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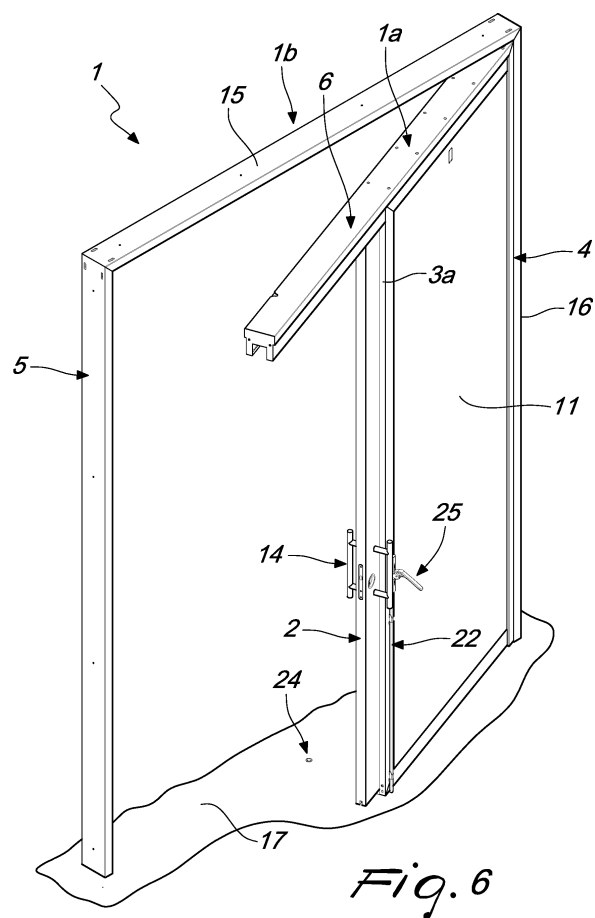
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(54)

IN-WALL FRAME FOR SLIDING DOORS

(57)

An in-wall frame (1) for retractable sliding doors (2) constituted by a first movable frame (1a), with which the door (2) is slidingly associated and which is pivoted to a second frame (1b), which is fixed and can be associated temporarily with it. The in-wall frame (1) comprises first means for supporting the first frame (1a) on the second frame (1b) in the condition in which the two are mutually aligned.



Description

[0001] The present invention relates to an in-wall frame for sliding doors of the retracting type.

[0002] Currently it is known to provide doors or windows which provide for the use of an in-wall frame, arranged firmly within a wall, inside which a door or a panel, designated also as "retracting door", is slidably associated.

[0003] This solution allows to reduce the space occupation of the door in a room by virtue of the possibility to make it slide into the in-wall frame: it is thus possible to use the space adjacent to the door, which would instead be occupied by doors of the type hinged laterally to a frame.

[0004] In the background art, the in-wall frame, embedded in the wall or between two plasterboard sheets, forms a containment casing for the sliding door and is usually constituted by a framework which comprises a plurality of vertical profiled elements, including a front post and a rear post, between which said door slides, and an upper crossmember, all of which form the opening or compartment that can be closed by means of said door.

[0005] Above the casing there protrudes, along an axis which is longitudinal to the casing and is extended on the opposite side with respect to the containment casing, a track which is concealed by a horizontal jamb.

[0006] Carriages are associated slidably within the track and are coupled to the upper edge of the door in order to allow its sliding in and out of the in-wall frame.

[0007] An additional element is usually associated with the end of the track that is not associated with the vertical posts and acts as a terminal for the abutment and location of the front edge of the door.

[0008] One problem that is observed in the use of these solutions resides in that the opening or compartment that can be closed by means of the sliding door is in any case defined and limited in its breadth; any widening of said compartment must be matched by a similar widening of the in-wall frame and of the containment casing of the sliding door, and this increases costs and is not always possible in the case of confined spaces or limitations due to the structure of the walls.

[0009] The aim of the present invention is therefore to solve the described technical problems, eliminating the drawbacks of the cited background art and thus providing an in-wall frame for retracting sliding doors in which it is possible to vary the breadth of the opening or compartment that can be closed by means of the sliding door, while maintaining the same dimensions for the latter.

[0010] Within this aim, another important object is to provide an in-wall frame for retracting sliding doors that is structurally simple.

[0011] Another object is to provide an in-wall frame for retracting sliding doors which is self-supporting in order to also allow to support in an optimum manner the sliding door in the conditions of its actuation.

[0012] Another object is to provide an in-wall frame for

retracting sliding doors that can be manufactured with ordinary systems and machines and has modest manufacturing costs.

[0013] This aim and these and other objects, which will become better apparent hereinafter, are achieved by an in-wall frame for retractable sliding doors, characterized in that it is constituted by a first movable frame, with which said door is associated slidably and which is pivoted to a second frame which is fixed and can be associated temporarily with it, said in-wall frame comprising first means for supporting said first frame on said second frame in the condition in which the two frames are mutually aligned.

[0014] Further characteristics and advantages of the invention will become better apparent from the detailed description of a particular but not exclusive embodiment, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a view of the in-wall frame in the condition in which the first and second frames are associated and the sliding door is open;

Figure 2 is a view taken along the sectional plane II-II of Figure 1;

Figure 3 is a view taken along the sectional plane III-III of Figure 1;

Figure 4 is a perspective view of the in-wall frame according to Figure 1;

Figure 5 is a view of the in-wall frame according to the preceding figure with the sliding door closed;

Figure 6 is a view of the in-wall frame in which the first movable frame is rotated with respect to the second fixed frame;

Figures 7 and 8 are views of the in-wall frame according to the preceding figure with the second frame variously rotated and with the sliding door open and closed;

Figure 9 is a view of the in-wall frame on the opposite side with respect to Figure 1;

Figures 10 and 11 are views of details of the in-wall frame;

Figures 12, 13, 14 and 15 are detailed views of the means for temporary locking of the first frame to the second frame.

[0015] In the exemplary embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0016] Moreover, it is 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.

[0017] With reference to the cited figures, the reference numeral 1 generally designates an in-wall frame for sliding doors 2 which is constituted by a first movable frame 1a, which comprises a pair of first front posts 3a, 3b and

a first head jamb 4, between which said door 2 slides, and a first upper crossmember 6, which has an inverted C-shaped cross-section.

[0018] Internally and centrally to the first upper crossmember 6 there is a profiled element 8 for the sliding of two or more carriages, each composed of a support 9 for a pair of wheels or rollers 10 below which said door 2 is associated.

[0019] The first upper crossmember 6 is longer than the door 2 in order to allow the extraction and partial storage of said door 2.

[0020] Two lateral panels 11 are associated with the sides of the first frame 1a, advantageously in a removable manner, conceal from view the door 2 and partially affect the width of each first front post 3a, 3b, so as to leave free a vertical band 12 proximate to the free end 13 of said first front posts 3a, 3b that is directed toward said second lateral post 5.

[0021] A handle 14 is associated with the door 2 and is of the protruding or recessed type, in the condition in which the door 2 is closed, beyond said free end 13 so that it can be gripped by the user.

[0022] The entire first frame 1a is pivoted, at the first head jamb 4, by means of appropriate and known hinges (not shown) along a vertical axis 26 to a second frame 1b, which is fixed to the wall or to a plasterboard or is self-supporting, since it is made with a particular tubular profiled member that enables it to support all the weight of the first frame 1a.

[0023] The second frame 1b surrounds and contains the first frame 1a, so as to form the opening 7 that can be closed by means of the door 2.

[0024] The first frame 1a and the second frame 1b therefore define a single self-supporting unit.

[0025] The first frame 1a can thus be opened about one edge with respect to the second frame 1b, which has a substantially box-like shape with a rectangular plan so as to form a second upper crossmember 15, a second lateral post 5, a third lateral upright 16, the second and third lateral posts 5, 16 resting on the floor 17.

[0026] The dimensions of the second frame 1b are therefore such as to allow the flush positioning of the first frame 1a inside it.

[0027] Figures 9, 10 and 11 show first means for supporting the first frame 1a on the second frame 1b in the condition shown in Figure 1; the first means are constituted by at least one wheel or disk 18 which protrudes below the second upper crossmember 15 in a region that is adjacent to the second lateral post 5.

[0028] The wheel or disk 18 is arranged so as to face the flat base 6a of the first upper crossmember 6 and its position is adjustable, since it is associated rotatably with an adapted threaded stem 19, which is integral with the second frame 1b.

[0029] In the condition shown in Figure 1, both the wheel or disk 18 and part of the threaded stem 19 can be inserted selectively at an adapted and appropriately shaped recess 20 provided at a perimetric edge 21 of

the first upper crossmember 6.

[0030] Thus, when the first frame 1a and the second frame 1b are mutually aligned, as shown in Figure 1, the first upper crossmember 6 of the first frame 1a is supported by the second upper crossmember 15 of the second frame 1b; thus, the first frame 1a, in this condition, is correctly in position even when the sliding door 2 is extracted until it abuts against the second lateral post 5.

[0031] Furthermore, at the first frame 1a there are second means for temporary locking to the second frame 1b in the condition in which the two are mutually aligned, as shown in Figure 1; the second means are constituted by a vertical rod 22, which is associated slidably at the vertical band 12 and is adapted to be positioned with its lower end 23 at an adapted seat 24 provided on said floor 17.

[0032] The rod 22 is actuated for example by means of an adapted knob 25 of a known type, which allows its lifting and lowering.

[0033] It has thus been found that the invention has achieved the intended aim and objects, an in-wall frame for retracting sliding doors having been devised in which it is possible to vary the breadth of the opening or compartment that can be closed by means of the sliding door simply by acting on the rod 22 and by rotating the second frame 1b with respect to the first frame 1a; in this manner, the dimensions of the opening 7 when the first and second frames 1a, 1b are mutually aligned are approximately doubled, allowing the user for example to move from one room to another large pieces of furniture or furnishings.

[0034] The in-wall frame thus obtained, furthermore, can be modified in its arrangement rapidly and simply, maintaining a compact and simple structure.

[0035] Finally, the in-wall frame thus obtained is also self-supporting, insofar as it does not need a wall to support the burden of the first movable frame 1a which furthermore exerts a leverage during opening, and it also allows to support in an optimum manner the sliding door in the conditions of its actuation.

[0036] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0037] The materials used, as well as the dimensions that constitute the individual components of the invention, may of course be more pertinent according to the specific requirements.

[0038] The various means for performing certain different functions need not certainly coexist only in the illustrated embodiment but can be present per se in many embodiments, including ones that are not illustrated. The characteristics indicated as advantageous, convenient or the like may also be omitted or be replaced by equivalents.

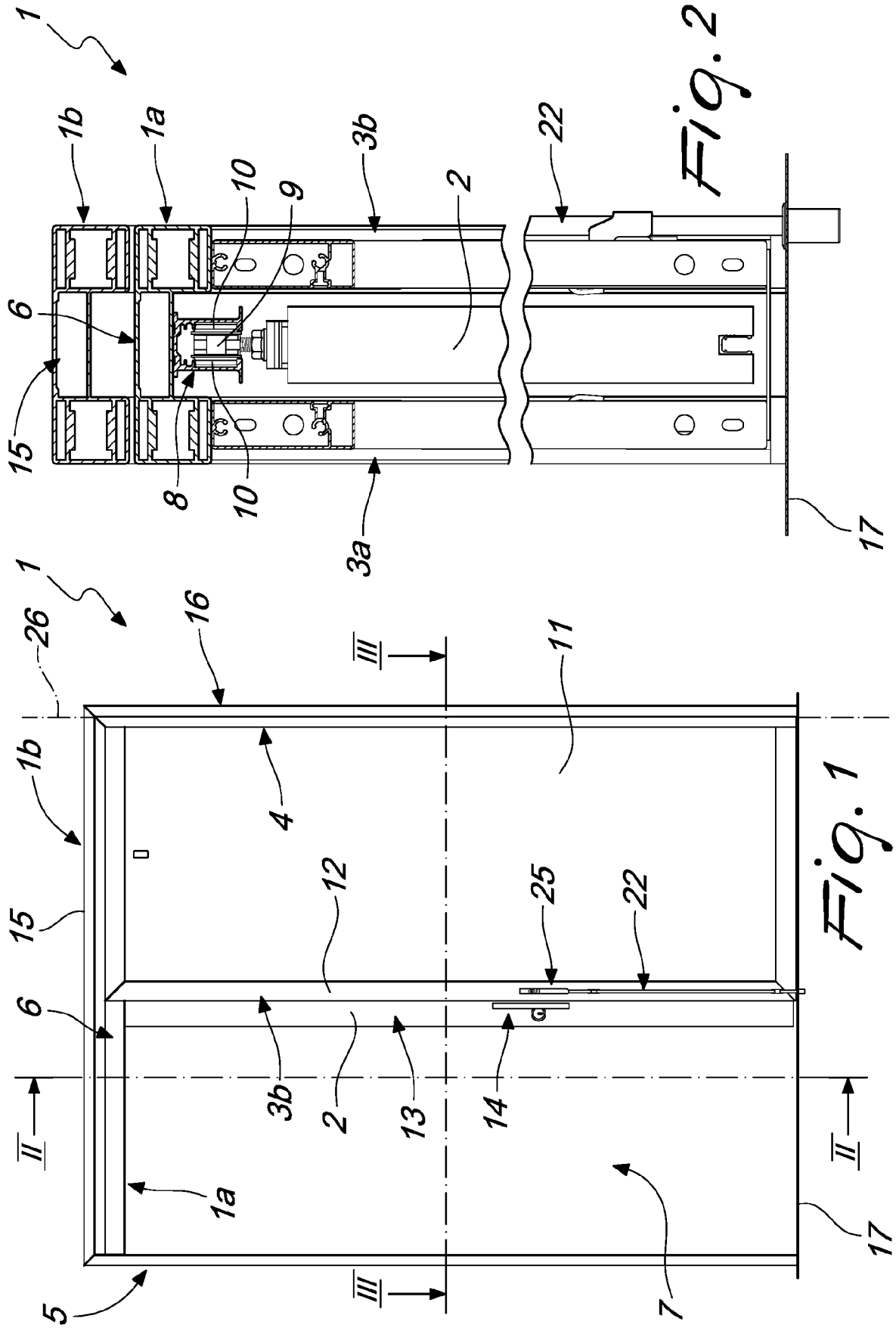
[0039] The disclosures in Italian Patent Application No. 102017000029569 from which this application claims priority are incorporated herein by reference.

[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 in-wall frame (1) for retractable sliding doors (2), **characterized in that** it is constituted by a first movable frame (1a), with which said door (2) is slidably associated and which is pivoted to a second frame (1b), which is fixed and can be associated temporarily with it, said in-wall frame (1) comprising first means for supporting said first frame (1a) on said second frame (1b) in the condition in which the two are mutually aligned.
2. The in-wall frame (1) for retractable sliding doors (2) according to claim 1, **characterized in that** it comprises, at said first frame (1a), second means for temporary locking to said second frame (1b) in the condition in which the two are mutually aligned.
3. The in-wall frame (1) for retractable sliding doors (2) according to claim 1, **characterized in that** said first movable frame (1a) comprises a pair of first front posts (3a, 3b) and a first head jamb (4), between which said door (2) slides, and a first upper crossmember (6), which has an inverted C-shaped cross-section inside which there is centrally a profiled element (8) for the sliding of two or more carriages, each composed of a support (9) for a pair of wheels or rollers (10) with which said door (2) is associated in a lower region, said first upper crossmember (6) being longer than said door (2); two lateral panels (11) are associated removably with the sides of said first frame (1a), hide said door (2) from view and partially affect the width of each first front post (3a, 3b), so as to leave free a vertical band (12) proximate to the free end (13) of said first front posts (3a, 3b) that is directed toward said second lateral post (5).
4. The in-wall frame (1) for retractable sliding doors (2) according to one or more of the preceding claims, **characterized in that** said first frame (1a) is pivoted, at said first head jamb (4) along a vertical axis (26), to said second frame (1b), which is fixed to the wall or to a plasterboard or is self-supporting, since it is made with a particular tubular profiled member that enables it to support all the weight of said first frame (1a), said second frame (1b) surrounding and containing said first frame (1a) so as to form an opening (7) that can be closed by means of said door (2).
5. The in-wall frame (1) for retractable sliding doors (2) according to claim 1, **characterized in that** said first frame (1a) can be opened about one edge with respect to said second frame (1b) which has a substantially boxlike shape with a rectangular plan so as to form a second upper crossmember (15), a second lateral post (5) and a third lateral post (16), said second and third lateral posts (5, 16) resting on the floor (17).
6. The in-wall frame (1) for retractable sliding doors (2) according to claim 1, **characterized in that** the dimensions of said second frame (1b) are such as to allow flush arrangement of said first frame (1a) inside it.
7. The in-wall frame (1) for retractable sliding doors (2) according to claim 1, **characterized in that** said first supporting means are constituted by at least one wheel or disk (18) which protrudes downward with respect to said second upper crossmember (15) in a region that is adjacent to said second lateral post (5), said wheel or disk (18) being arrangeable so as to face a flat base (6a) of said first upper crossmember (6) and being associated rotatably with an adapted threaded stem (19), which is integral with said second frame (1b).
8. The in-wall frame (1) for retractable sliding doors (2) according to one or more of the preceding claims, **characterized in that** said wheel or disk (18) and part of said threaded stem (19) can be inserted selectively at an adapted and conveniently shaped recess (20) provided at a perimetric edge (21) of said first upper crossmember (6), so that said first upper crossmember (6) is supported by said second upper crossmember (15).
9. The in-wall frame (1) for retractable sliding doors (2) according to one or more of the preceding claims, **characterized in that** said second means for temporary locking to said second frame (1b) in the condition in which it is aligned with said first frame (1a) are constituted by a vertical rod (22), which is associated slidably at said vertical band (12), and is adapted to be arranged so that its lower end (23) is located at an adapted seat (24) provided in the floor (17), said rod (22) being actuated by means of an adapted knob (25).



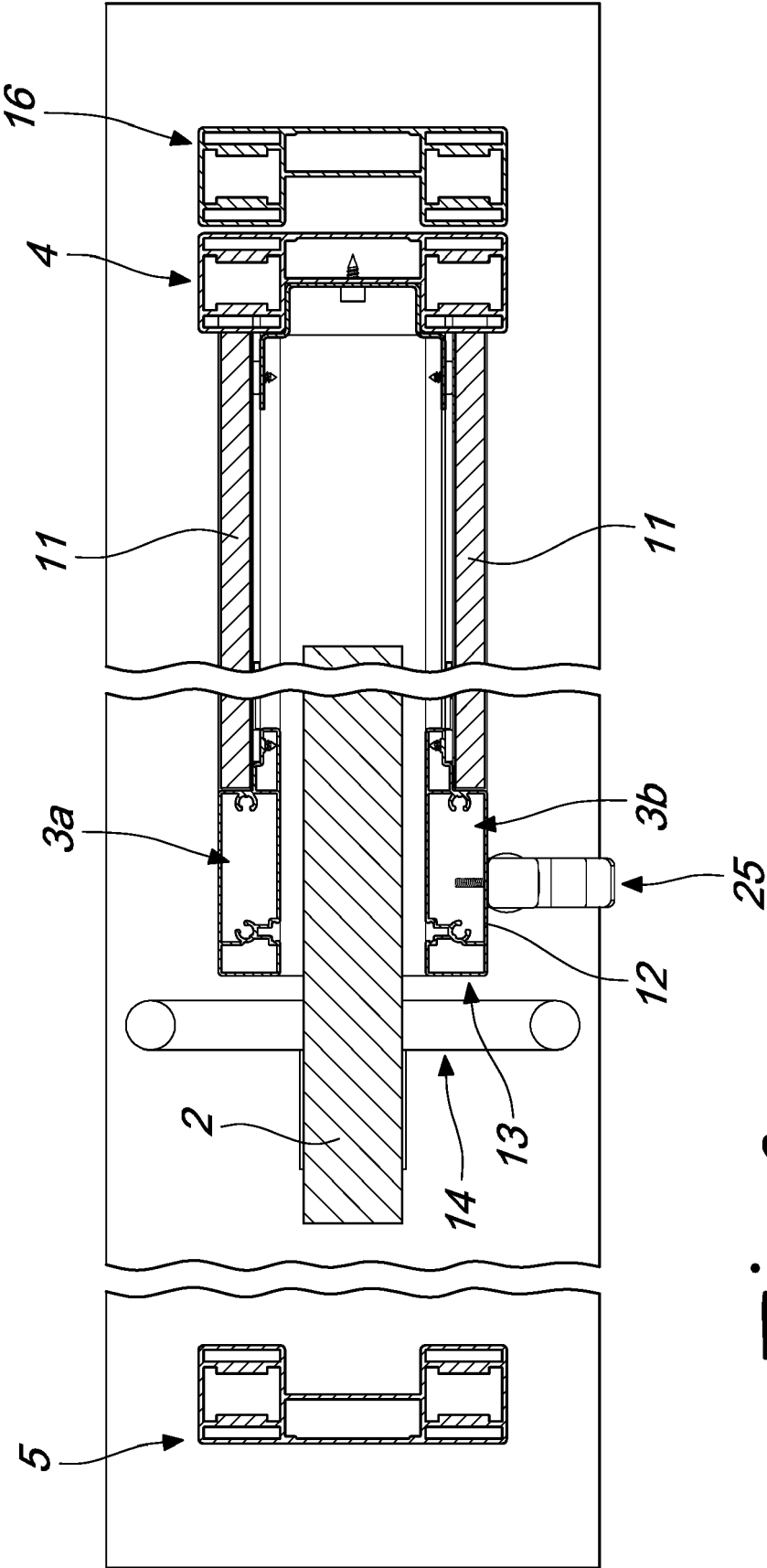
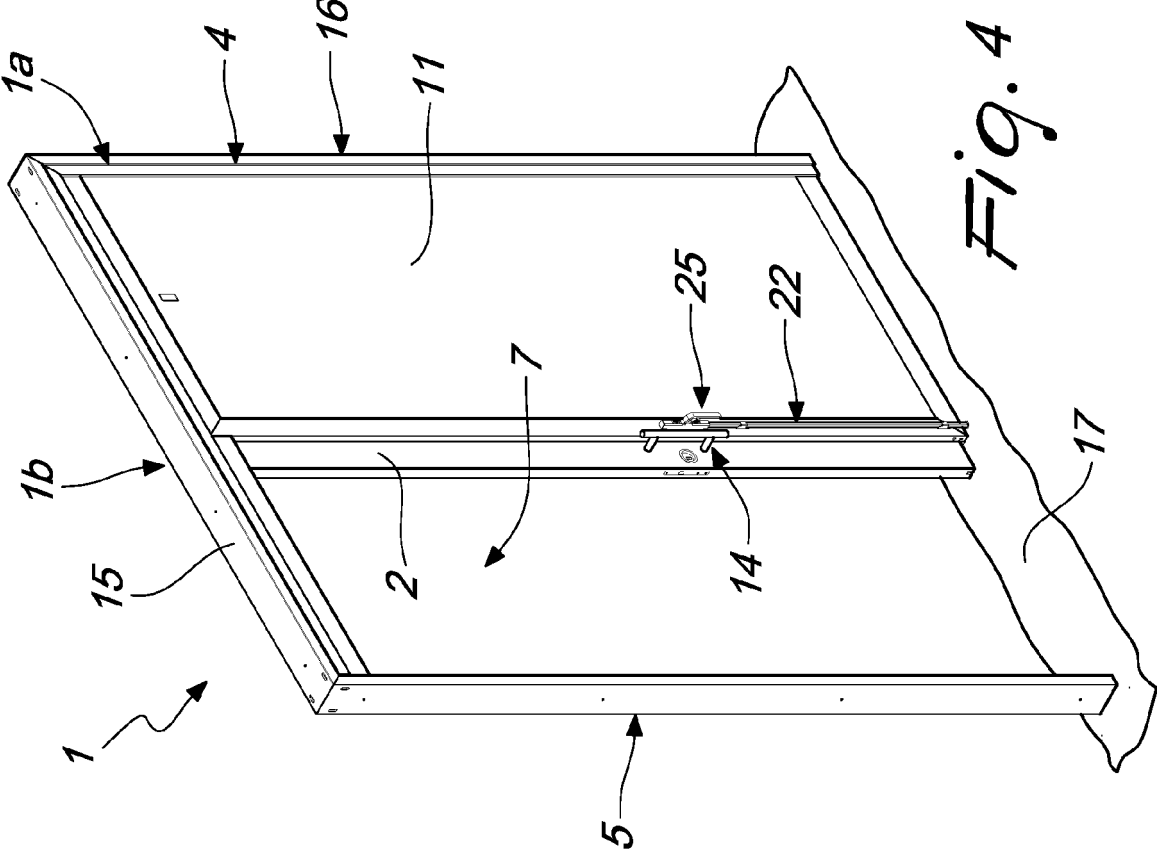
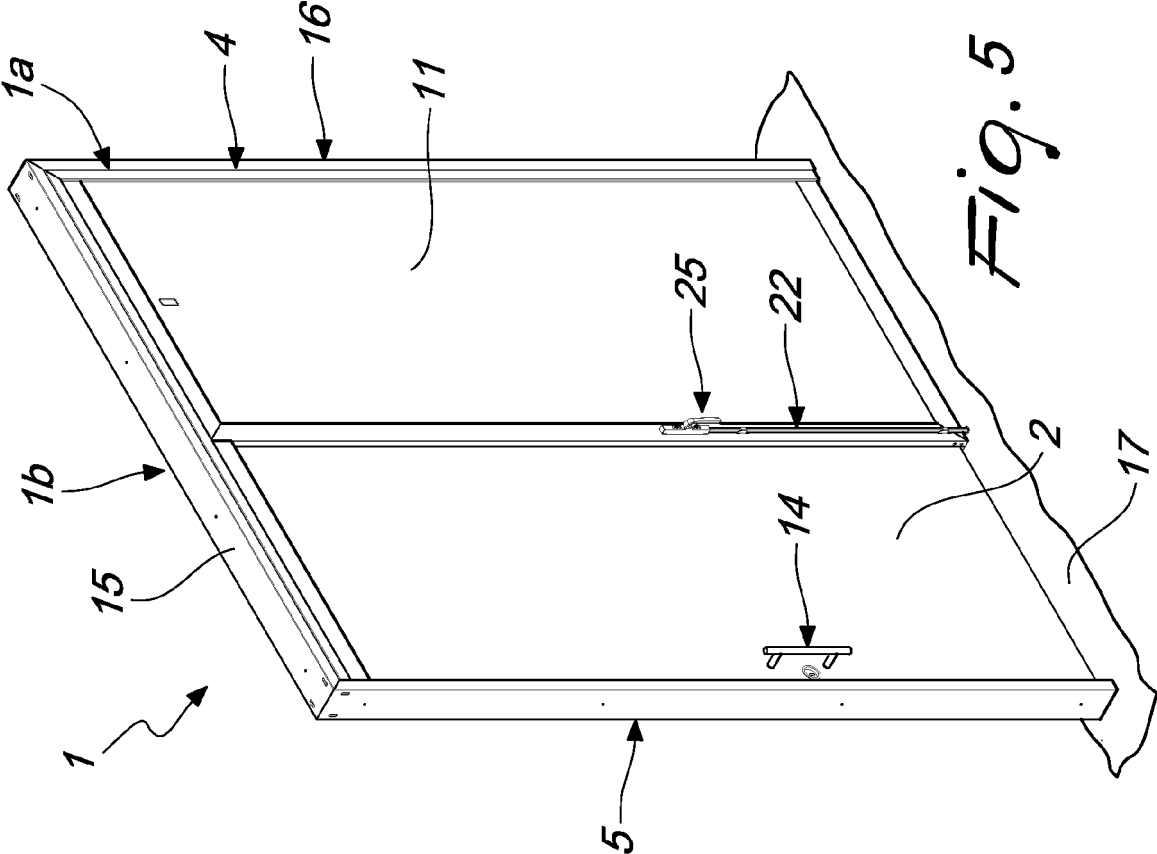


Fig. 3



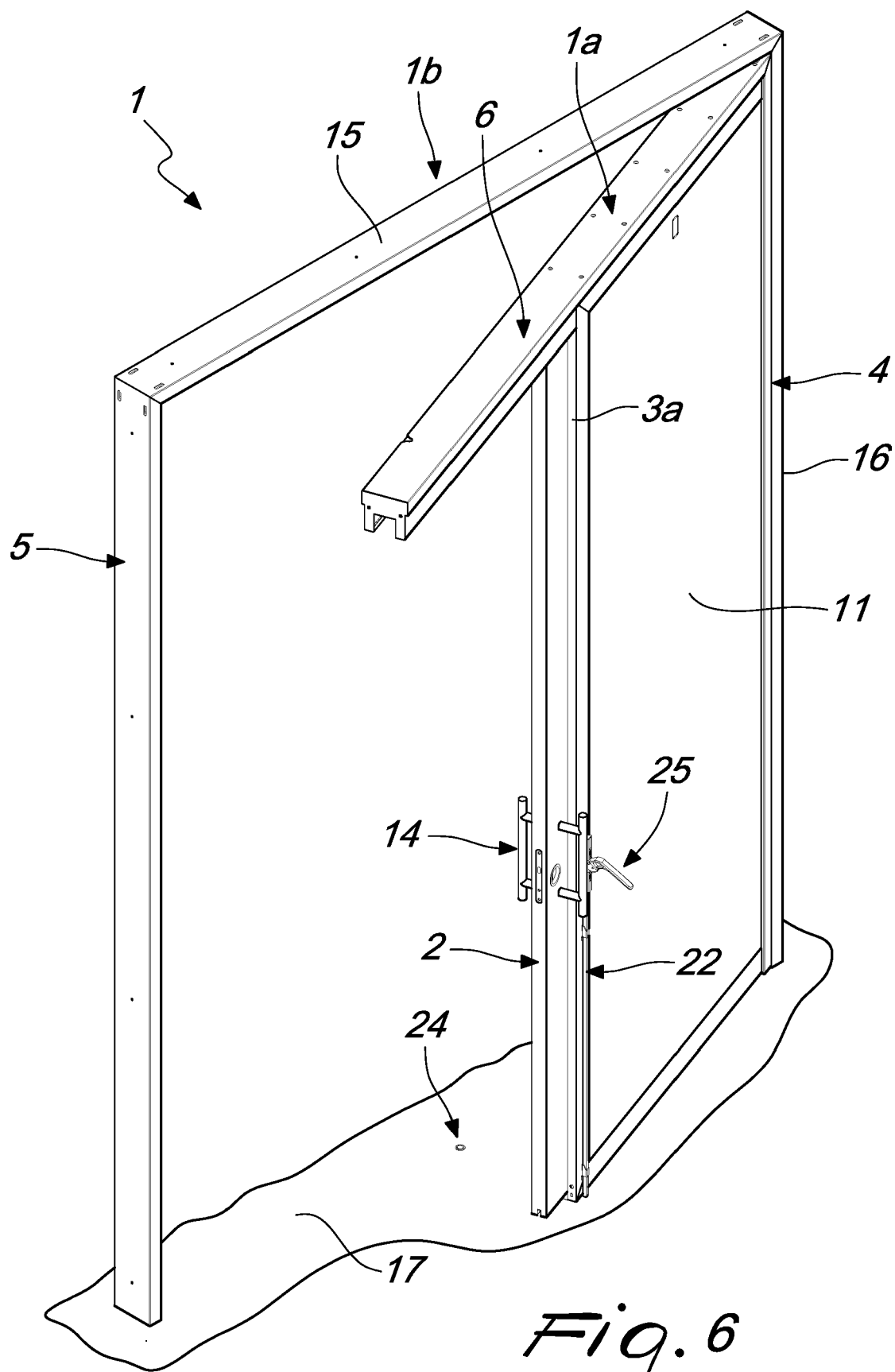
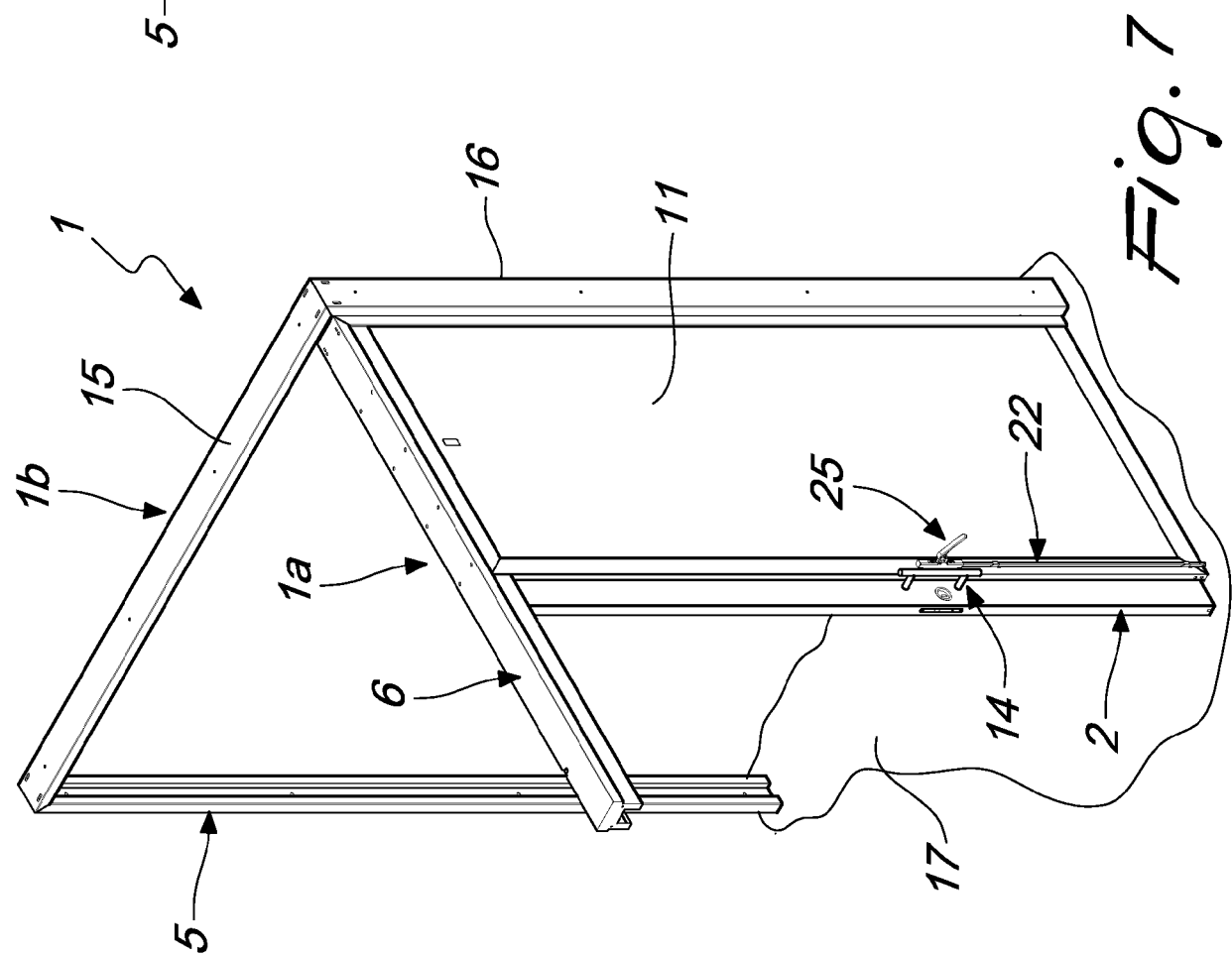
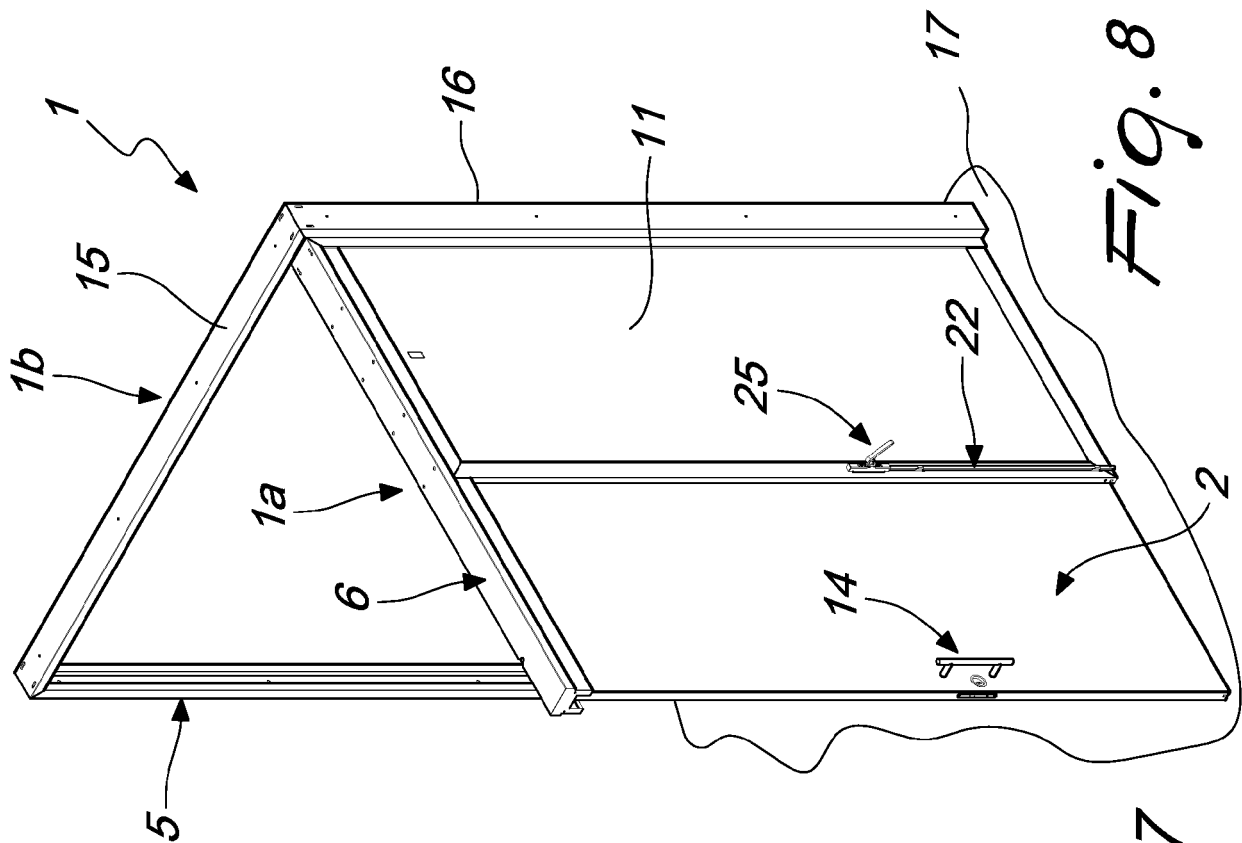


Fig. 6



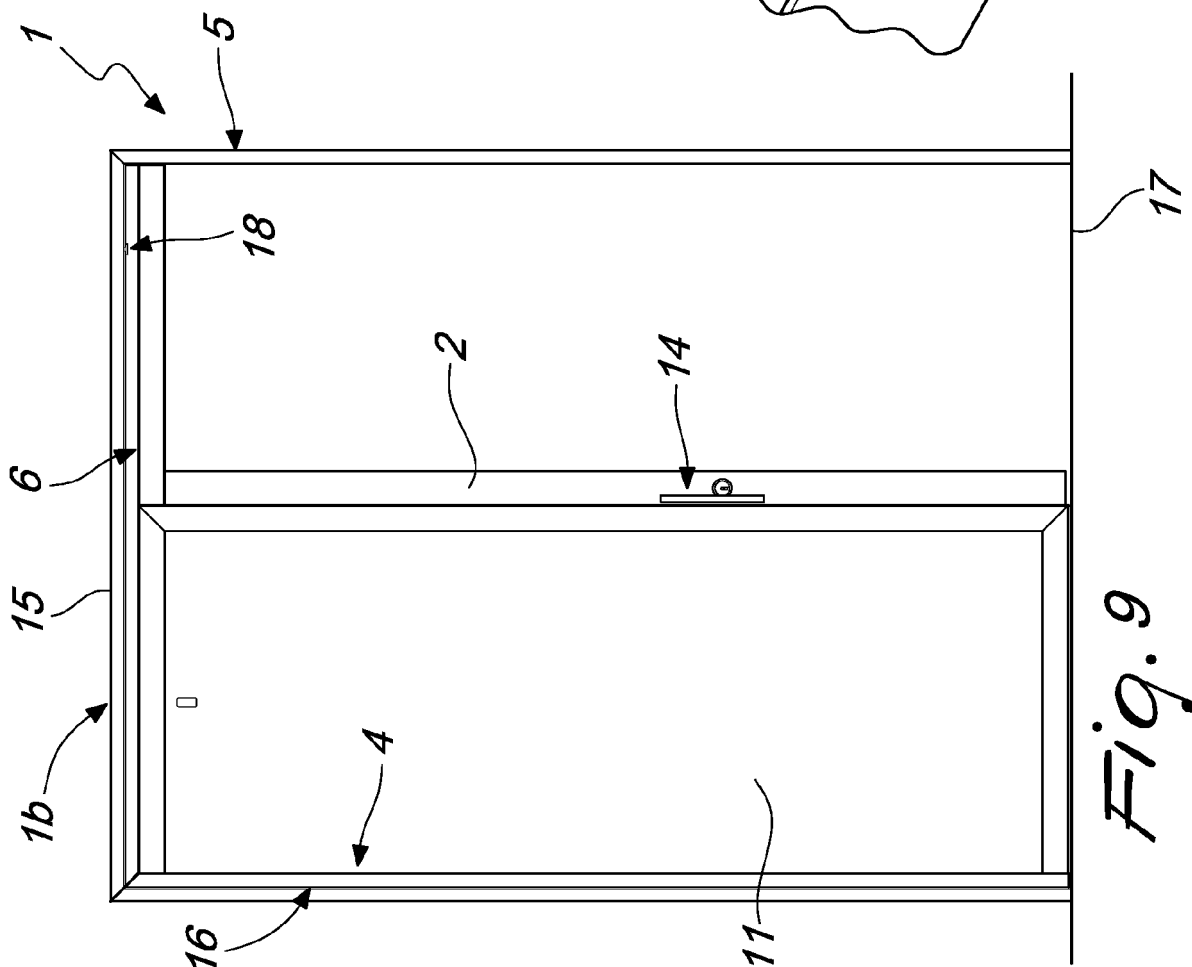


Fig. 10

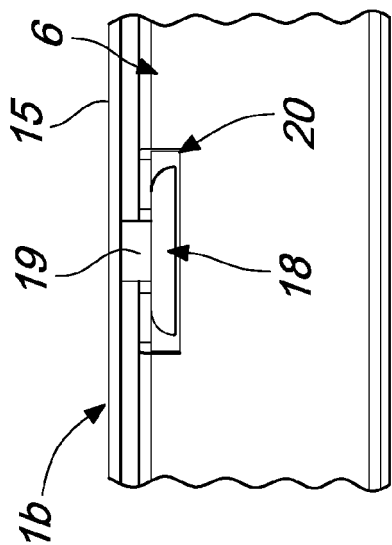
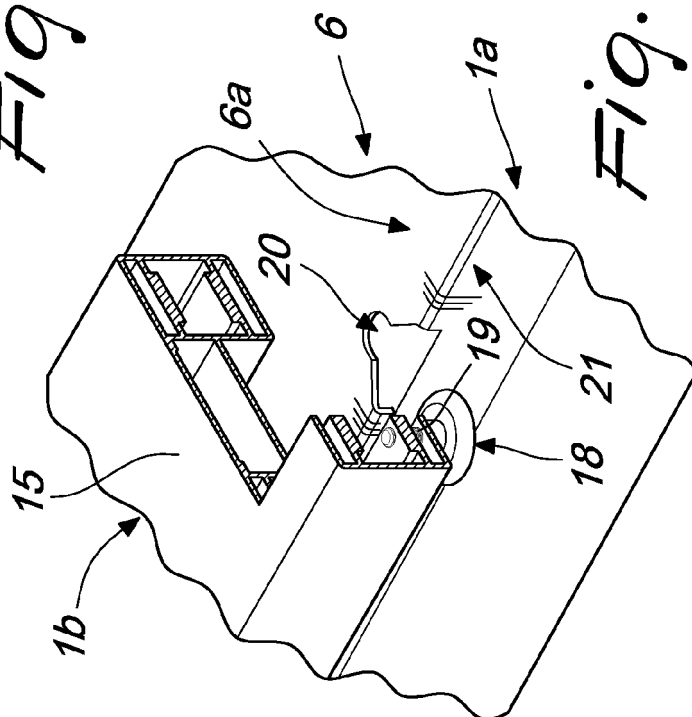
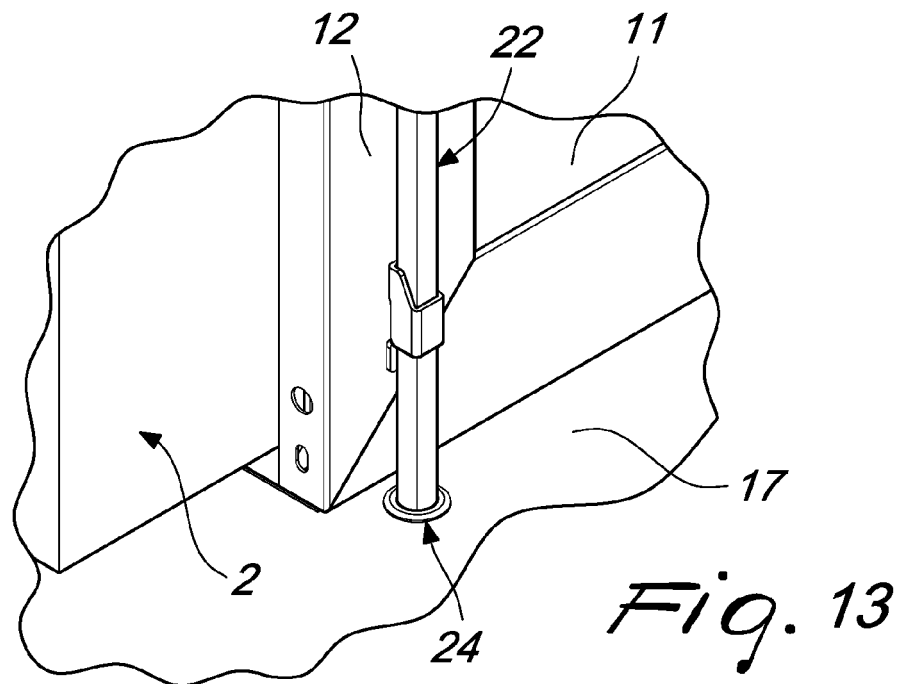
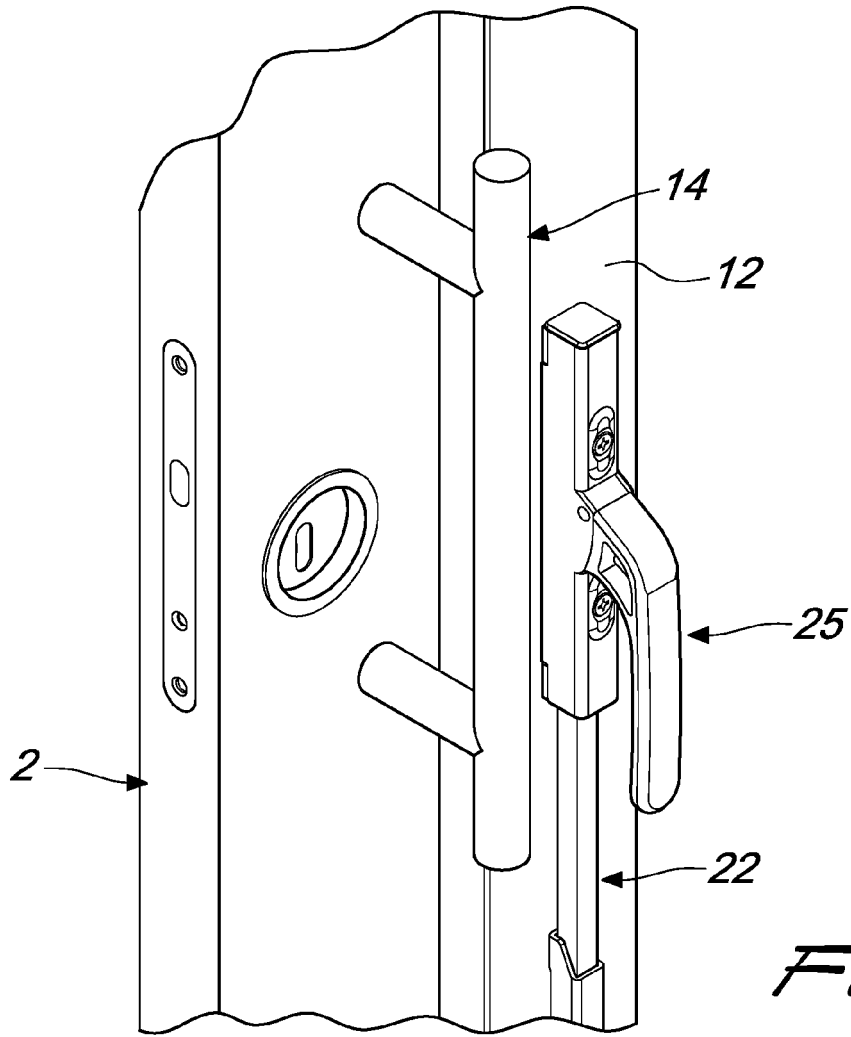
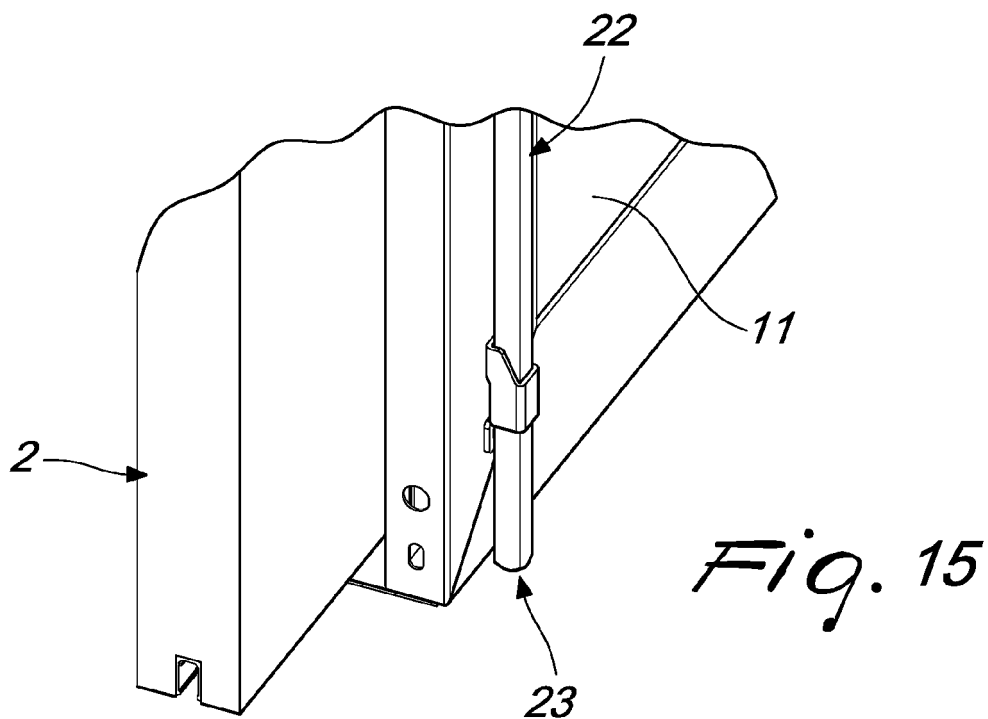
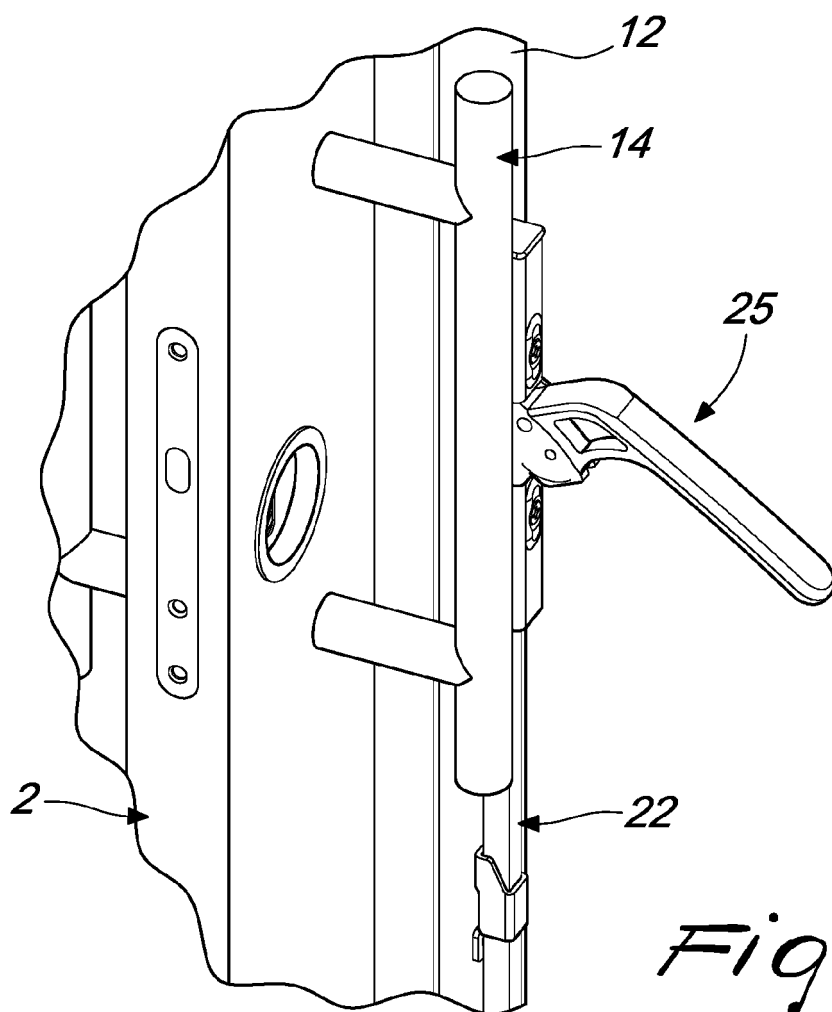


Fig. 11









EUROPEAN SEARCH REPORT

Application Number
EP 18 16 2069

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 10 July 2018	Examiner Gallego, Adoración
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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