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(54) **interconnection device for retractable sliding doors**

Verbindungsvorrichtung für einziehbare Schiebetüren

Dispositif d'interconnexion pour portes coulissantes rétractables

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## Description

**[0001]** The present invention relates to an interconnection device for retractable sliding doors.

**[0002]** Nowadays it is known to provide door frames which involve the use of a casing, arranged inside a wall or for the application of plasterboard, within which a door or a panel or a door leaf is slideably associated, which is also known as a "retractable door".

**[0003]** Door frames are also known which involve the use of a single rail external to the wall.

**[0004]** Such solutions make it possible to reduce the encumbrances of the door in a room thanks to the possibility of making it slide into the casing. One can thus use the space adjacent to the door which would otherwise be occupied by doors of the type which are hinged laterally to a casement.

**[0005]** In the known art the casing embedded in the plasterboard or plaster wall usually comprises vertical posts which form, together with transverse lintels, a case for the containment of the panel or of the door. With the application of an outer net to the containment case, the plaster can then be applied.

**[0006]** Protruding above the case, along an axis which is longitudinal with respect to the case and extends on the side opposite to the containment case, is a rail which is hidden by a jamb or directly by the section of the wall.

**[0007]** A type of jamb is thus known which involves the fixing of the upper lintel, which is previously placed so as to rest on the upper end of the vertical posts (or posts in abutment) and flush with them, by way of screws, or by way of an adhesive.

**[0008]** Then the vertical trim elements are mounted so as to hide the fixing system and the coupling fissures between the elements of the jamb and the parts of the casing or of the wall.

**[0009]** A system is also known in which the fixing of the upper lintel to the vertical post (or post in abutment) is ensured by way of a fixing plate, of a length that affects the ends both of the upper lintel and of the vertical post, and which has adapted holes for screws. All this is then hidden by trim elements.

**[0010]** Another system is also known in which the upper lintel is placed in front of the vertical post (or post in abutment) and is then fixed by way of screws which however are screwed in at the lower edge of the upper lintel (from the bottom upward). The coupling slots are then hidden by way of trim elements.

**[0011]** Such conventional technique has a number of drawbacks: in the first two solutions described, in fact, in order to remove the upper lintel, for example to height-adjust the door panel, it is necessary to remove the trim elements, which are generally fixed by way of nails or adhesives and/or silicone. This operation can cause damage to the wall, and in any case such operation must be done by trained personnel and requires a large amount of time to be carried out.

**[0012]** The latter conventional technique illustrated, al-

though simplifying the operation in that the fixing is done at the lower part of the upper lintel which is thus removable without removal of the trim elements, however still requires the use of an apparatus in order to remove the screws and thus introduces the possibility, as a result of having to execute the operation repeatedly, of stripping the threading in the lintel, which is generally made of wood.

**[0013]** EP 0 733 753 discloses a bar and post connection between a hollow vertical post and a hollow horizontal bar, comprising an axially movable spring-biased bolt located in a cylindrical housing of the bar and having an end locking member engaging in an associated bore in the wall of the post.

**[0014]** FR 2 764 966 A1 discloses a further interconnection device with all the features of the preamble of claim 1.

**[0015]** The aim of the present invention is thus to solve the above-mentioned technical problems, eliminating the drawbacks in the cited known art, by providing a device that makes it possible to achieve, quickly, easily and without special equipment, the fixing and the removal of the upper lintel.

**[0016]** Within this aim, an object of the invention is to provide a device that makes it possible to achieve such fixing and removal without causing any damage to the wall or to the components of the casing.

**[0017]** Another object is to provide a device that makes it possible to achieve such fixing and removal without the necessity of intervention by specially trained personnel.

**[0018]** Another object is to provide a device that can be used quickly, without the upper lintel, the posts and the trim elements being damaged in any way.

**[0019]** Another object is to provide a device that is structurally simple and can be produced with the usual plants and machines, and at low cost.

**[0020]** In accordance with the invention, there is provided an interconnection device for retractable sliding doors which are associable with a casing as defined in the appended claims.

**[0021]** Further characteristics and advantages of the invention will become more apparent from the detailed description of a specific, but not exclusive, embodiment, illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of the invention;

Figure 2 is an exploded view of the invention;

Figures 3, 4 and 5 show the invention applied to a set of covering elements of a casing;

Figure 6 is an exploded view of the previous figure;

Figures 7 and 8 show the invention associated and not associated with the upper lintel.

**[0022]** In the embodiments that follow, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

**[0023]** Moreover, it should be noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

**[0024]** With reference to the figures, the reference numeral 1 generally designates an interconnection device for retractable sliding doors (not shown) which are associable with a casing 2, which is associated in the plaster-board or plaster wall and usually comprises vertical posts 3 which form, together with upper lintels 4, a case for the containment of the door or of a panel.

**[0025]** The vertical posts 3 and the upper lintels 4 can be covered by way of transverse trim elements 5 and vertical trim elements 6.

**[0026]** The interconnection device 1 is constituted by a box-like body 7 that is constituted by a metallic or plastic material profile, which is substantially shaped like a parallelepiped with a square or rectangular cross-section and has a first solid portion 8 on which an axial seat 9 is provided which is preferably cylindrical in cross-section.

**[0027]** The first portion 8 is followed by a second portion 10, substantially having the same length and size, which in transverse cross-section is U-shaped so as to form a flat base 11 and two lateral wings 12a and 12b which thus form an opening 13 on one side.

**[0028]** A slot 14 is provided axially in the flat base 11 and is contiguous to the axial seat 9 and contoured with respect to it so as to constitute an extension of the axial seat 9.

**[0029]** A preferably L-shaped bolt 15 is associated slideably with the box-like body 7 at the axial seat 9 and at the slot 14.

**[0030]** The larger wing 16 of the bolt 15 slides freely within the axial seat 9 and in the slot 14, whereas the smaller wing 17 acts at the opening 13.

**[0031]** The end tip 18 of the bolt 15 can protrude beyond the perimetric edge 19 of the first body 8, on the side opposite to the second portion 10, by a desired extent.

**[0032]** The bolt 15 is arrangeable proximate to at least one end 20 of at least one of the upper lintels 4, at adapted axial guides 21a and 21b which are provided preferably on the lateral surface 22 of the upper lintels 4 that is directed away from the respective transverse trim element 5.

**[0033]** The end tip 18 of the bolt 15 is adapted to be connected selectively and temporarily to one of the vertical posts 3 at adapted and complementarily shaped seats 23 provided therein.

**[0034]** Wings 25 are provided on the lateral surfaces 24a and 24b of the first portion 8 of the body 7 and are shaped so as to facilitate the insertion, by means of pressure which may be manual, of the upper lintels 4 into the axial guides 21a and 21b and then prevent them from moving, all without the aid of adhesives for fixing.

**[0035]** Thus it has been found that the invention has achieved the set aim and objects, a device having been devised that makes it possible to achieve, quickly, easily

and without special equipment, the fixing and the removal of the upper lintel with respect to the casing without resulting in any damage to the wall or to the components of the casing. In fact in order to associate the upper lintels 4 with the vertical posts 3 with which the transverse trim elements 5 and the vertical trim elements 6 have previously been associated, it is sufficient to position the upper lintels 4 against the vertical posts 3 and push the bolt 7 through the smaller wing 17 until it is coupled with the seats 23 that are provided in the vertical posts 3.

**[0036]** The device makes it possible moreover to achieve such fixing and removal without the necessity of intervention by specially trained personnel and without the upper lintel, the posts and the trim elements being damaged in any way.

**[0037]** Obviously the invention is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

**[0038]** Obviously the materials used as well as the dimensions constituting the individual components of the invention can be more pertinent to specific requirements.

**[0039]** The various means for effecting certain different functions shall not in any way coexist only in the illustrated embodiment, but may be present per se in many embodiments, even if they are not illustrated. The characteristics indicated as advantageous, convenient or similar may also be missing or be substituted by equivalent characteristics within the scope of the appended claims.

**[0040]** Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. An interconnection device (1) for retractable sliding doors which are associable with a casing (2) which comprises at least one upper lintel (4) and a pair of vertical posts (3) which can be covered by means of transverse trim elements (5) and vertical trim elements (6), the interconnection device (1) comprising a box-like body (7) provided with a first solid portion (8) having an axial seat (9), and a second portion (10) that is U-shaped in transverse cross-section so as to form a flat base (11) and two lateral wings (12a, 12b) which thus form an opening (13) on one side, and that is provided with a slot (14) contiguous and contoured with respect to the axial seat (9) to constitute an extension of the axial seat (9), said slot (14) being provided axially in said flat base (11), the interconnection device (1) further comprising at least one L-shaped bolt (15) that is associated slideably with the box-like body (7) at the axial seat (9) and at the slot (14), and which can be associated proximate

to at least one end (20) of said upper lintel (4) and is adapted to be connected selectively and temporarily to at least one of said vertical posts (3).

2. The device according to claim 1, **characterized in that** said box-like body (7) is constituted by a metallic profile which is substantially shaped like a parallelepiped with a polygonal cross-section and is provided with said first solid portion (8), in which said axial seat (9) having a substantially cylindrical cross-section is provided, said first portion (8) being followed by said second portion (10), substantially having the same length and size. 5
3. The device according to claim 1, **characterized in that** the larger wing (16) of said L-shaped bolt (15) slides freely within said axial seat (9) and in said slot (14), whereas the smaller wing (17) acts at said opening (13). 10
4. The device according to claim 3, **characterized in that** the end tip (18) of said bolt (15) can protrude beyond the perimetric edge (19) of said first body (8), on the side opposite to said second portion (10), by a desired extent, said bolt (15) being arrangeable proximate to at least one end (20) of at least one of said upper lintels (4), at adapted axial guides (21 a, 21b) which are provided preferably on the lateral surface (22) of said upper lintels (4) that is directed away from the respective transverse trim element (5). 15
5. The device according to claim 4, **characterized in that** the end tip (18) of said bolt (15) is adapted to be connected selectively and temporarily to one of said vertical posts (3) at adapted and complementarily shaped seats (23) provided therein. 20
6. The device according to claim 5, **characterized in that** wings (25) are provided on the lateral surfaces (24a, 24b) of said first portion (8) of said body (7) and are shaped so as to facilitate the insertion, by means of pressure which may be manual, of said upper lintels (4) into said axial guides (21 a, 21b) and then prevent them from moving, all without the aid of adhesives for fixing. 25

#### Patentansprüche

1. Eine Verbindungsvorrichtung (1) für einziehbare Schiebetüren, die mit einem Gehäuse (2) verbindbar sind, das mindestens einen oberen Türsturz (4) und ein Paar vertikaler Pfosten (3) umfasst, die mit Hilfe transversaler Trimmelemente (5) und vertikaler Trimmelemente (6) bedeckt werden können, wobei die Verbindungsvorrichtung (1) einen kastenähnlichen Körper (7) umfasst, ausgestattet mit einem ersten festen Abschnitt (8), der einen axialen Sitz (9) 50

hat, und einem zweiten Abschnitt (10), der im transversalen Querschnitt U-förmig ist, um eine flache Basis (11) und zwei Seitenflügel (12a, 12b) zu bilden, die so auf einer Seite eine Öffnung (13) bilden, und der mit einem Schlitz (14) versehen ist, angrenzend und konturiert mit Bezug auf den axialen Sitz (9), um eine Verlängerung des axialen Sitzes (9) zu bilden, wobei der Schlitz (14) axial in der flachen Basis (11) angebracht ist, wobei die Verbindungsvorrichtung (1) weiter mindestens einen L-förmigen Bolzen (15) umfasst, welcher am axialen Sitz (9) und am Schlitz (14) verschiebbar mit dem kastenähnlichen Körper (7) verbunden ist und an mindestens einem Ende (20) des oberen Türsturzes (4) angeschlossen werden kann und ausgebildet ist, um selektiv und vorübergehend mit mindestens einem der vertikalen Pfosten (3) verbunden zu werden.

2. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der kastenähnliche Körper (7) aus einem Metallprofil besteht, das im Wesentlichen wie ein Parallelepiped mit vieleckigem Querschnitt geformt ist und mit dem ersten festen Abschnitt (8) ausgestattet ist, in dem der axiale Sitz (9) mit im Wesentlichen zylindrischem Querschnitt angebracht ist, wobei der erste Abschnitt (8) von dem zweiten Abschnitt (10) gefolgt ist, der im Wesentlichen dieselbe Länge und Größe hat. 20
3. Die Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der längere Schenkel (16) des L-förmigen Bolzens (15) frei in dem axialen Sitz (9) und in dem Schlitz (14) gleitet, während der kürzere Schenkel (17) an der Öffnung (13) wirkt. 25
4. Die Vorrichtung gemäß Anspruch 3, **dadurch gekennzeichnet, dass** die Endspitze (18) des Bolzens (15) über die Umfangskante (19) des ersten Körpers (8) an der Seite gegenüber dem zweiten Abschnitt (10) um eine gewünschte Länge hinausragen kann, wobei der Bolzen (15) nahe mindestens einem Ende (20) mindestens eines der oberen Türsturze (4) angeordnet werden kann, an geeigneten axialen Führungen (21a, 21b), die vorzugsweise an der Seitenfläche (22) der oberen Türsturze (4) angebracht sind, die vom entsprechenden transversalen Trimmelement (5) abgewandt ist. 30
5. Die Vorrichtung gemäß Anspruch 4, dadurch gekennzeichnet, dass die Endspitze (18) des Bolzens (15) ausgebildet ist, um selektiv und vorübergehend mit einem der vertikalen Pfosten (3) an geeigneten und komplementär geformten Sitzen (23) verbunden zu werden, die darin angebracht sind. 35
6. Die Vorrichtung gemäß Anspruch 5, **dadurch gekennzeichnet, dass** Flügel (25) an den Seitenflächen (24a, 24b) des ersten Abschnitts (8) des Kör- 40

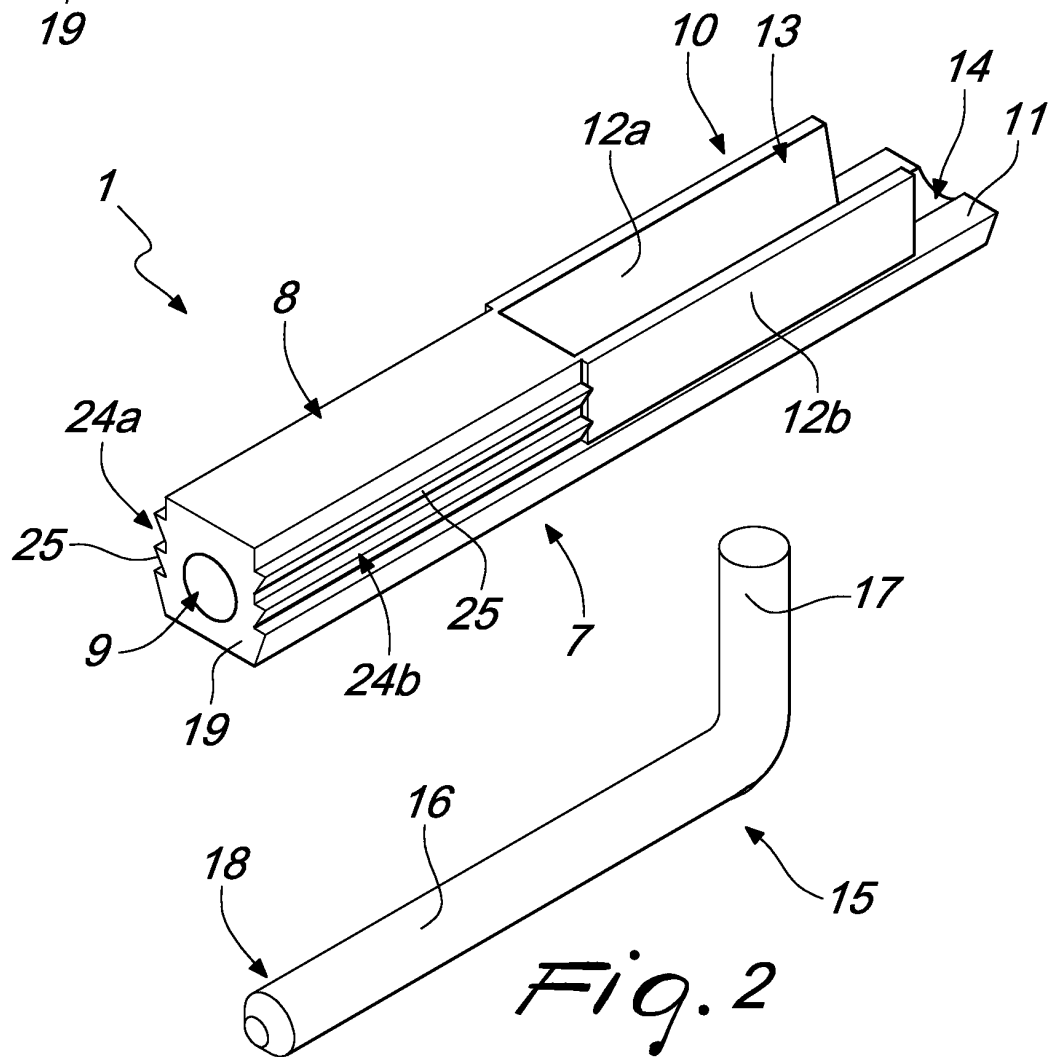
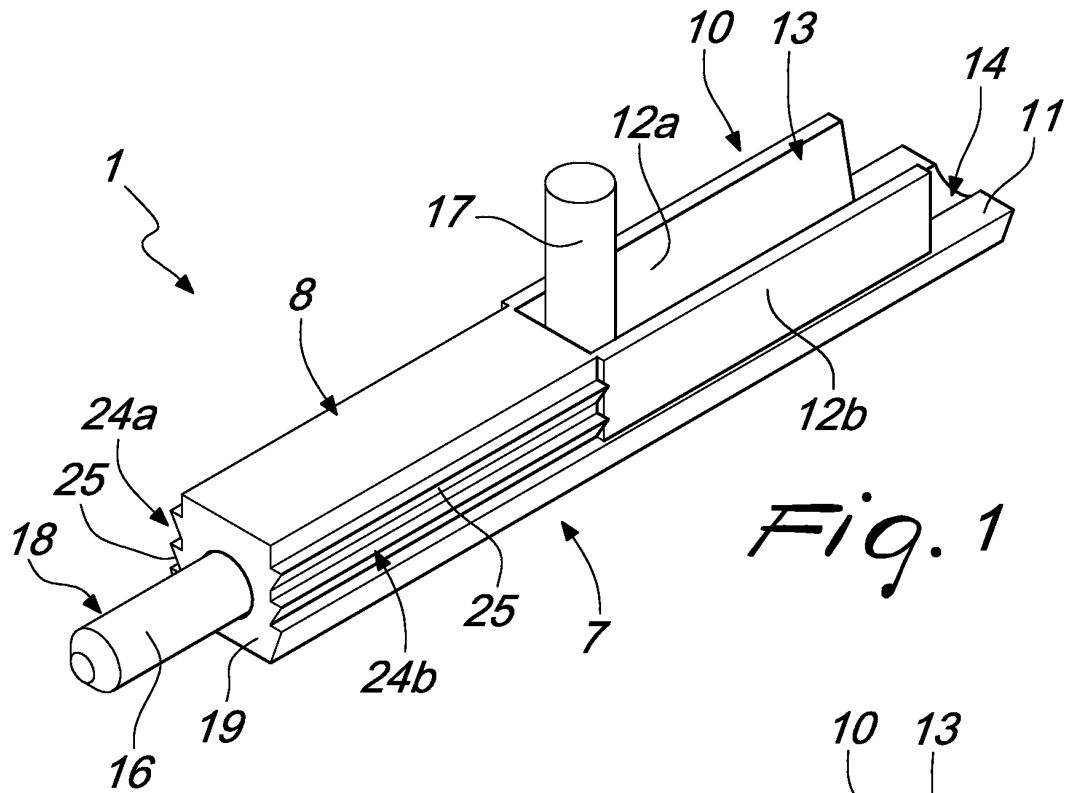
pers (7) angebracht und geformt sind, um, durch Druck, der manuell sein kann, das Einsetzen der oberen Türstürze (4) in die axialen Führungen (21a, 21b) zu erleichtern und sie dann an der Bewegung zu hindern, ganz ohne Hilfe von Klebstoffen zur Befestigung.

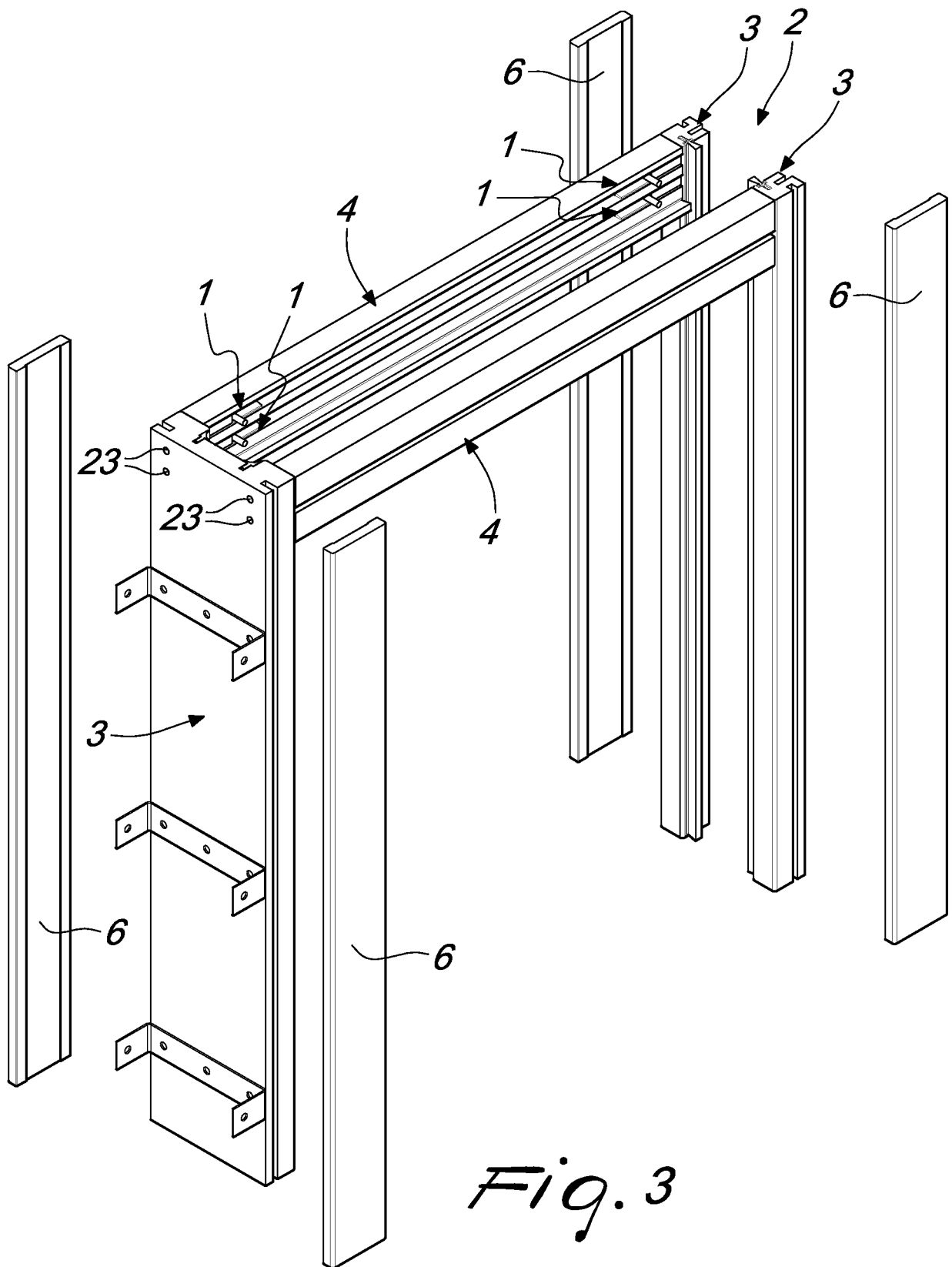
## Revendications

1. Dispositif d'interconnexion (1) pour portes coulissantes rétractables qui peuvent être associées à une enceinte (2) qui comprend au moins un linteau supérieur (4) et une paire de montants verticaux (3) qui peuvent être recouverts à l'aide d'éléments d'habillage transversaux (5) et d'éléments d'habillage verticaux (6), le dispositif d'interconnexion (1) comprenant un corps en forme de boîte (7) muni d'une première partie pleine (8) comportant un siège axial (9), et d'une deuxième partie (10) qui est en forme de U en section transversale, de façon à former une base plate (11) et deux ailes latérales (12a, 12b), qui forment par conséquent une ouverture (13) sur un côté, et qui est munie d'une fente (14) contiguë et ayant un certain contour par rapport au siège axial (9) de façon à constituer une extension du siège axial (9), ladite fente (14) étant située axialement dans ladite base plate (11), le dispositif d'interconnexion (1) comprenant de plus au moins une broche en forme de L (15) qui est associée de façon à pouvoir coulisser au corps en forme de boîte (7) au niveau du siège axial (9) et au niveau de la fente (14), et qui peut être associée de façon proximale à au moins une extrémité (20) dudit linteau supérieur (4), et qui est adaptée de façon à être reliée de façon sélective et temporaire à au moins l'un desdits montants verticaux (3).
2. Dispositif selon la revendication 1, **caractérisé en ce que** ledit corps en forme de boîte (7) est constitué par un profil métallique qui est sensiblement formé sous la forme d'un parallépipède avec une section transversale polygonale et qui est muni de ladite première partie pleine (8), dans laquelle ledit siège axial (9) ayant une section transversale sensiblement cylindrique est disposé, ladite première partie (8) étant suivie par ladite deuxième partie (10), ayant sensiblement la même longueur et la même taille,
3. Dispositif selon la revendication 1, **caractérisé en ce que** l'aile la plus grande (16) de ladite broche en forme de L (15) coulisse librement à l'intérieur dudit siège axial (9) et dans ladite fente (14), tandis que l'aile la plus petite (17) agit au niveau de ladite ouverture (13).
4. Dispositif selon la revendication 3, **caractérisé en ce que** la pointe d'extrémité (18) de ladite broche

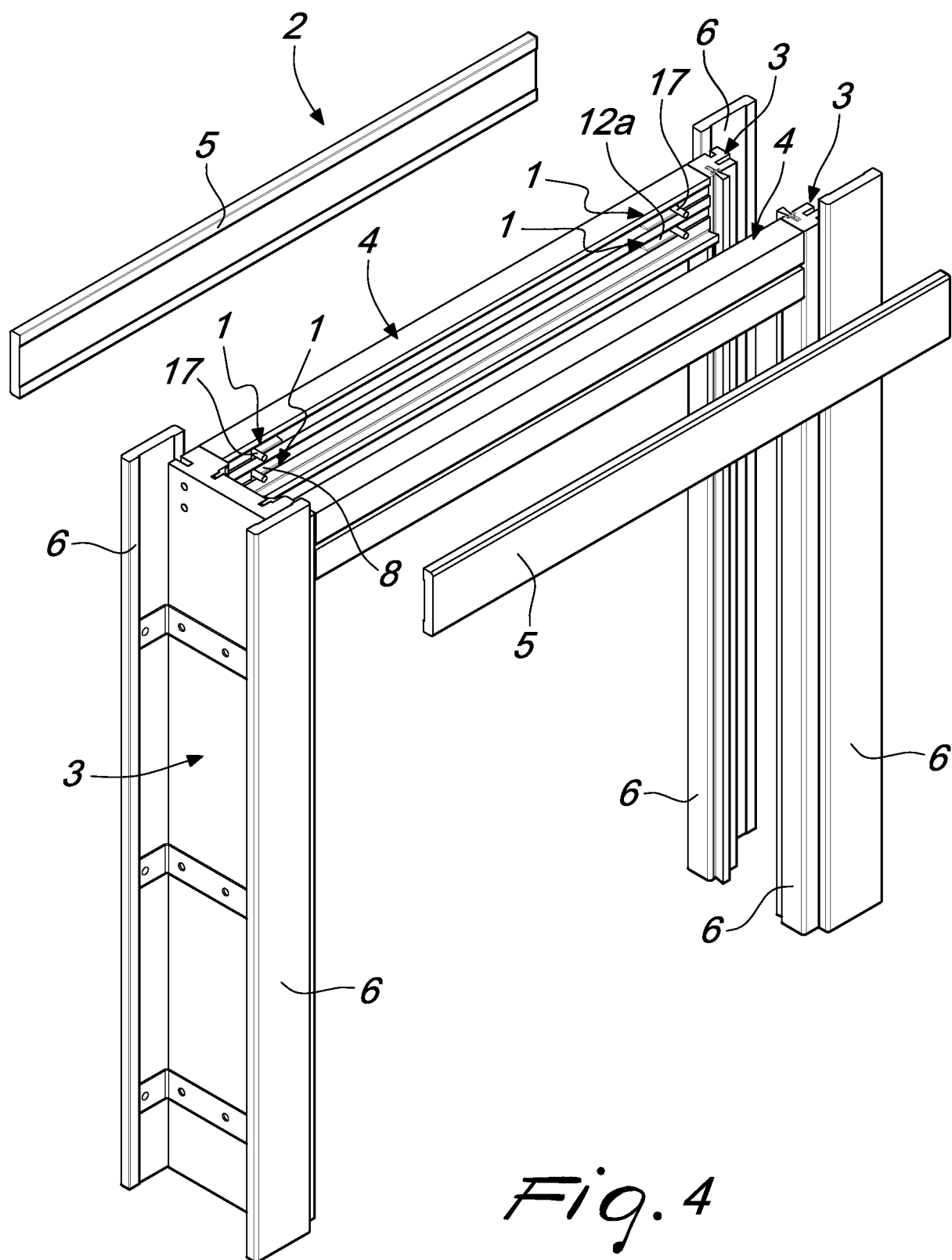
(15) peut faire saillie au-delà du bord périphérique (19) dudit premier corps (8), sur le côté opposé à ladite deuxième partie (10), d'une étendue désirée, ladite broche (15) pouvant être disposée à proximité d'au moins une extrémité (20) d'au moins l'un desdits linteaux supérieurs (4), au niveau de guides axiaux adaptés (21a, 21b) qui sont disposés, de préférence, sur la surface latérale (22) desdits linteaux supérieurs (4) qui est dirigée de façon à s'éloigner de l'élément d'habillage transversal respectif (5).

5. Dispositif selon la revendication 4, **caractérisé en ce que** la pointe d'extrémité (18) de ladite broche (15) est adaptée de façon à être reliée de façon sélective et temporaire à l'un desdits montants verticaux (3) au niveaux de sièges adaptés et de forme complémentaire (23) disposés à l'intérieur de ceux-ci.
6. Dispositif selon la revendication 5, **caractérisé en ce que** des ailes (25) sont disposées sur les surfaces latérales (24a, 24b) de ladite première partie (8) dudit corps (7), et sont formées de façon à faciliter l'insertion, à l'aide d'une pression qui peut être manuelle, desdits linteaux supérieurs (4) dans lesdits guides axiaux (21a, 21b), et à éviter alors à ceux-ci de se déplacer, le tout sans l'aide d'adhésifs pour la fixation.



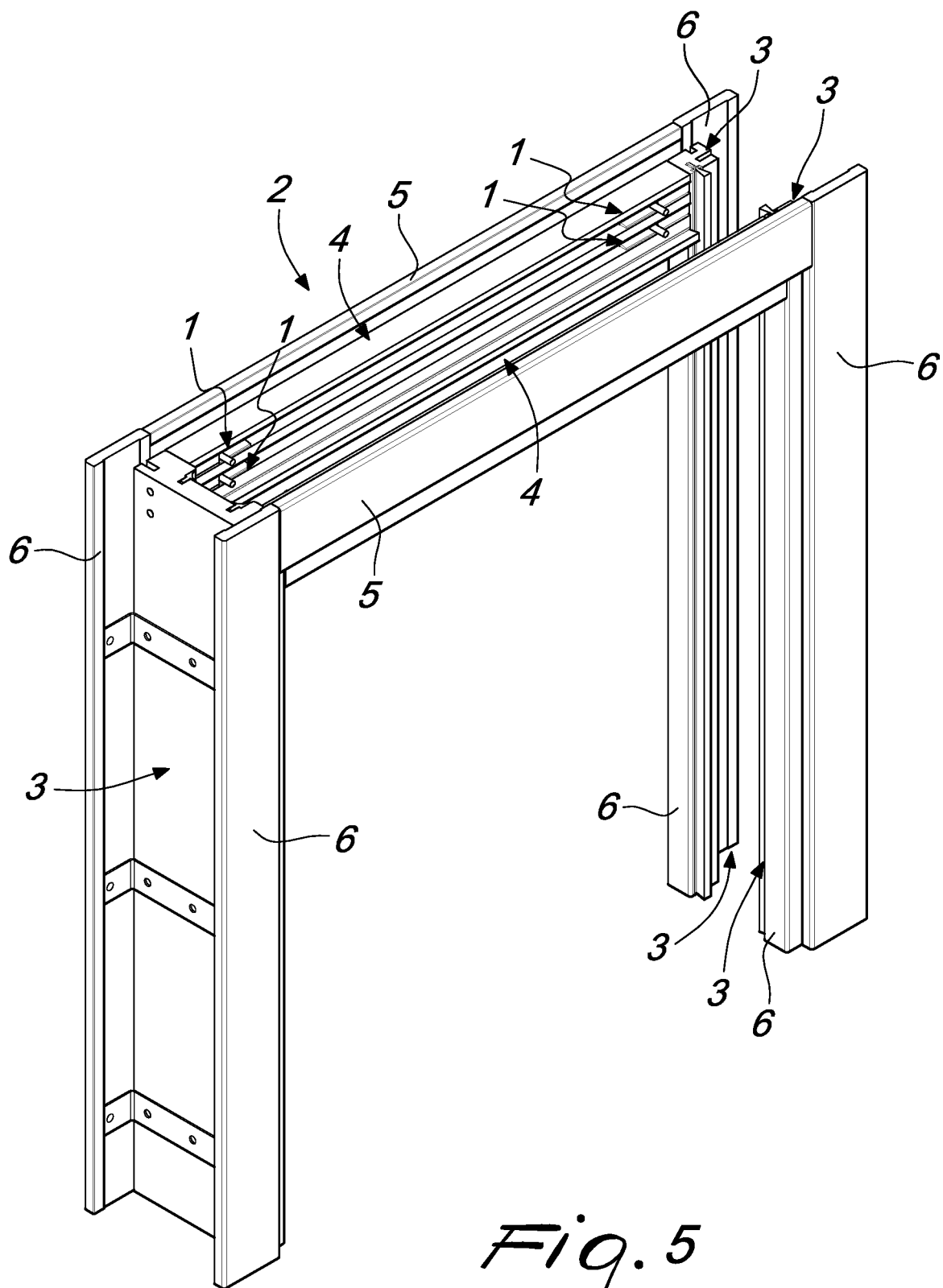


*Fig. 3*

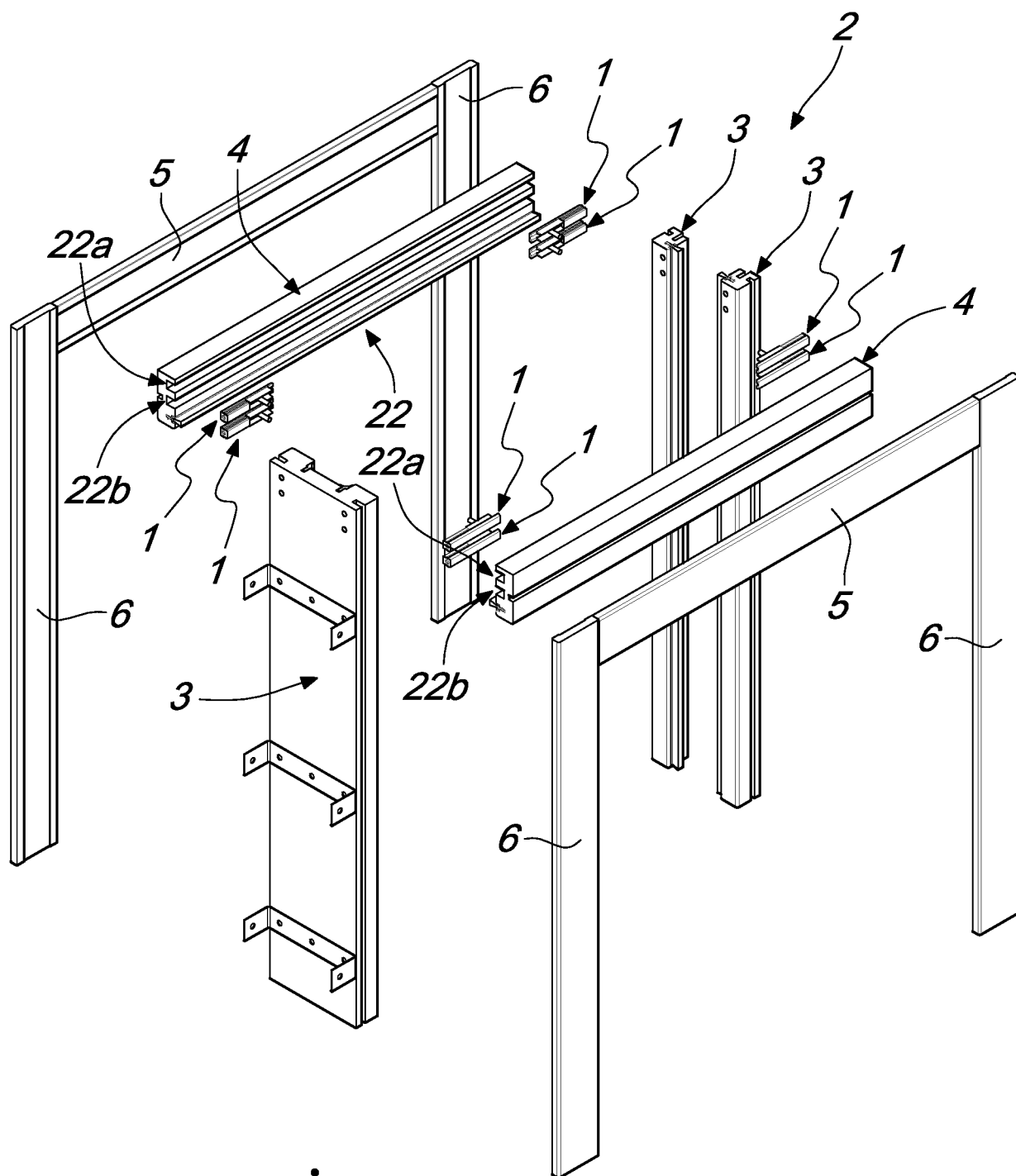


*Fig. 4*

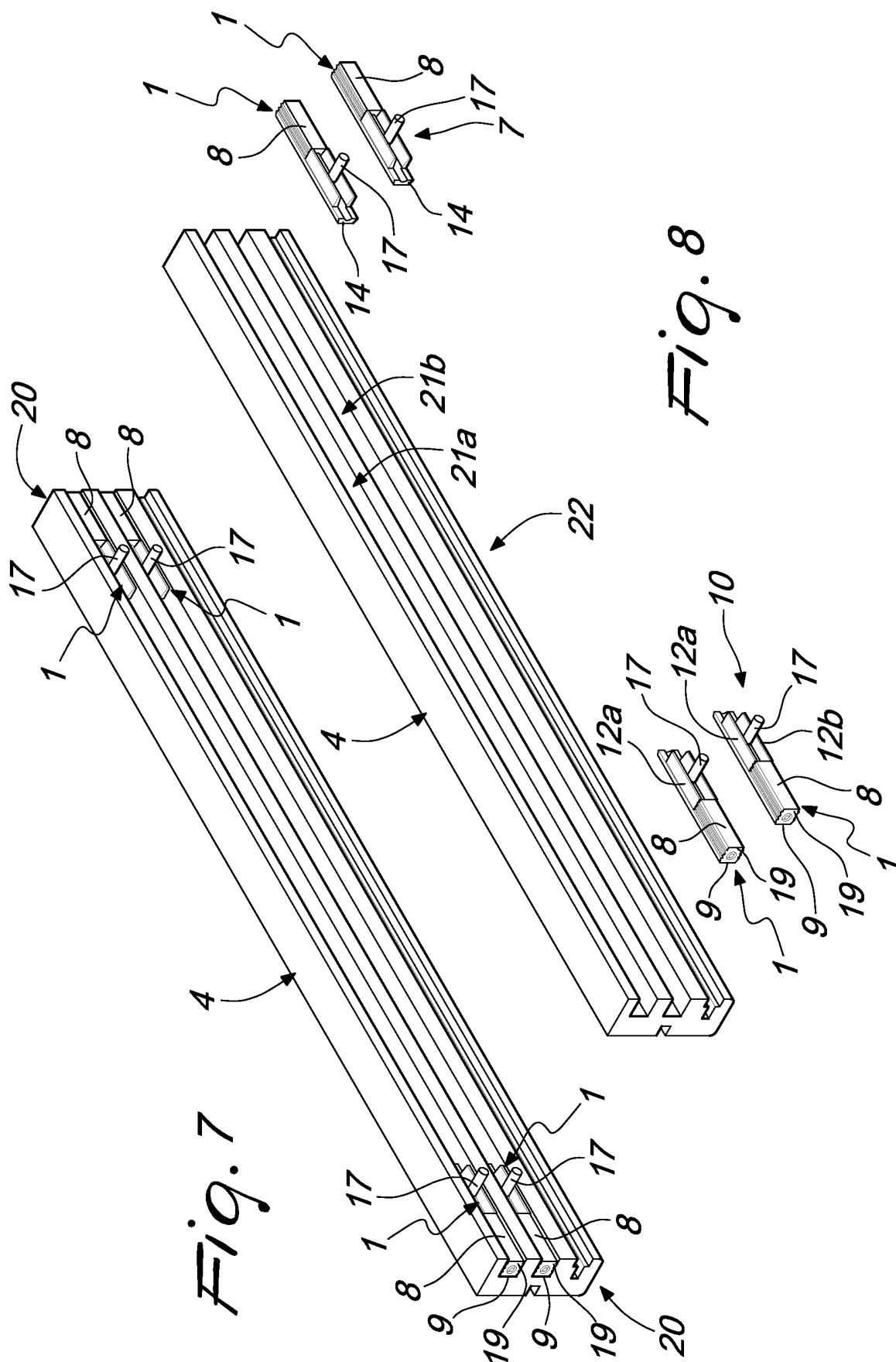




*Fig. 5*



*Fig. 6*



**REFERENCES CITED IN THE DESCRIPTION**

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