

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.02.2016 Bulletin 2016/06

(51) Int Cl.: **E05C 17/60** ^(2006.01) **E05D 15/06** ^(2006.01)
E05F 5/00 ^(2006.01)

(21) Application number: **15177708.3**

(22) Date of filing: **21.07.2015**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
 GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
 PL PT RO RS SE SI SK SM TR**
 Designated Extension States:
BA ME
 Designated Validation States:
MA

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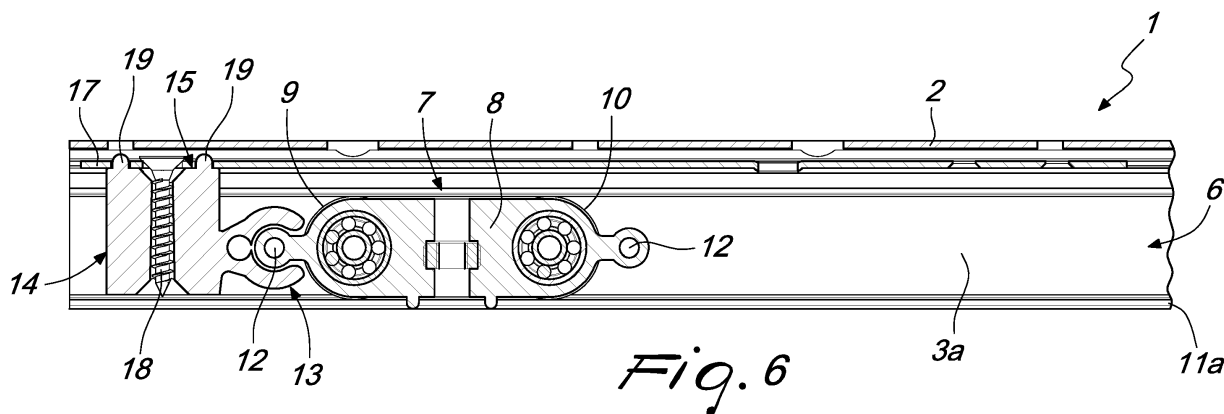
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(30) Priority: 08.08.2014 IT MI20141471

(54) **TRACK, PARTICULARLY FOR IN-WALL FRAMES OF SLIDING DOORS**

(57) A track (1), particularly for in-wall frames of sliding doors, which is provided with a seat (6) for the sliding of at least one trolley (7), for supporting an underlying sliding door, with one end of which a doorstop (14) can be associated selectively; at least one centering protrusion

sion (19) protrudes from such doorstep (14) and can be positioned selectively in a complementarily shaped seat (20) provided in an overlying flat bar (17); the doorstep (14) is further provided with guiding means for its sliding within the track (1).



Description

[0001] The present invention relates to a track, particularly for in-wall frames of sliding doors.

[0002] Nowadays it is known to provide door frames which involve the use of an in-wall frame, positioned inside a wall, in which a door or a panel is slideably associated and which is also known as a "retractable door".

[0003] Such solution makes it possible to reduce the encumbrances of the door in a room thanks to the possibility of sliding it into the in-wall frame: thus one can use the space adjacent to the door, which would otherwise be occupied by doors of the type that are hinged laterally to a casement.

[0004] In the known art the in-wall frame, embedded in the wall or between two plasterboard slabs, defines a containment case for the door and is usually constituted by a framework that comprises a plurality of vertical profiled elements, including a front post and a rear post, between which slides the door, and an upper lintel, all of which define the opening that can be closed by way of the door.

[0005] Protruding above the case, along an axis that is longitudinal with respect to the case proper and which extends from the side opposite to that of the containment case, is a track which is hidden by a horizontal jamb.

[0006] Trolleys coupled to the upper edge of the door are slideably integrated in the track in order to enable the sliding of the door into and out of the in-wall frame.

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

[0008] The use is also known of a doorstop which is usually constituted by a block made of plastic material, one end of which is shaped like a spout with elastically deformable wings in order to allow the insertion and the temporary locking of a complementarily shaped tab that protrudes axially with respect to the trolley.

[0009] In such sense, Italian patent no. 0001350865 is known, which discloses a doorstop with which it is possible to associate laterally the first end of a cylindrical L-shaped retaining rod; such rod thus protrudes laterally and externally both to the doorstop and to the track and at the second end it is provided with a plate, which protrudes radially therefrom and along a surface perpendicular to the trolley, which is selectively positioned at adapted retaining seats which are provided on the track.

[0010] Such solution however suffers many drawbacks: first of all, difficulty has been encountered in positioning and fixing the doorstop, usually by using a single, central screw.

[0011] Furthermore the positioning of the retaining rod laterally to the doorstop increases the encumbrances and is structurally complex, thus entailing high implementation costs, as well as the possibility of generating noise owing to the vibrations imposed on the retaining rod during the movement of the door.

[0012] The positioning, by gravity, of the plate on the track is further subject to possible decouplings caused for example by the impact of the door, when being closed, on the jamb.

[0013] Another drawback is constituted by the low flexibility of positioning of the doorstop, owing to the reduced travel of the cylindrical transfer rod, constrained by the slot provided on the sliding guide (track) by way of which the rod is associated with the doorstop.

[0014] Finally, the sliding of the doorstop with respect to the track entails the formation of vibrations and/or torsion of the doorstop proper on contact with the trolley, during the opening or closing of the panel, i.e. the coupling and releasing between trolley and doorstop.

[0015] The principal aim of the present invention is therefore to resolve the above mentioned technical problems, eliminating the drawbacks in the cited known art and thus devising a track provided with a doorstop that can be easily positioned and which can slide with respect to the track.

[0016] Within this aim, an object of the invention is to provide an invention that makes it possible to obtain the optimal sliding of the doorstop with respect to the track without vibrations and/or torsion of the doorstop on contact with the trolley, during the opening or closing of the panel, i.e. the coupling and releasing between trolley and doorstop.

[0017] Another object of the invention is to provide a track provided with a doorstop that can be easily and stably associated with the track.

[0018] Another object is to provide an invention that can be installed rapidly and easily, with considerable flexibility of positioning and thus of adjustment.

[0019] Another object is to provide a track provided with a doorstop which is structurally simple, flexible, reliable in use and which can be provided with the usual systems and machines and which is low cost.

[0020] This aim and these and other objects which will become better apparent hereinafter, are achieved by a track, particularly for in-wall frames of sliding doors, which is provided with a seat for the sliding of at least one trolley, for supporting an underlying sliding door, with one end of which a doorstop can be associated selectively, characterized in that at least one centering protrusion protrudes from said doorstop and can be positioned selectively in a complementarily shaped seat provided in an overlying flat bar, said doorstop being provided with guiding means for its sliding within said track.

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

Figure 1 is a perspective view of the track of the invention;

Figure 2 is a perspective view of the track of the invention, partially cutaway at the doorstop;

Figure 3 is a side view of the track of the invention, partially cutaway at the doorstep;

Figure 4 is a view from above of the track of the invention, partially cutaway at the doorstep;

Figure 5 is a view from above of the track of the invention;

Figure 6 is a sectional view taken along the line VI-VI in Figure 5;

Figure 7 is a view from above of the flat bar with the doorstep associated;

Figure 8 is a perspective view of the flat bar with the doorstep associated;

Figure 9 is a front elevation view of the track of the invention from the side with the doorstep.

[0022] In the embodiments illustrated, 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 a track, particularly for in-wall frames for sliding doors, which is provided, in transverse cross-section, with a substantially omega-like shape so as to define a substantially flat upper surface 2, which is connected at its ends to a pair of first wings 3a, 3b, which protrude at right angles therefrom and in turn are connected at their ends to a pair of second wings 4a, 4b which are arranged at right angles and on the opposite side with respect to the respective first wings 3a, 3b.

[0025] Below the track 1 there is a longitudinal opening 5 and, internally and axially thereto, a seat 6 for the sliding of a pair of trolleys 7, for supporting an underlying sliding door, not shown.

[0026] Each trolley 7 is constituted by a body 8 which is shaped substantially like a parallelepiped and with which, in the specific embodiment shown, two pairs of wheels 9, 10 are rotatably associated and can slide on adapted first tabs 11a, 11b which protrude within the track 1 at a plane that is substantially equal to the plane of arrangement of the pair of second wings 4a, 4b.

[0027] Second tabs 12a, 12b protrude axially at the ends of the body 8 and have, in a transverse cross-section, a substantially circular shape.

[0028] A complementarily shaped end 13 of a doorstep 14, which is preferably made of plastic material and is accommodated slideably within the track 1, cooperates selectively with one of the second tabs 12.

[0029] The doorstep 14 is constituted by a body shaped like a parallelepiped with a substantially X-like transverse cross-section so as to define a flat upper end face 15 and a flat lower end face 16, which are substantially mutually parallel, the body being at the lateral ends slightly narrower than the width between the first wings

3a, 3b.

[0030] A flat bar or rod 17 is arranged at the flat upper end face 15, is slightly narrower and is constituted substantially by a flat strip fixed to the doorstep 14 by way of a screw 18.

[0031] At least one centering protrusion 19 protrudes from the flat upper end face 15 of the doorstep 14; in the specific embodiment shown the protrusions are two in number and protrude substantially at the longitudinal central axis of the flat upper end face 15 adjacent to the screw 18.

[0032] The protrusions 19 are shaped like a pin and advantageously have a rounded tip in order to facilitate their arrangement at a complementarily shaped seat 20 provided on the overlying flat bar 17.

[0033] Thus the positioning and the fixing of the doorstep to the bar is facilitated.

[0034] The lower end face 16 rests at its ends slideably on the first tabs 11a, 11b, while the flat bar 17, which is associated with the flat upper end face 15, is arranged below the upper surface 2.

[0035] The doorstep 14 has guiding means for its sliding within the track 1, such means being constituted by two pairs of lateral wings 21a, 21b, 22a, 22b, which are mutually parallel and are spaced apart by such an extent as to define first slots 30 that allow the sliding arrangement therein of a first pair of first tabs 23a, 23b which protrude internally from each one of the first wings 3a, 3b proximate to the flat upper end face 15.

[0036] A pair of second tabs 24a, 24b protrudes internally from the first wings 3a, 3b, proximate to the upper surface 2 and below the plane of arrangement of the flat bar 17, and is arranged on a plane that is substantially parallel to the plane of the two pairs of lateral wings 21a, 21b, 22a, 22b, the lateral ends of the flat bar 17 resting slideably thereon, the second tabs 24a, 24b acting on the second slots 31.

[0037] Thus it has been found that the invention fully achieves the intended aim and objects, a track having been devised in which the protrusions 19 that protrude from the doorstep facilitate the positioning and the fixing of the doorstep 14 on the flat bar 17, thus optimizing and speeding up the mounting.

[0038] Furthermore, the shape structure of the doorstep and of the track make it possible, thanks to the presence of the first and second tabs 23a, 23b, 24a, 24b, to eliminate any vibrations during the use of the doorstep and thus the noise when opening/closing the door.

[0039] The invention is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0040] The materials used as well as the dimensions of the individual components of the invention may be more pertinent according to specific requirements.

[0041] The various means of achieving certain different functions certainly need not coexist only in the embodiment shown, but may be present in many embodiments, even if they are not shown.

[0042] The characteristics indicated above as advantageous, convenient or the like, may also be missing or be substituted by equivalent characteristics.

[0043] The disclosures in Italian Patent Application No. MI2014A001471 from which this application claims priority are incorporated herein by reference.

[0044] 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. A track (1), particularly for in-wall frames of sliding doors, which is provided with a seat (6) for the sliding of at least one trolley (7), for supporting an underlying sliding door, with one end of which a doorstop (14) can be associated selectively, **characterized in that** at least one centering protrusion (19) protrudes from said doorstop (14) and can be positioned selectively in a complementarily shaped seat (20) provided in an overlying flat bar (17), said doorstop (14) being provided with guiding means for its sliding within said track (1).
2. The track (1) according to claim 1, **characterized in that** said guiding means for the sliding of said doorstop (14) within said track (1) are constituted by a pair of lateral wings (21a, 21b, 22a, 22b) which define a pair of first and second slots (30, 31) within which slide a first pair of first tabs (23a, 23b) and a pair of second tabs (24a, 24b) which protrude internally from each one of said first wings (3a, 3b).
3. The track according to claims 1 and 2, provided, in transverse cross-section, with a substantially omega-like shape so as to define an upper surface (2), which is connected at its ends to a pair of first wings (3a, 3b), which protrude at right angles from it and in turn are connected at their ends to a pair of second wings (4a, 4b) which are arranged at right angles and on the opposite side with respect to the respective first wings (3a, 3b), below said track (1) there being a longitudinal opening (5), each trolley (7) being constituted by a body (8) which is shaped substantially like a parallelepiped and with which two pairs of wheels (9, 10) are rotatably associated and can slide on adapted first tabs (11a, 11b) which protrude within said track (1) at a plane that is substantially equal to the plane of arrangement of said pair of second wings (4a, 4b), second tabs (12a, 12b) protruding axially at the end of said body (8) and having, in a transverse cross-section, a substantially circular shape, with at least one of which a comple-

mentarily shaped end (13) of said doorstop (14) accommodated slideably within said track (1) cooperates selectively, **characterized in that** said doorstop (14) is constituted by a body shaped like a parallelepiped with a substantially X-like transverse cross-section, so as to define a flat upper end face (15) and a flat lower end face (16), which are substantially mutually parallel, said body being, at the lateral ends, slightly narrower than the width between said first wings (3a, 3b).

4. The track according to claims 1 and 3, **characterized in that** a flat bar or rod (17) is arranged at said flat upper end face (15), is slightly narrower and is constituted substantially by a flat strip fixed to said doorstop (14) by way of a screw (18), two protrusions (19) protruding from said flat upper end face (15) of said doorstop (14) substantially at the longitudinal central axis of said flat upper end face (15) adjacent to said screw (18).
5. The track according to claims 1 and 4, **characterized in that** said protrusions (19) are shaped like a pin and have a rounded tip in order to facilitate their arrangement at a complementarily shaped seat (20) provided on said overlying flat bar (17).
6. The track according to claims 1 and 5, **characterized in that** said lower end face (16) rests at its ends slideably on said first tabs (11a, 11b), while said flat bar (17), which is associated with said flat upper end face (15), is arranged below said upper surface (2).
7. The track according to claims 1 and 6, **characterized in that** said guiding means for the sliding of said doorstop (14) within said track (1) are constituted by two pairs of lateral wings (21a, 21b, 22a, 22b) which are mutually parallel and are spaced apart by such an extent so as to define first slots (30) that allow the sliding arrangement therein of a first pair of first tabs (23a, 23b) which protrude internally from each one of said first wings (3a, 3b) proximate to the flat upper end face (15).
8. The track according to claims 1 and 7, **characterized in that** a pair of second tabs (24a, 24b) protrudes internally from said first wings (3a, 3b), proximate to said upper surface (2) and below the plane of arrangement of said flat bar (17), and is arranged on a plane that is substantially parallel to the plane of said two pairs of lateral wings (21a, 21b, 22a, 22b), the lateral ends of said flat bar (17) resting slideably thereon, said second tabs (24a, 24b) acting on said second slots (31).

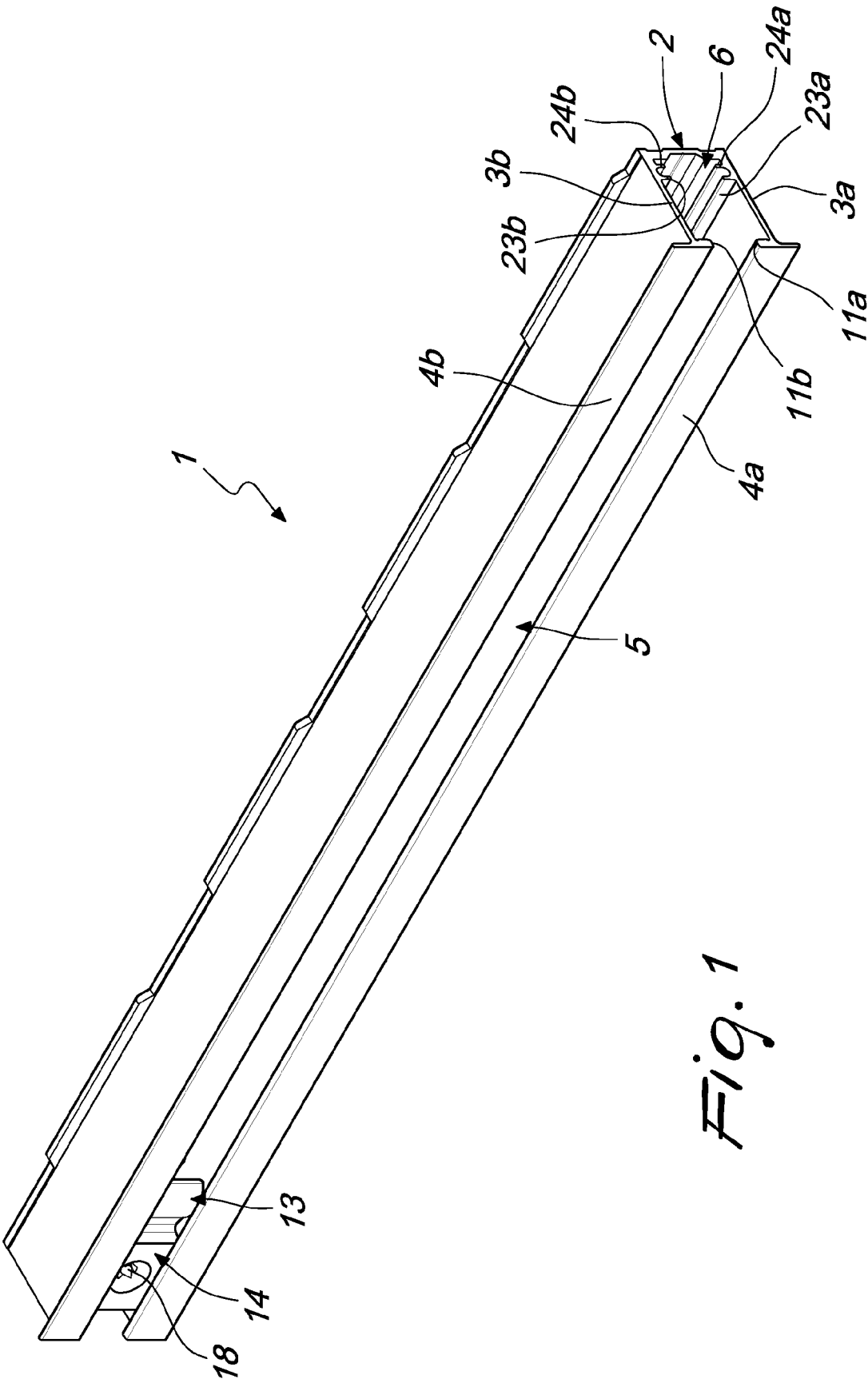
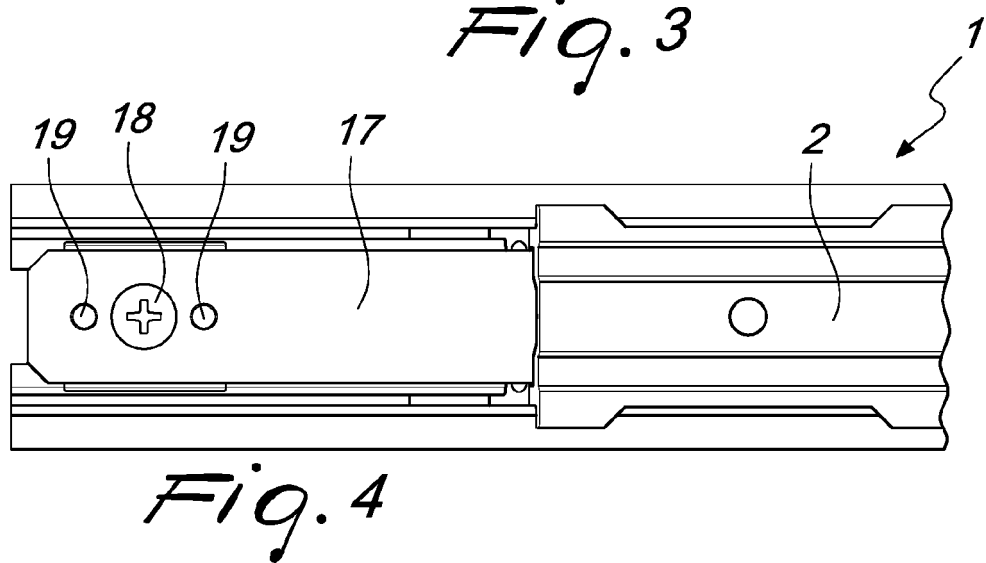
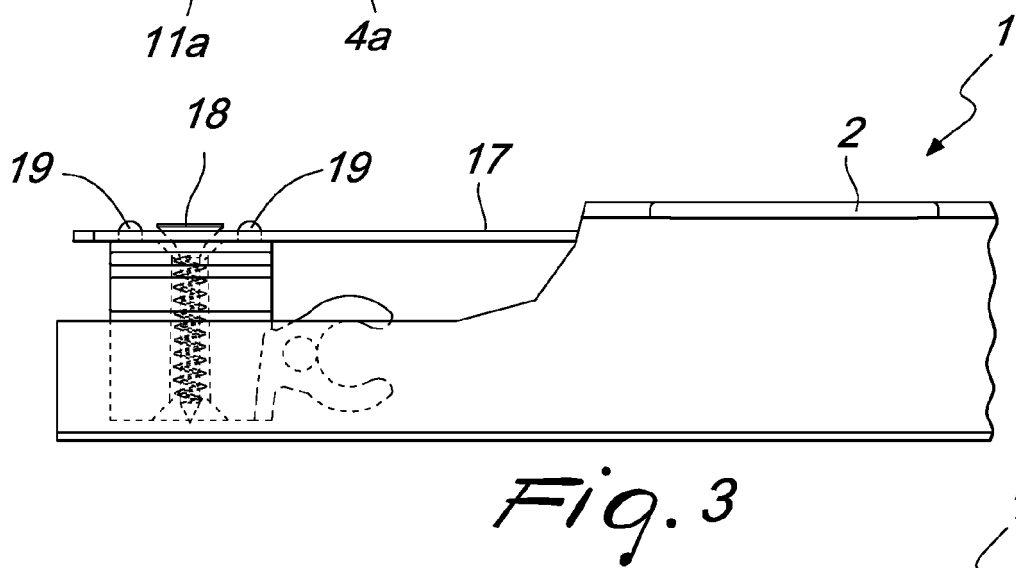
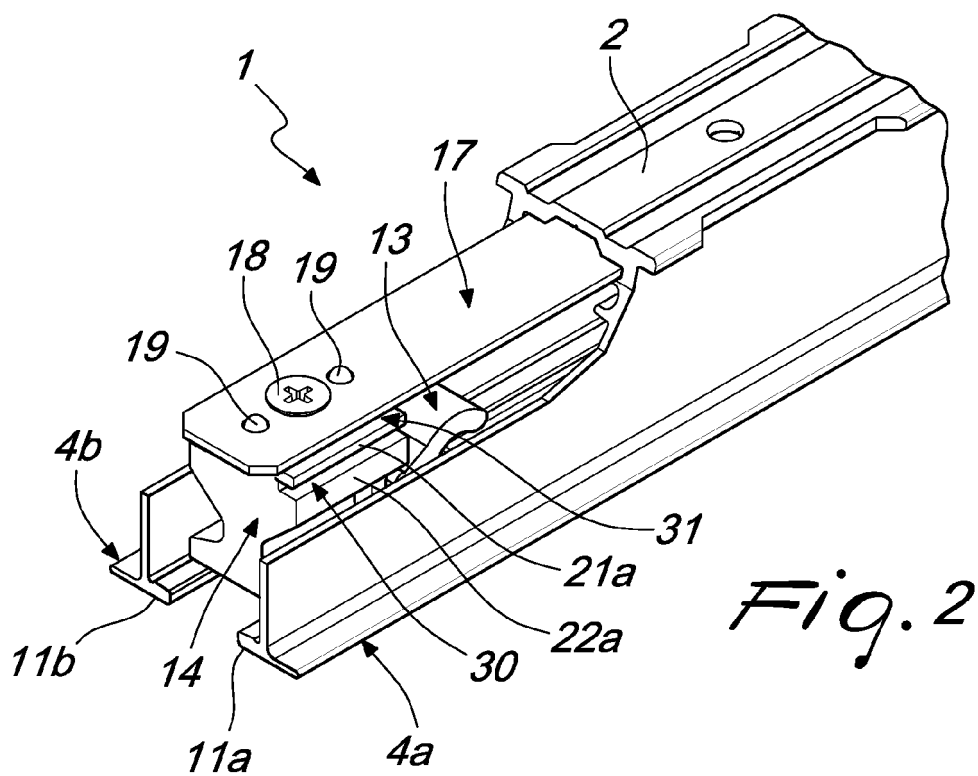


Fig. 1



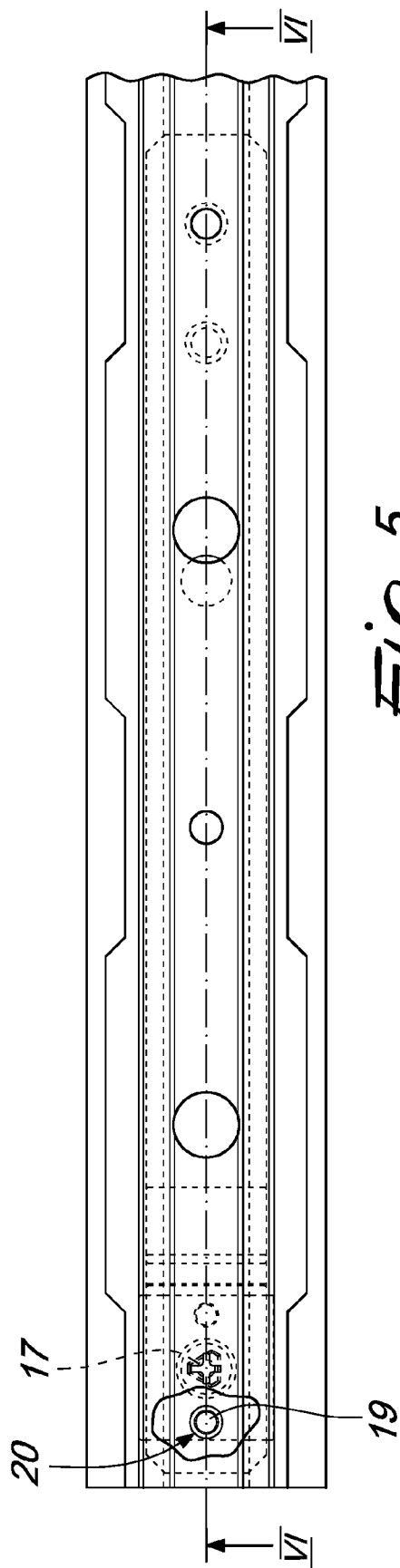


Fig. 5

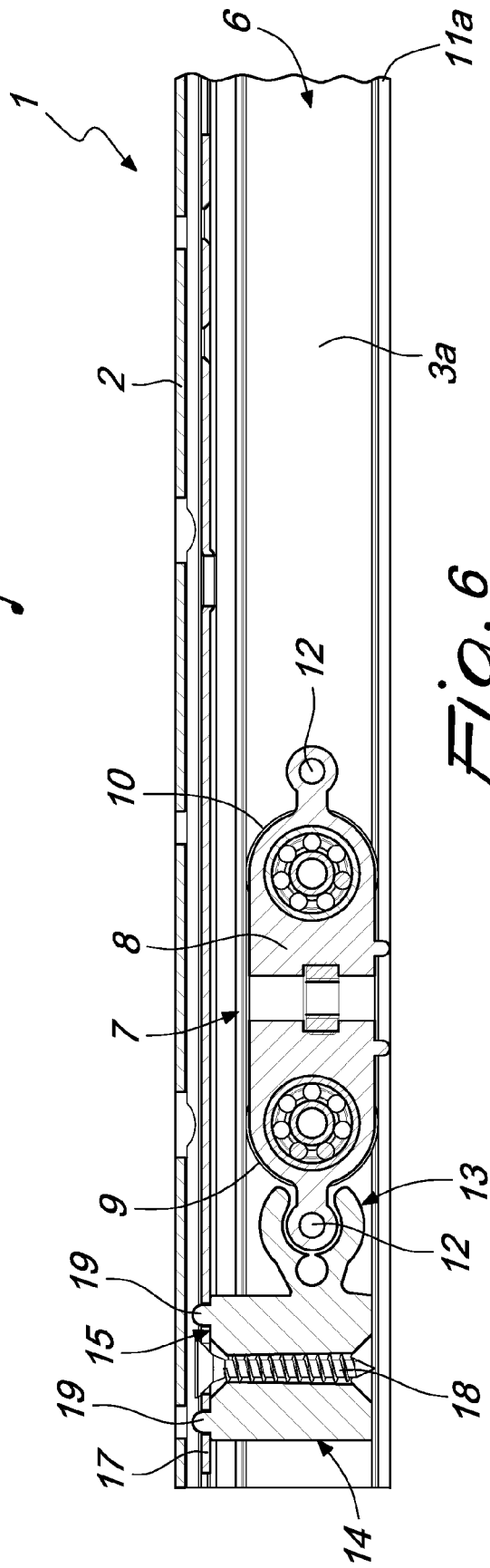


Fig. 6

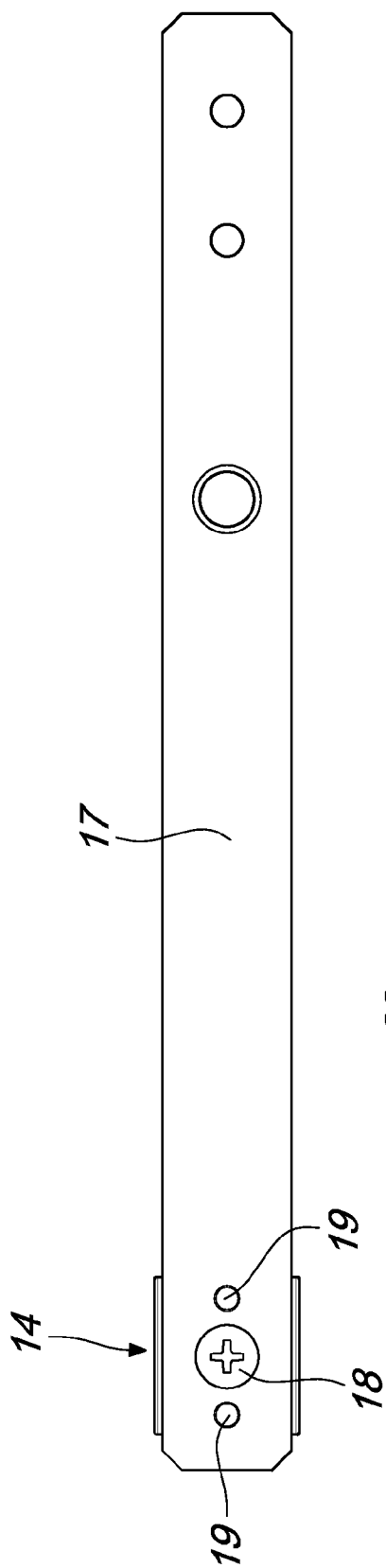


Fig. 7

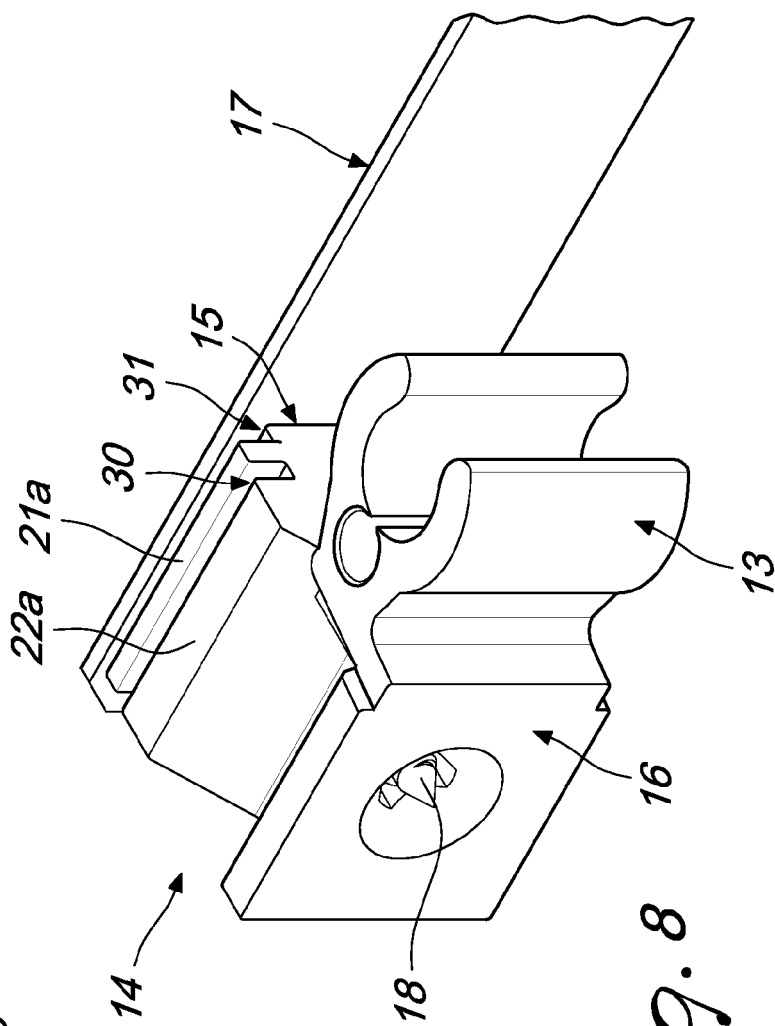


Fig. 8

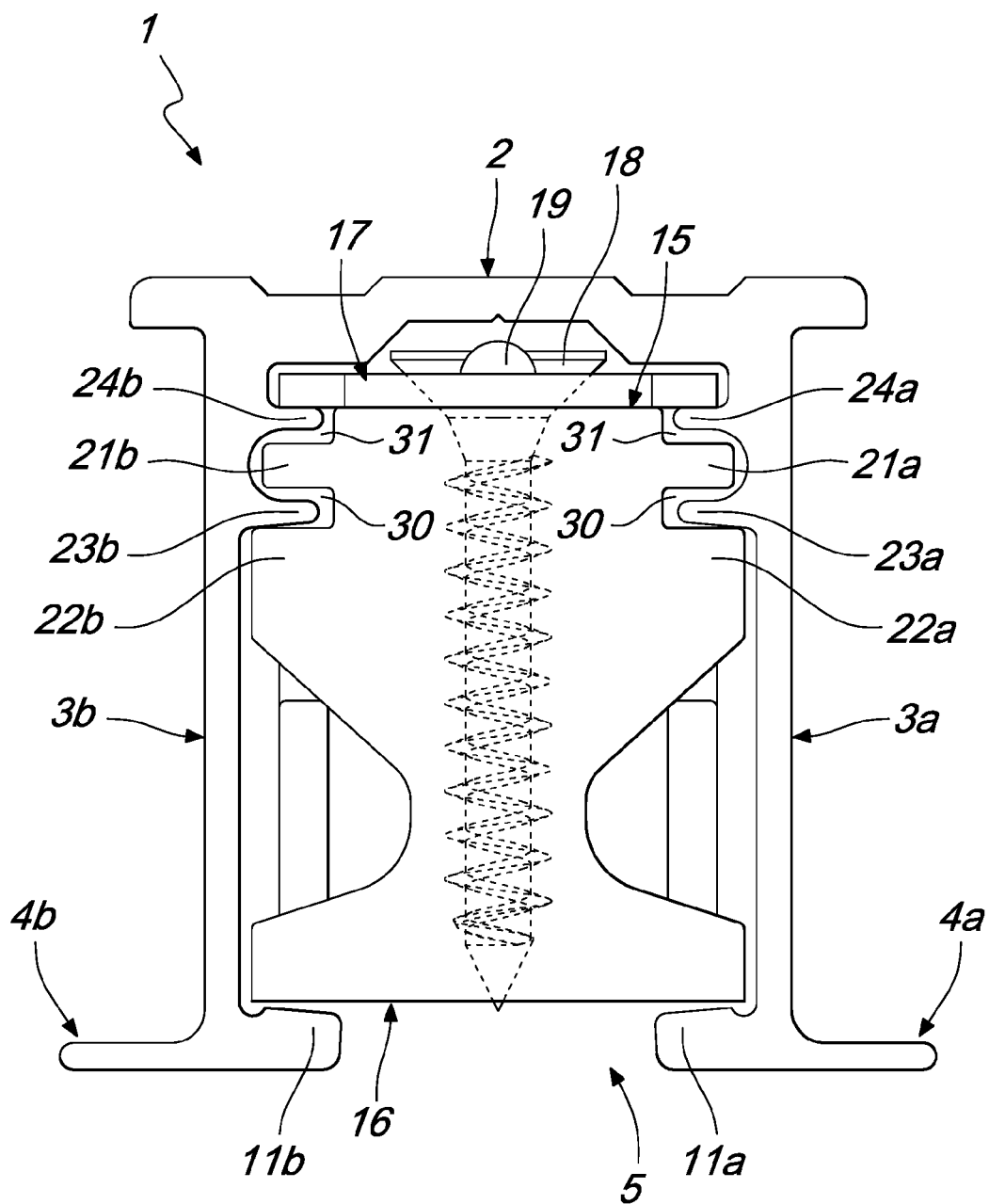


Fig. 9



EUROPEAN SEARCH REPORT

Application Number
EP 15 17 7708

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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	DE 10 2011 075778 B3 (GEZE GMBH [DE]) 28 June 2012 (2012-06-28) * paragraph [0017] - paragraph [0024]; figures 1-4 * -----	1,2	INV. E05C17/60 E05D15/06 E05F5/00
			TECHNICAL FIELDS SEARCHED (IPC)
			E05D E05F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 January 2016	Examiner Guillaume, Geert
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 15 17 7708

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
DE 102011075778 B3	28-06-2012	DE 102011075778 B3	28-06-2012
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- IT MI20141471 A [0043]