2.

[0012] In the example shown the shutter 2 is of the twin-leaf type and comprises two leaves 3 which are supported so as to be able to rotate with respect to the structure of the building so as to pass from an open configuration into a closed contact configuration where the leaves 3 perform the function of covering/protecting the window or door openings.

[0013] The support structure 1 according to the inven-

tion comprises two facing uprights 4 and 5 and an upper cross-member 6 for connecting together the abovementioned uprights. Together the cross-member 6 and the uprights 4 and 5 define a frame able to be fixed to the masonry structure of the building in the region of a window or door opening. More specifically, the support structure 1 is suitable for being inserted directly inside the abovementioned opening, so as to be substantially flush with the outer wall which bounds the opening.

[0014] In accordance with a variation of embodiment, the support structure 1 according to the invention may also comprise a bottom cross-member 7 for connecting together the uprights 4 and 5, which helps increase the rigidity of the structure. In this configuration the support structure 1 has a quadrilateral configuration. In this connection it should be pointed out that the presence of the bottom cross-member 6, although it allows an increase in the structural rigidity of the support structure, may be undesirable for some applications, for example in the case of French windows, since it may hinder access.

[0015] The uprights 4 and 5 and the upper cross-member 6 and bottom cross-member 7 may advantageously be made of aluminium or other material which can be easily extruded, as well as wood or plastic.

[0016] Furthermore, the support structure 1 comprises hinges 8 which are associated with the uprights 4 and 5 in order to allow the abovementioned rotation of the leaves 3 of the shutter 2.

[0017] In this connection it should be pointed out that the embodiment shown in the figures relates to a twin-leaf shutter such that both the upright 4 and the upright 5 have hinges 8 for allowing rotation of the respective shutter 2 supported by them. Differently, in the case where the shutter has only one leaf, which may be divided into two or more parts, it is evident that only one of the two side uprights will be provided with respective hinges.

[0018] In the example shown in the figures, each leaf 3 of the shutter 2 is supported rotatably with respect to the respective upright 4 or 5 by means of two hinges 8, it also being possible to envisage a greater number of hinges, for example three or four hinges for leaves with greater dimensions and/or weight.

[0019] Each hinge 8 comprises a fixed part 8a fixed to the respective upright 4,5 and a movable part 8b which is associated with the fixed part 8a so as to be able to rotate about a hinging axis which is conventional per se. The movable hinge part 8b is intended to be fixed to a respective leaf of a shutter so as to ensure the rotational supporting of the leaf with respect to the upright between a closed position in contact with the support structure 1 (Figures 1 and 2) and an open position. Figures 3, 4 and 5 show a condition where one of the two leaves is in the partially open configuration.

[0020] The support structure 1 envisages locating means against which the leaves 3 of the shutter 2 come into contact, defining the abovementioned closed contact position.

[0021] In greater detail, the fixed hinge part 8a is fixed

to the respective upright by means of a fixing bracket 14, while the movable hinge part 8b is in turn rigidly connected to a further fixing bracket 15 designed to allow fixing to the leaf 3.

[0022] Advantageously all the hinges 8 fixed to the same upright 4 or 5 are positioned aligned with each other so as to have their respective axes of rotation substantially aligned with each other along the same straight line X-X intersecting the upper cross-member 6. Furthermore, the upper cross-member 6 defines a housing 9 for housing actuating means 12 suitable for rotationally actuating the leaves 3 of the shutter 2 between the closed position in contact with the support structure 1 (Figure 1) and an open position. Advantageously, the abovementioned actuating means 12 have a rotating shaft 13 which extends along the abovementioned straight line X-X in alignment with the axes of the hinges 8 and is able to cause rotation of the respective leaf 3.

[0023] In the example shown in the Figures, the support structure 1 according to the invention comprises two respective and separate actuating means 12 which are positioned at the opposite side ends of the upper cross-member 6, each having a respective rotating shaft 13 positioned and extending in the manner described above.

[0024] Preferably, the housing 9 of the upper cross-member 6 is closed at the bottom by a covering case 10 which has an opening 11 positioned opposite the point where the abovementioned straight line X-X intersects the upper cross-member 6. The free end of each rotating shaft 13 of the actuating means 12 projects from the respective opening 11 so as to be able to transmit the rotational movement to the respective leaf 3. For this purpose, each leaf 3 of the shutter 2 has, fixed thereto, along the upper edge close to the respective upright 4,5, a bracket 20 - in the example L-shaped - which is designed to engage with the free end of the respective rotating shaft 13 in the form of a prismatic connection able to transfer the rotational movement of the rotating shaft 13 to the bracket 20 and, consequently, to the respective leaf 3. In the example shown in the figures, the free end of the rotating shaft 13 terminates in a rectangular end lug, while the bracket 20 has an end fork able to engage with this end lug.

[0025] According to an alternative embodiment not shown, the abovementioned bracket 20 may have an end which is formed so as to be inserted inside the respective opening 11 of the casing 10 and be rotationally actuated there by the actuating means 12.

[0026] It should be pointed out that the operation of the actuating means 12, in particular the electric motor incorporated in them, may advantageously be managed by an electronic module, the latter being controlled by means of control signals (electric signals of the type which can be transmitted via radio frequency, infrared or cable), and by end-of-travel sensors.

[0027] The control signals may, for example, be generated by a user who presses the keys forming part of a remote control or a control switch.

[0028] In order to ensure greater solidity of the support structure 1, the uprights 4 and 5 have a box-like form, as do the upper cross-member 6 and the bottom cross-member 7 where present. The connection between an upright and a cross-member at a corner may be performed, in a manner conventional per se, by means of reinforcing angle-pieces which engage with inner end portions of the abovementioned box-like structures.

[0029] In accordance with a preferred constructional embodiment, the uprights 4 and 5 have a respective recess 16 in the inner wall in the vicinity of the top end, more precisely at a predefined distance from the upper cross-member 6. This recess is such as to allow the built-in mounting of a portion of the actuating means 12 so as to obtain positioning of these motor means which is as close as possible to the outer side of the support structure, namely in the vicinity of the masonry structure.

[0030] Similarly, the upper cross-member 6 also has a respective recess 21 (shown in Figure 5) which is formed in its bottom wall at the opposite ends. This recess 21 allows built-in mounting of a portion of the actuating means 12 so as to obtain positioning of these motor means which is as high up as possible.

[0031] Advantageously the support structure 1 comprises a perimetral flange 18 and a corresponding perimetral flange 19 projecting outwards along the outer and inner edges of the support structure 1, respectively. The abovementioned perimetral flanges 18 and 19 are able to ensure that there is correct contact between the support structure 1 and the masonry structure portion of the building to which this structure is applied, acting as a barrier against the possible infiltration of water, rain and the like. In particular, the perimetral flange 18 is able to project a few centimetres beyond the edge of the window or door opening inside which the support structure 1 is arranged.

[0032] During use of the support structure 1, the latter is fixed, in a manner conventional per se, for example by means of plugs, to the masonry structure of the building, after it has been correctly positioned inside the opening, for example of a window.

[0033] Once the support structure 1 has been arranged in position, with the fixed hinge parts 8a already fixed to the uprights 4 and 5, it is merely required to mount on it the leaves 3 of the shutter 2, to which the movable hinge parts 8b have been fixed beforehand by means of the fixing brackets 15. In order to do so it is sufficient to engage the movable hinge parts 8b with the hinge pin mounted on the fixed parts 8a of the said hinges.

[0034] The structure 1 therefore ensures correct positioning of the leaves 3 and the correct closure of the window opening when both the leaves 3 are in the closed contact configuration (Figures 1 and 2). Moreover the presence of the support structure 1 ensures that the two opposite leaves 3 of the shutter 2 overlap with each other in the closed condition in the correct manner.

[0035] In the case where it is required to automate operation of the shutter 2, it is sufficient to add the actuating

means 12, if necessary also at a later date after initial installation of the support structure. To do so, it is sufficient to house the actuating means 12 in the housing 11 provided in the upper cross-member, ensuring that the end lugs of the rotating shafts 13 project from the respective openings in the casing 10. Then the bracket 20 need merely be mounted on each leaf 3 of the shutter, ensuring that the end fork of each bracket engages with the end lug of the respective rotating shaft.

[0036] With reference to Figure 8 it should be pointed out that the figure shows a support structure 1 according to the invention designed to support a rotating shutter 2 of the so-called Vicenza type. In particular, Figure 8 shows a situation where the casing 10 of the upper cross-member 8 has been removed and the Vicenza type leaf 3, composed of two half-leaves 3a and 3b hinged together, is in a partly open position. It should be pointed out that the half-leaf 3b, not directly hinged with the upright 4, is guided along an upper track supported by the upper cross-member 6 in a manner conventional per se. For the sake of simplicity of the illustration it was preferred not to show the abovementioned upper track and the connection means necessary for slidably connecting the half-leaf 3b to this track since they are parts which are known per se to a person skilled in the art.

[0037] It should be pointed out that the structural and functional features of the support structure 1, in particular with reference to positioning of the hinging axes with respect to the upper cross-member, are such that it is possible to perform automation of the leaf shutters without having to provide hinged lever systems since, as described above, the bracket rigidly fixed to each leaf 3 is directly actuated by a rotating shaft of the actuating means. As can be seen from that described above, with the support structure for leaf shutters according to the invention it is possible to fulfil the abovementioned requirements, without encountering the problems associated with the difficulty of positioning the hinges with respect to the masonry structure or the presence of the hinged lever systems.

[0038] Obviously, a person skilled in the art, in order to satisfy contingent and specific requirements, may make numerous modifications and variations to the support structure for leaf shutters described above, all of which moreover are included within the scope of protection of the invention as defined by the following claims.

Claims

1. Support structure for leaf shutters (2), comprising:

- two facing uprights (4,5) and an upper cross-member (6) connecting together said uprights (4,5), together the cross-member (6) and said two facing uprights (4,5) defining a frame suitable for being fixed to a masonry structure of a building in the region of a window or door open-

ing;

- hinges (8) comprising a fixed part (8a) fixed to an upright (4,5) and a movable part (8b) associated with said fixed part (8a) so as to be able to rotate about a hinging axis (X-X), said movable hinge part (8b) being intended to be fixed to a shutter (3) in order to perform rotational supporting thereof with respect to said support structure (1) between a position closed against said support structure and an open position,

characterized in that:

- the hinges (8) fixed to a respective upright (4,5) are positioned so as to have their respective axes of rotation substantially aligned together along a straight line (X-X) intersecting said upper cross-member (6) of the frame and

- said upper cross-member (6) defines a housing (9) where are housed actuating means (12) for actuating a shutter between a closed position and an open position, wherein said actuating means (12) have a rotating shaft (13) able to cause rotation of a respective leaf (3), said rotating shaft (13) extending in alignment with the axes of rotation of the hinges (8) of a respective upright (4,5).

2. Support structure according to Claim 1, in which the housing (9) of said upper cross-member (6) is closed at the bottom by a casing (10) having an opening (11) positioned at the point where said cross-member is intersected by said straight line (X-X) passing along the axes of rotation of the hinges (8) of each upright (4,5).
3. Support structure according to Claim 2, wherein the free end of said rotating shaft (13) projects from the opening (11) to be able to transmit the rotational movement to the respective leaf (3).
4. Support structure according to any one of Claims 1 to 3, comprising respective pluralities of hinges (8) on each of said two uprights (4,5), said upper cross-member (6) defining a housing (9) for housing said actuating means (12) in the vicinity of each upright (4,5).
5. Support structure according to any one of Claims 1 to 4, comprising a bottom cross-member (7) for connecting together said uprights (4,5).
6. Support structure according to any one of Claims 1 to 5, comprising a flange (18) projecting outwards along the outer edge.
7. Support structure according to any one of Claims 1 to 6, comprising a flange (19) projecting outwards

along the inner perimetral edge.

8. Support structure according to any one of Claims 1 to 7, in which said fixed part (8a) of said hinges (8) is fixed to the respective upright (4,5) by means of a fixing bracket (14).
9. Support structure according to any one of Claims 1 to 8, in which said movable part (8b) of said hinges (8) is connected to a fixing bracket (15) for allowing fixing to a shutter (3).
10. Support structure according to any one of Claims 1 to 3, in which said uprights have a box-like form.
11. Support structure according to Claim 10, in which said uprights (4,5) have, formed in them, a recess (16) for allowing built-in mounting of a portion of the actuating means and obtaining positioning of said motor means as close as possible to the outer side of the support structure, namely in the vicinity of the masonry structure.
12. Support structure according to any one of Claims 1 to 3, in which said upper cross-member comprises a section with a box-like form.
13. Support structure according to Claim 12, in which said cross-member (6) comprises a recess (21) for allowing built-in mounting of a portion of the actuating means and obtaining positioning of said actuating means as high up as possible.

35 Patentansprüche

1. Tragkonstruktion für Läden (2), umfassend:

- zwei einander zugewandte Pfosten (4, 5) und einen oberen Querträger (6), der diese Pfosten (4, 5) miteinander verbindet, wobei der Querträger (6) und die zwei einander zugewandten Pfosten (4, 5) gemeinsam einen Rahmen definieren, der geeignet ist, im Bereich einer Fenster- oder Türöffnung am Mauerwerk eines Gebäudes befestigt zu werden;

- Scharniere (8), die einen an einem Pfosten (4, 5) befestigten festen Teil (8a) und einen beweglichen Teil (8b) umfassen, der so mit dem festen Teil (8a) verbunden ist, dass er sich um eine Gelenkachse (X-X) drehen kann, wobei der bewegliche Scharnierteil (8b) dazu bestimmt ist, an einem Laden (3) befestigt zu werden, um dessen gegenüber der Tragkonstruktion (1) zwischen einer gegen die Tragkonstruktion geschlossenen Stellung und einer geöffneten Stellung drehbare Lagerung zu bewerkstelligen;

dadurch gekennzeichnet, dass:

- die an einem jeweiligen Pfosten (4, 5) befestigten Scharniere (8) so angeordnet sind, dass ihre jeweiligen Drehachsen im Wesentlichen entlang einer Geraden (X-X) miteinander gefluchtet sind, die den oberen Querträger (6) des Rahmens kreuzt, und
 - der obere Querträger (6) eine Aufnahme (9) definiert, in der Betätigungsmittel (12) zum Betätigen eines Ladens zwischen einer geschlossenen Stellung und einer geöffneten Stellung untergebracht sind, wobei diese Betätigungsmittel (12) eine Drehwelle (13) aufweisen, welche die Drehung eines jeweiligen Flügels (3) bewirken kann, wobei sich die Drehwelle (13) in einer Linie mit den Drehachsen der Scharniere (8) eines entsprechenden Pfostens (4, 5) erstreckt.
2. Tragkonstruktion nach Anspruch 1, bei der die Aufnahme (9) des oberen Querträgers (6) unten durch ein Gehäuse (10) verschlossen wird, das eine Öffnung (11) aufweist, die sich an dem Punkt befindet, wo der Querträger von der Geraden (X-X) gekreuzt wird, die entlang den Drehachsen der Scharniere (8) jedes Pfostens (4, 5) verläuft.
 3. Tragkonstruktion nach Anspruch 2, bei der das freie Ende der Drehwelle (13) aus der Öffnung (11) herausragt, damit es die Drehbewegung auf den jeweiligen Flügel (3) übertragen kann.
 4. Tragkonstruktion nach einem der Ansprüche 1 bis 3, die jeweilige Vielzahl von Scharnieren (8) auf jedem der zwei Pfosten (4, 5) umfasst, wobei der obere Querträger (6) eine Aufnahme (9) für die Unterbringung der Betätigungsmittel (12) in der Nähe jedes Pfostens (4, 5) definiert.
 5. Tragkonstruktion nach einem der Ansprüche 1 bis 4, die einen unteren Querträger (7) zum miteinander Verbinden der Pfosten (4, 5) umfasst.
 6. Tragkonstruktion nach einem der Ansprüche 1 bis 5, die einen längs der Außenkante nach außen vorstehenden Flansch (18) umfasst.
 7. Tragkonstruktion nach einem der Ansprüche 1 bis 6, die einen längs der inneren Umfangskante nach außen vorstehenden Flansch (19) umfasst.
 8. Tragkonstruktion nach einem der Ansprüche 1 bis 7, bei welcher der feste Teil (8a) der Scharniere (8) mit einer Befestigungsklammer (14) am jeweiligen Pfosten (4, 5) befestigt ist.
 9. Tragkonstruktion nach einem der Ansprüche 1 bis

8, bei welcher der bewegliche Teil (8b) der Scharniere (8) mit einem Befestigungswinkel (15) verbunden ist, um die Befestigung an einem Laden (3) zu ermöglichen.

10. Tragkonstruktion nach einem der Ansprüche 1 bis 3, bei der die Pfosten kastenförmig sind.
11. Tragkonstruktion nach Anspruch 10, bei der die Pfosten (4, 5) eine in ihnen ausgebildete Aussparung (16) aufweisen, um die Einbaumontage eines Teils der Betätigungsmittel zu ermöglichen und die Positionierung dieser Antriebsmittel möglichst nahe bei der Außenseite der Tragkonstruktion, und zwar in der Nähe des Mauerwerks, zu erreichen.
12. Tragkonstruktion nach einem der Ansprüche 1 bis 3, bei welcher der obere Querträger einen kastenförmigen Abschnitt umfasst.
13. Tragkonstruktion nach Anspruch 12, bei welcher der Querträger (6) eine Aussparung (21) umfasst, um die Einbaumontage eines Teils der Betätigungsmittel zu ermöglichen und die möglichst hohe Positionierung dieser Betätigungsmittel zu erreichen.

Revendications

1. Structure de support pour volets battants (2), comprenant .

- deux montants se faisant face (4,5) et une traverse supérieure (6) reliant ensemble lesdits montants (4,5), la traverse (6) et lesdits deux montants se faisant face (4,5) définissant ensemble un cadre adapté pour être fixé à une structure en maçonnerie d'un bâtiment dans la région d'une fenêtre ou ouverture de porte ;

- des charnières (8) comprenant une partie fixe (8a) fixée à un montant (4,5) et une partie mobile (8b) associée à ladite partie fixe (8a) de manière à pouvoir pivoter autour d'un axe d'articulation (X-X), ladite partie de charnière mobile (8b) étant destinée à être fixée à un volet (3) afin de réaliser un support pivotant de celui-ci par rapport à ladite structure de support (1) entre une position fermée contre ladite structure de support et une position ouverte,

caractérisée en ce que :

- les charnières (8) fixées à un montant respectif (4,5) sont positionnées de manière à avoir leurs axes respectifs de rotation substantiellement alignés ensemble le long d'une ligne droite (X-X) croisant ladite traverse supérieure (6) du cadre et

- ladite traverse supérieure (6) définit un logement (9) où sont logés des moyens d'actionnement (12) pour actionner un volet entre une position fermée et une position ouverte, où lesdits moyens d'actionnement (12) ont un arbre rotatif (13) capable d'entraîner la rotation d'un battant respectif (3), ledit arbre rotatif (13) s'étirant en alignement avec les axes de rotation des charnières (8) d'un montant respectif (4,5).
2. Structure de support selon la revendication 1, dans laquelle le logement (9) de ladite traverse supérieure (6) est fermé au fond par un boîtier (10) ayant une ouverture (11) positionnée au point où ladite traverse est croisée par ladite ligne droite (X-X) passant le long des axes de rotation des charnières (8) de chaque montant (4,5).
3. Structure de support selon la revendication 2, où l'extrémité libre dudit arbre rotatif (13) dépasse de l'ouverture (11) pour pouvoir transmettre le mouvement rotatif au battant respectif (3).
4. Structure de support selon une quelconque des revendications 1 à 3, comprenant des pluralités respectives de charnières (8) sur chacun desdits deux montants (4,5), ladite traverse supérieure (6) définissant un logement (9) pour loger lesdits moyens d'actionnement (12) à proximité de chaque montant (4,5).
5. Structure de support selon une quelconque des revendications 1 à 4, comprenant une traverse de fond (7) pour relier ensemble lesdits montants (4,5).
6. Structure de support selon une quelconque des revendications 1 à 5, comprenant une bride (18) dépassant vers l'extérieur le long du bord externe.
7. Structure de support selon une quelconque des revendications 1 à 6, comprenant une bride (19) dépassant vers l'extérieur le long du bord périmétral interne.
8. Structure de support selon une quelconque des revendications 1 à 7, dans laquelle ladite partie fixe (8a) desdites charnières (8) est fixée au montant respectif (4,5) au moyen d'une patte de scellement (14).
9. Structure de support selon une quelconque des revendications 1 à 8, dans laquelle ladite partie mobile (8b) desdites charnières (8) est reliée à une patte de scellement (15) pour permettre la fixation à un volet (3).
10. Structure de support selon une quelconque des revendications 1 à 3, dans laquelle lesdits montants ont une forme de boîte.
11. Structure de support selon la revendication 10, dans laquelle lesdits montants (4,5) ont, formé en eux, un retrait (16) pour permettre le montage intégré d'une partie des moyens d'actionnement et obtenir le positionnement desdits moyens moteurs aussi près que possible du côté externe de la structure de support, à savoir à proximité de la structure en maçonnerie.
12. Structure de support selon une quelconque des revendications 1 à 3, dans laquelle ladite traverse supérieure comprend une section avec une forme de boîte.
13. Structure de support selon la revendication 12, dans laquelle ladite traverse (6) comprend un retrait (21) pour permettre le montage intégré d'une partie des moyens d'actionnement et obtenir le positionnement desdits moyens d'actionnement aussi haut que possible.

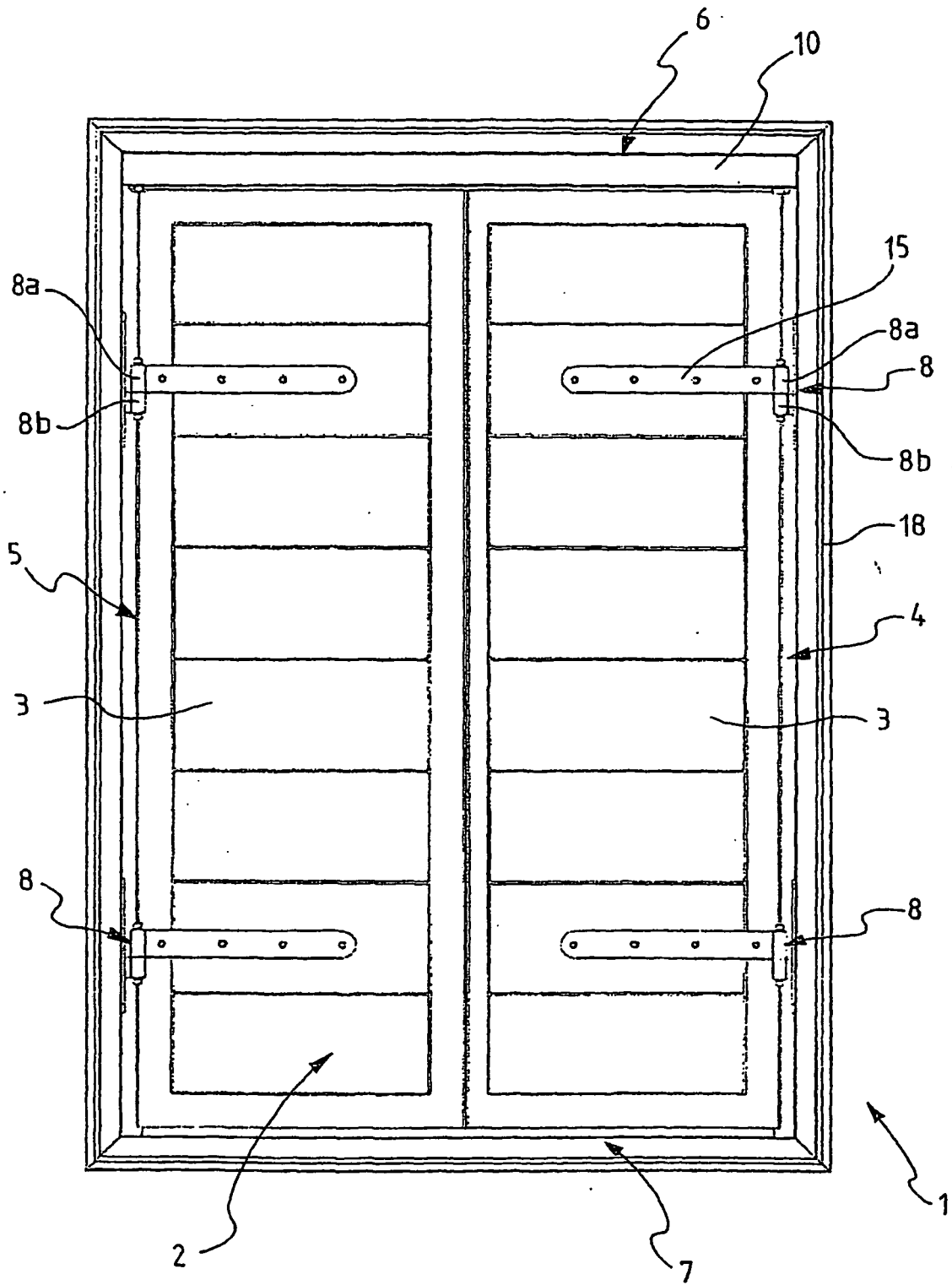


Fig. 1

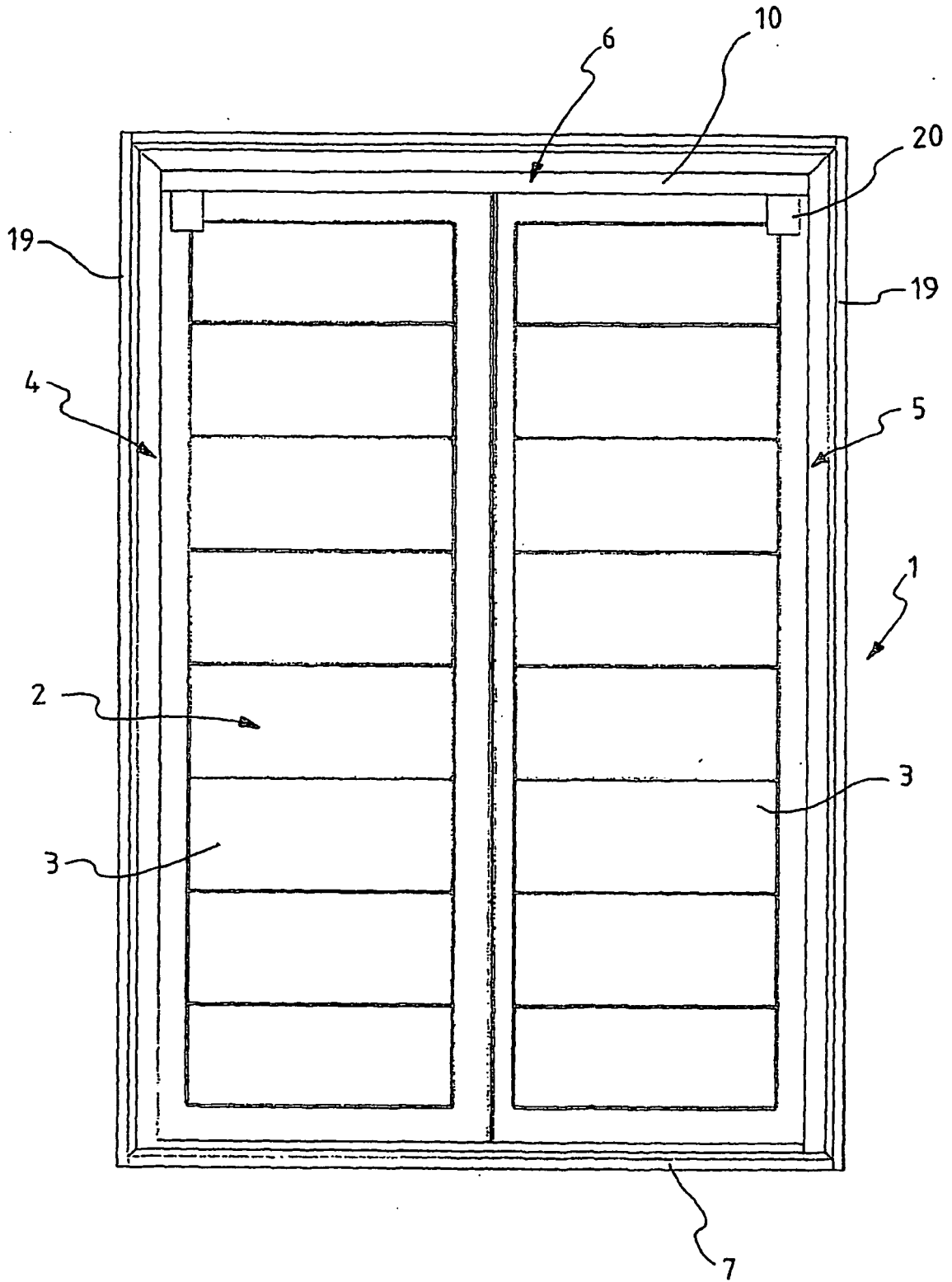


Fig. 2

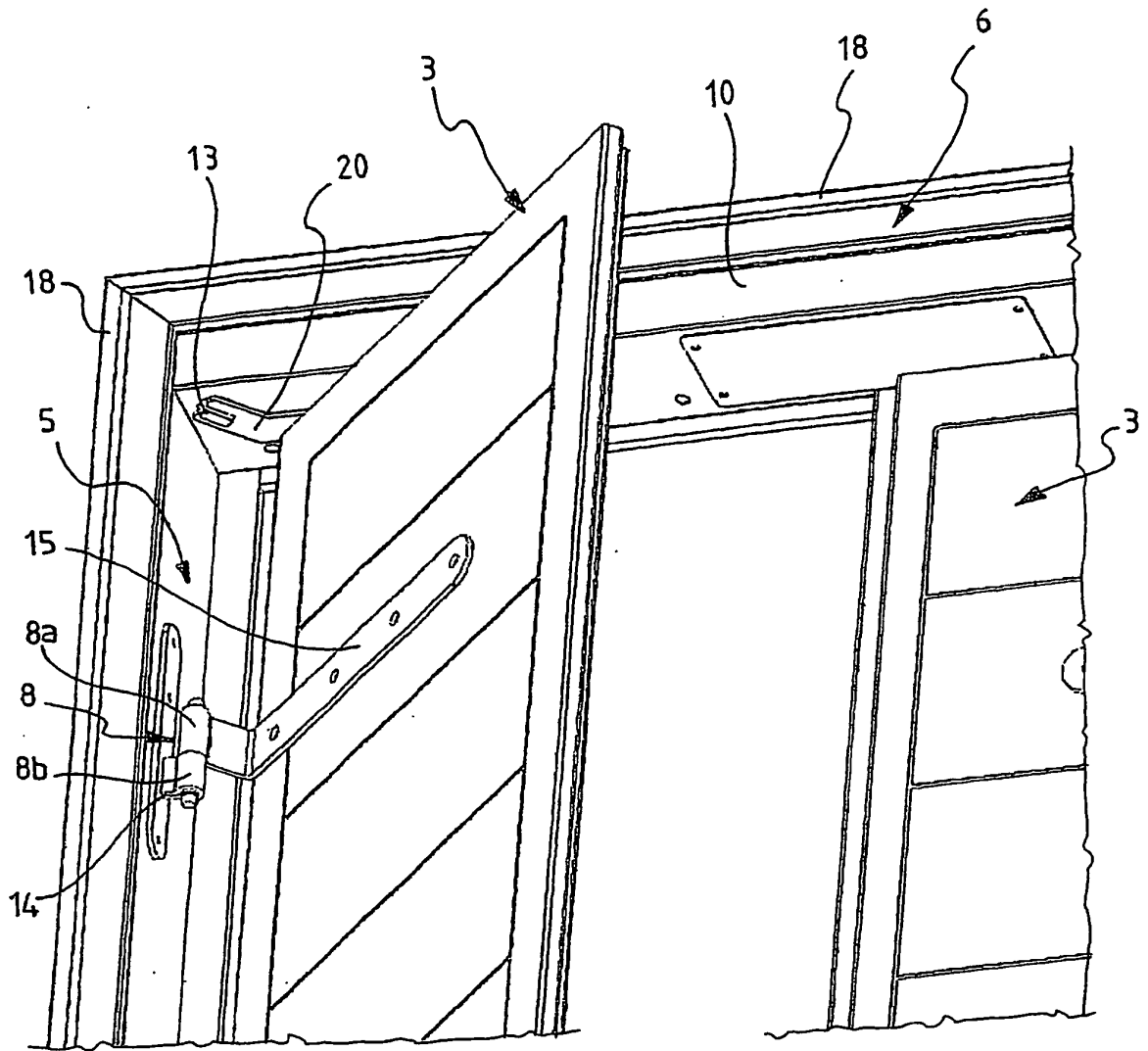


Fig. 3

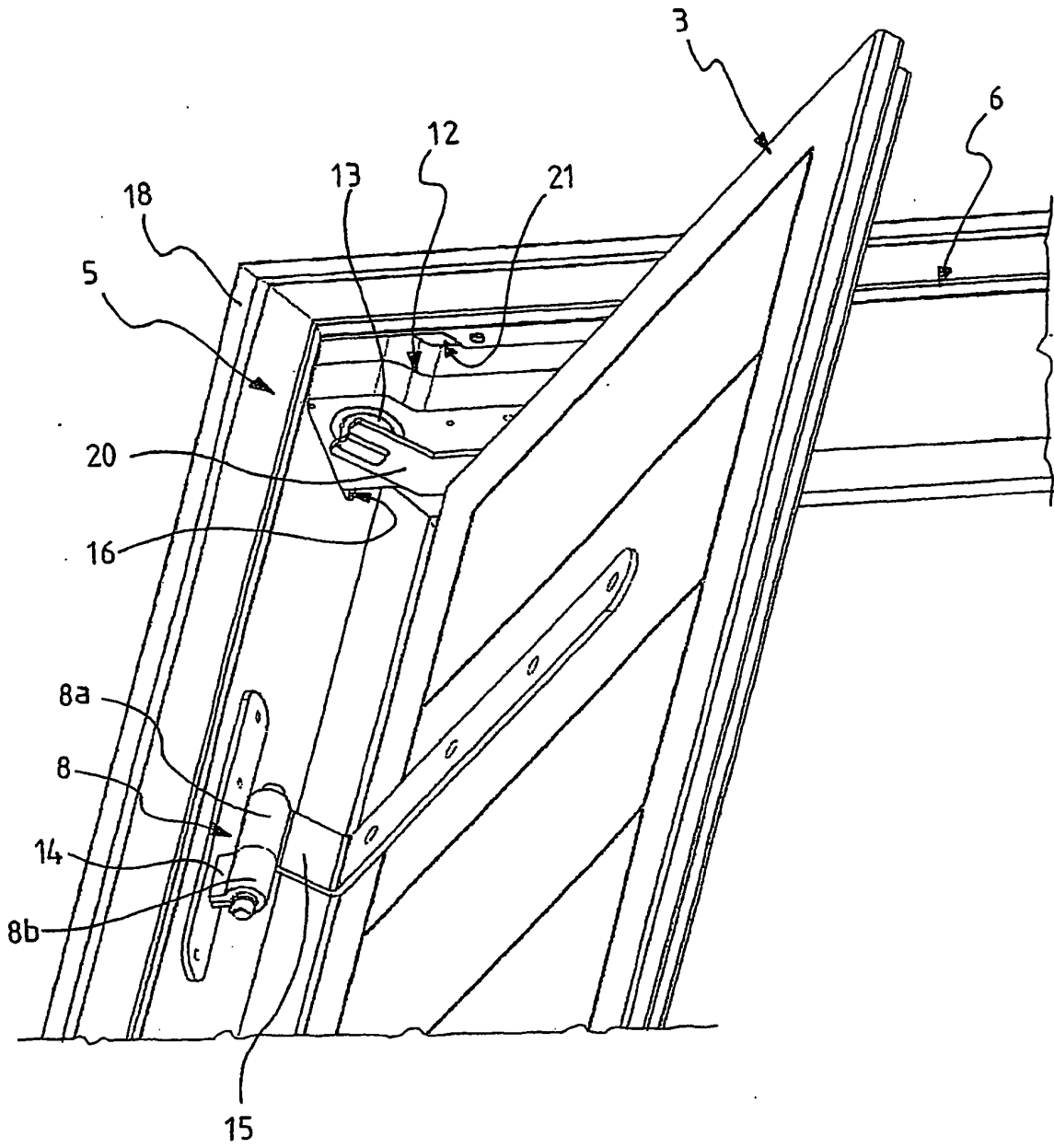


Fig. 4

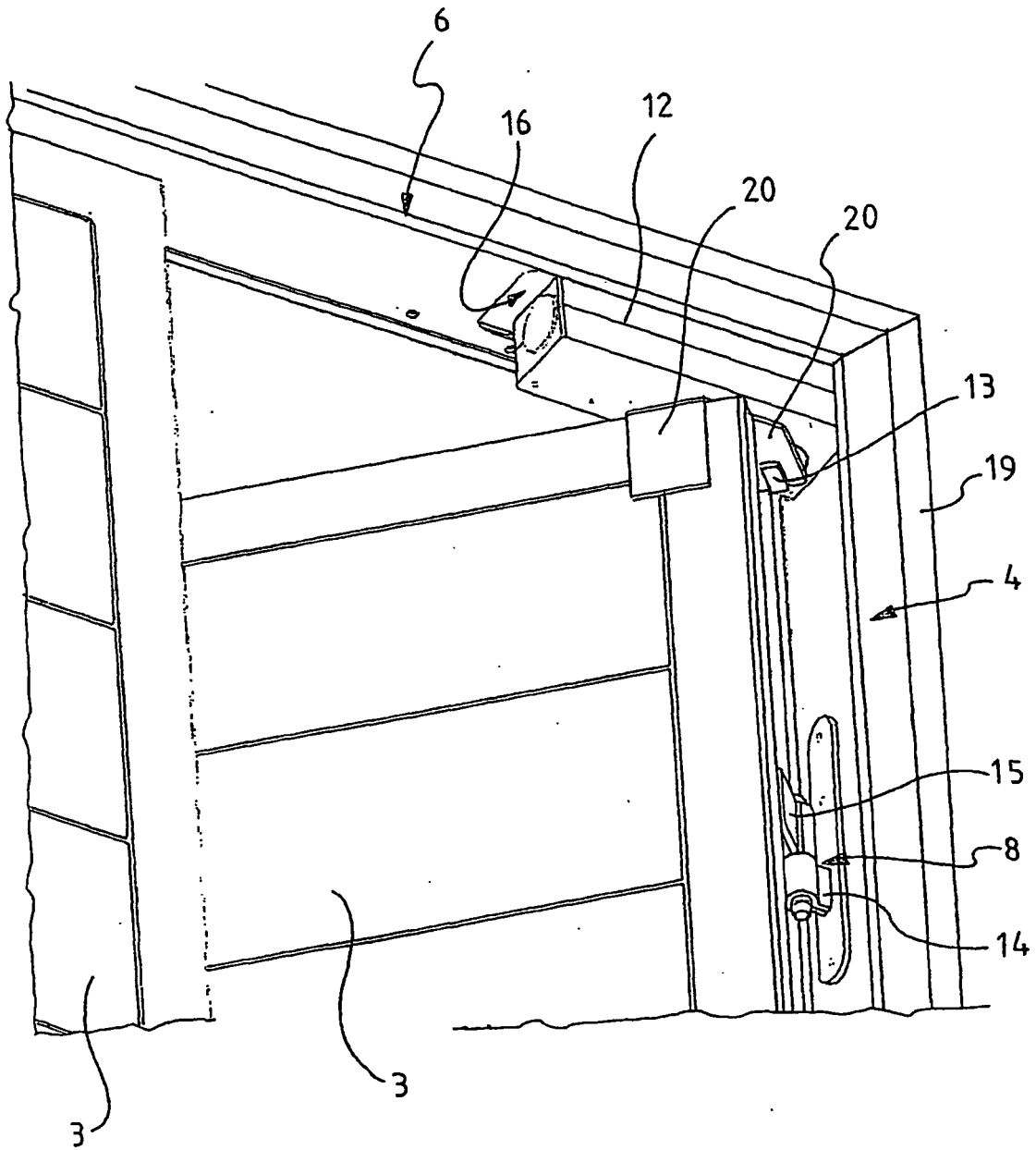


Fig. 5

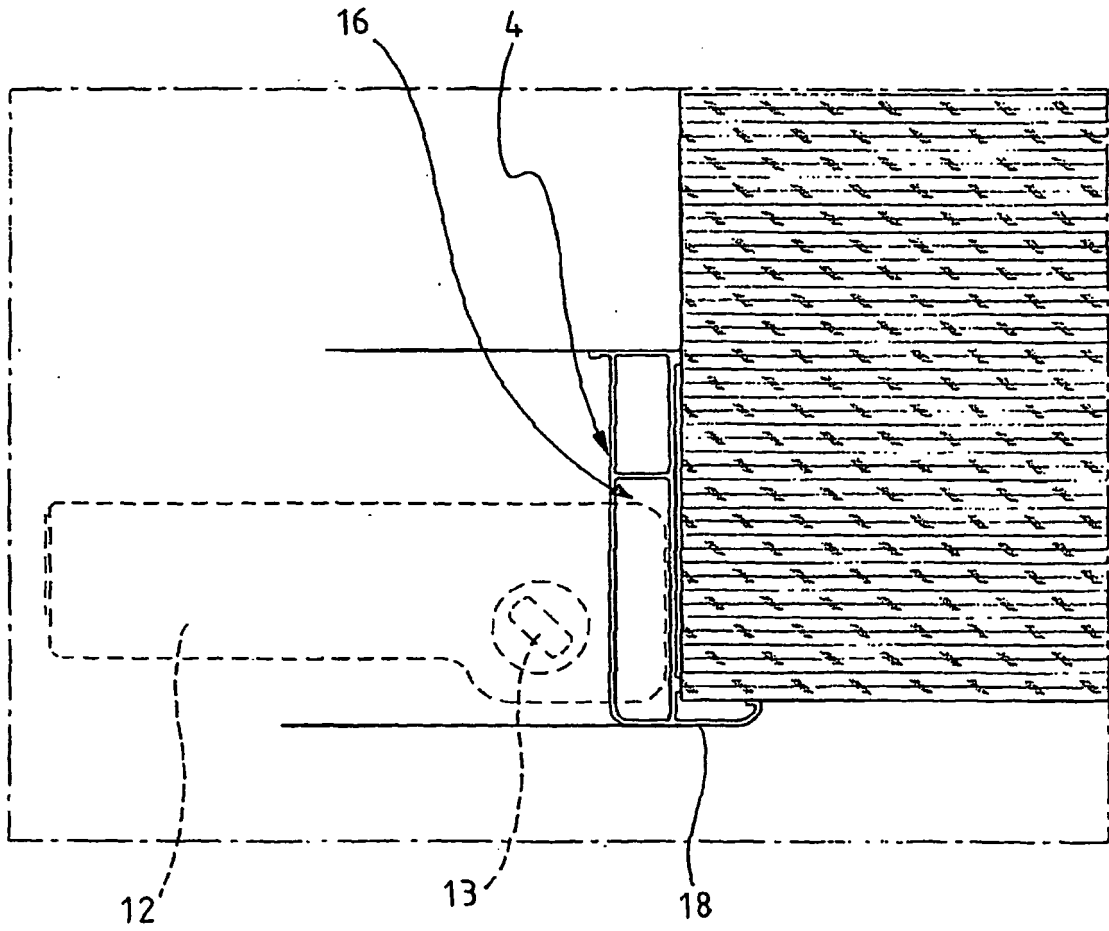


Fig. 6

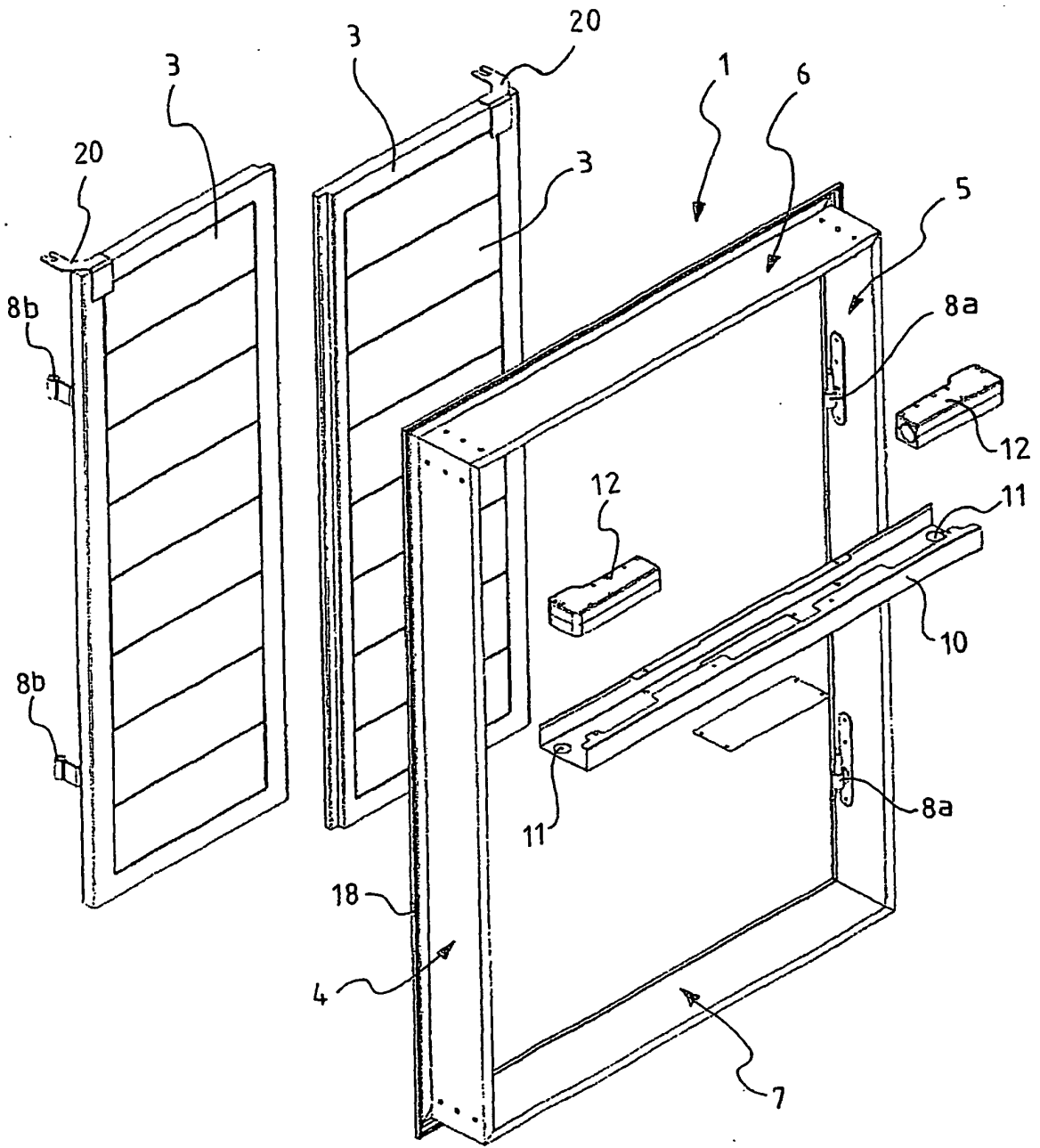


Fig. 7

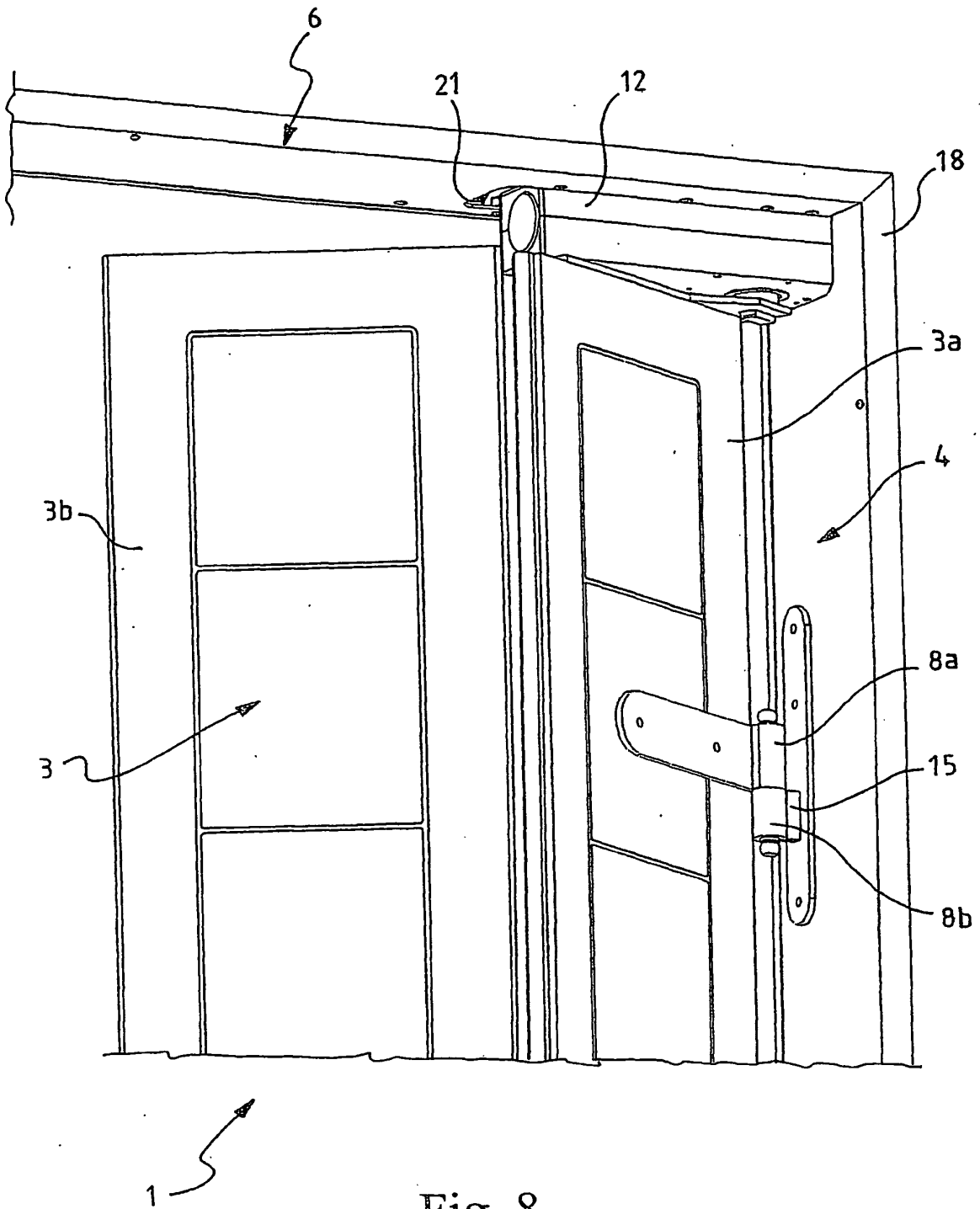


Fig. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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