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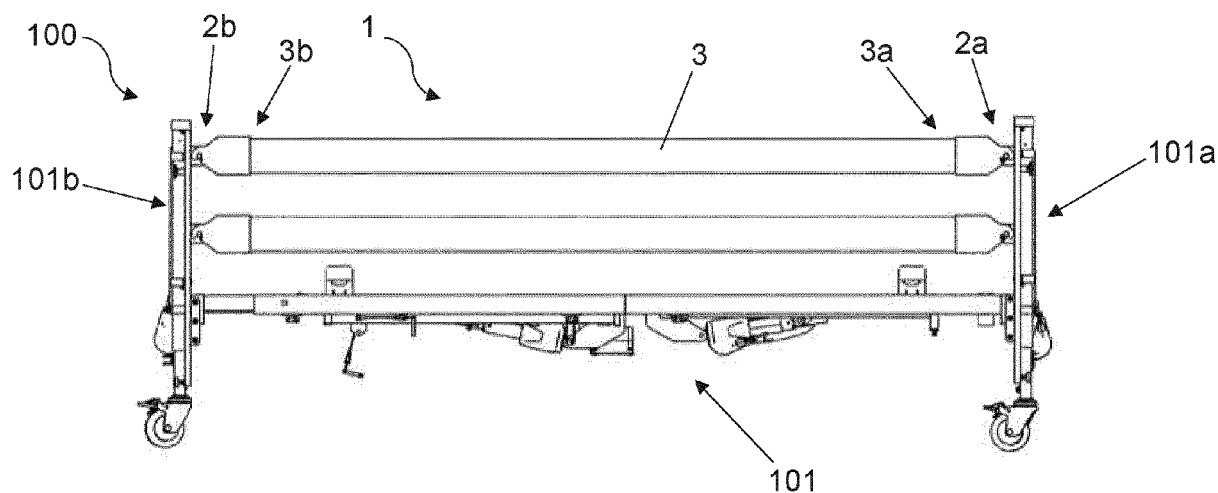
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(54) **RAIL FOR A BED, BED COMPRISING SUCH RAIL AND METHOD FOR MOUNTING SUCH RAIL ON A BED**

(57) A rail (1) for a bed (100), comprising:
- at least one support (2) that can be installed in a housing of the bed (100);
- a bar (3) with a prevalently longitudinal extension, hav-

ing at least one end (3a) that can be configured in a first position, wherein it is mechanically or magnetically coupled to the support (2), and in a second position, wherein the end (3a) is uncoupled from the support (2).

FIG. 1



Description

[0001] The present invention relates to a rail for a bed, a bed comprising such rail and a method for mounting such rail on a bed.

[0002] As is known, rails are installed on a bed for increasing the safety of the person in the bed. In fact, such equipment prevents a lateral fall from the bed.

[0003] Solutions of the known type comprise a rail to be mounted directly on the bed. As the rail is a single part, the user has difficulty in the installation, in particular in having to handle a rather long component (about 2 metres) and coordinating the coupling of the two ends with the bed.

[0004] Therefore, the rail mounting and dismounting operation is long and complicated.

[0005] In this context, the technical task underpinning the present invention is that of proposing a rail for a bed, a bed comprising such rail and a method for mounting such rail on a bed, which obviate the drawbacks of the prior art cited above.

[0006] In particular, the aim of the present invention is to propose a rail for a bed which is easy to mount and dismount.

[0007] Another purpose of the present invention is to make available a rail for a bed, a bed comprising such rail and a method for mounting such rail on a bed, which reduce the time scales of the rail mounting and dismounting operations on the bed and at the same time increase the safety with respect to known solutions.

[0008] The stated technical task and specified aims are substantially achieved by a rail for a bed, comprising:

- at least one support that can be installed in a housing of the bed;
- a bar with a prevalently longitudinal extension, having at least one end that can be configured in a first position, wherein it is mechanically or magnetically coupled to the support, and in a second position, wherein the end is uncoupled from said support.

[0009] According to one embodiment, the support comprises at least one pin and the end of the bar comprises at least one hooking element for which, in the first end position, the hooking element is engaged with the pin and in the second end position, the hooking element is disengaged from the pin. According to one embodiment, the support comprises a flat block and two pins arranged on opposite sides of the flat block. The end of the bar comprises two hooking elements so that each hooking element can be engaged in one of the support pins.

[0010] According to one embodiment, the rail comprises a mechanical stop means movable at least between an operating position, wherein it maintains the end of the bar coupled to the support (when the end is in the first position), and a rest position, wherein it allows the uncoupling between the end and the support.

[0011] The stated technical task and specified aims are substantially achieved by a bed, comprising:

- a frame having at least one headboard and one footboard;
- at least one housing afforded in the headboard or in the footboard;
- at least one rail according to the present invention, wherein the support is installed in the housing.

[0012] According to one embodiment, the housing is a groove afforded in the headboard or in the footboard in which the support is slidably mounted.

[0013] According to one embodiment, the bed comprises two housings of which a first housing afforded in the headboard and a second housing afforded in the footboard. The rail comprises two supports of which a first support which can be installed in the first housing and a second support which can be installed in the second housing. The bar of the rail comprises two ends of which a first end can be mechanically or magnetically coupled to the first support and a second end can be coupled mechanically or magnetically to the second support.

[0014] According to one embodiment, the bed comprises at least two rails for each side. The rails of the same side have a single common support for each end of the corresponding bars.

[0015] The defined technical task and the specified objects are substantially reached by a method for mounting a rail on a bed, comprising the steps of:

- installing the rail support in a housing of the bed;
- after installing the support, configuring the end of the bar of the rail in the first position for which it is coupled mechanically or magnetically to the support.

[0016] According to one embodiment of the method, the housing is a groove afforded in the headboard or in the footboard, for which the step of installing the support in the housing takes place by making the support slide in the groove.

[0017] According to one embodiment, the method further comprises a step of locking the end in the first position so that its uncoupling from the support is prevented.

[0018] Further characteristics and advantages of the present invention will more fully emerge from the non-limiting description of a preferred but not exclusive embodiment of a rail for a bed, a bed comprising such rail and a method for mounting such rail on a bed, as illustrated in the accompanying drawings, in which:

- figure 1 shows a bed, according to the present invention, on which two rails are mounted, according to the present invention, in a front view;
- figure 2 shows a detail (coupling between the ends of the bar and support) of the rail of figure 1, in a front view;
- figure 3 shows a detail (single common support) of

the rails of figure 1;

- figures 4a, 4b and 4c show three steps of the method for mounting the rail on the bed of figure 1;
- figures 5-7 show an embodiment of a system for blocking the sliding of the support, being part of the bed of figure 1, in a partially sectioned front view;
- figures 8-10 show an alternative embodiment of the system for blocking the sliding of the support, being part of the bed of figure 1, in a partially sectioned lateral view.

[0019] With reference to the figures, reference numeral 1 indicates a rail for a bed. The rail 1 comprises at least one support 2 that can be installed in a housing of the bed 100.

[0020] The rail 1 comprises a bar 3 having a prevalently longitudinal extension. Such bar 3 acts as a protection against falling from the sides of the bed for anyone in the bed.

[0021] Advantageously, the bar 3 has at least one end 3a that can be configured in a first position, wherein it is mechanically or magnetically coupled to the support 2, and in a second position, wherein it is uncoupled from the support 2.

[0022] Preferably, the support 2 comprises at least one pin 4 and the end 3a of the bar 3 comprises at least one hooking element 5. In the first position of the end 3a, the hooking element 5 is engaged with the pin 4. In the second position of the end 3a, the hooking element 5 is disengaged from the pin 4.

[0023] Preferably, the hooking element 5 is arch shaped or hook shaped so as to create a rotational coupling between the end 3a and the support 2.

[0024] In the embodiment described and illustrated herein, the support 2 comprises a flat block 6 and two pins 4 arranged on opposite sides of the flat block 6. The end 3a of the bar 3 comprises two hooking elements 5 so that each hooking element 5 can be engaged in one of the support 2 pins 4.

[0025] In particular, when the end 3a is configured in the first position, i.e. when the bar 3 is coupled to the support 2, the flat block 6 is comprised between the two elements 5.

[0026] Preferably, the rail 1 comprises a mechanical stop means 7 movable at least between an operating position, in which it prevents the uncoupling between the end 3a and the support 2, and a rest position.

[0027] In the embodiment described and illustrated herein, the mechanical stop means 7 comprises an abutment element 8 hinged to the end 3a of the bar 3. In the operating position, the abutment element 8 is in contact with the pin 4 and keeps it coupled to the end 3a. In the second rest position, the abutment element 8 disengages the pin 4 and enables the uncoupling between the end 3a and the support 2. The abutment element 8 then passes from the operating position to the rest position, or vice versa, rotating about a hinging axis.

[0028] Preferably, the rest position is defined by a re-

cess afforded in the end 3a. In an alternative embodiment, the abutment element 8 is slidably movable between the two positions.

[0029] Preferably, the mechanical stop means 7 comprises an elastic element (not illustrated) associated with the abutment element 8 for keeping it in the first operating position.

[0030] A bed, according to the present invention, is described below.

[0031] Such bed 100 comprises a frame 101 having a headboard 101a and a footboard 101b. In particular, an intermediate section 101c of the frame is also comprised, substantially defining a support surface so as to house a bed base and a mattress. The headboard 101a and the footboard 101b extend in one direction away from the surface defined by the intermediate section 101c. In particular, the intermediate section 101c is substantially horizontal, the headboard 101a and the footboard 101b are substantially vertical.

[0032] The bed 100 comprises at least one housing 107 afforded in the headboard 101a or in the footboard 101b. Preferably, the housing 107 is afforded at a lateral end of the headboard 101a or of the footboard 101b. A rail 1 is also comprised according to what is described above. The support 2 of the rail 1 is installed in the housing 107.

[0033] In the preferred embodiment, the housing 107 is a groove afforded in the headboard 101a or in the footboard 101b. Preferably, the groove 107 is arranged at a lateral end of the headboard 101a or of the footboard 101b.

[0034] The support 2 is slidably mounted along the groove 107.

[0035] Preferably, the groove 107 extends along the same distancing direction as the headboard 101a or as the footboard 101b. In particular, the groove 107 extends along the height of the headboard 101a or of the footboard 101b. Preferably, the groove 107 extends vertically.

[0036] According to one embodiment, the headboard 101a and/or the footboard 101b project laterally with respect to the intermediate section 101c. The groove 107 is afforded in the projecting portion of the headboard 101a or of the footboard 101b. In this way, the rail 1 mounted on the bed 100 is not bulky for the person in the bed and at the same time ensures easy mounting and dismounting.

[0037] Preferably, the groove 107 extends at least to a lower end of the headboard 101a or of the footboard 101b.

[0038] Preferably, the groove 107 projects below the headboard 101a or the footboard 101b to facilitate the installation of the support 2.

[0039] In the preferred embodiment, illustrated in figure 1, the bed 100 comprises two housings 107. A first housing 107 is afforded in the headboard 101a and a second housing 107 is afforded in the footboard 101b. The rail 1 comprises two supports 2a, 2b of which a first

support 2a which can be installed in the first housing 107 and a second support 2b which can be installed in the second housing 107. The bar 3 of the rail 1 comprising two ends 3a, 3b of which a first end 3a can be mechanically or magnetically coupled to the first support 2a and a second end 3b can be coupled mechanically or magnetically to the second support 2b.

[0040] Preferably, the bed comprises at least two rails 1 for each side. The rails 1 of the same side have a single common support 10 for each end of the corresponding axes 3.

[0041] In particular, as shown in figure 3, the single common support 10 consists of two or more supports 2 connected and equidistant to one another. For example, the single common support can be made as a single part. Alternatively, the single common support can be made by assembling various supports 2, e.g. by interlocking.

[0042] Preferably, the bed 100 comprises a system 102 for blocking the sliding of the support 2 in the groove 107. The blocking system 102, shown in figures 5 to 10, comprises an abutment means 103 movable between an engagement position, in which it at least partially obstructs the groove 107 so as to prevent the sliding of the support 2 downwards, and a rest position, in which it enables the sliding of the support 2.

[0043] Originally, the support 2 comprises a blocking element 104 suitable for being coupled with the abutment means 103 when the latter is in the engagement position. The coupling is such that the blocking element 104 prevents the abutment means 103 from passing from the engagement position to the rest position. Preferably, the blocking element 104 is a projection of the support 2, situated at one end thereof.

[0044] Preferably, the abutment means 103 comprises a pin 105 on which the projection 104 rests. Preferably, the projection 104 is shaped so as to at least partially wrap around the pin 105.

[0045] The blocking system 102 comprises an activator 106 for bringing the abutment means 103 from the engagement position to the rest position, and vice versa.

[0046] In this way, if a user wishes to make the support 2 slide towards the bottom of the groove 107, he/she must act through a sequence of combined movements. In particular, the user must act on the support 2 pushing it upwards so that the projection 104 is uncoupled from the pin 105 and simultaneously on the activator 106 to bring the abutment means 103 from the engagement position to the rest position. In this way, the user must use both hands to make the support 2 slide into the groove 107, thus preventing the operation being able to happen by accident and the user getting hurt.

[0047] According to the embodiment shown in figures 5 to 7, the activator 106 is a pull switch. In this case, the user pulls the support 2 upwards with one hand and with the other he/she pulls the pull switch towards him/herself, releasing the groove 107 from the abutment means 103.

[0048] According to an alternative embodiment shown in figures 8 to 10, the activator 106 is a button. In this

case, the user pulls the support 2 upwards with one hand and with the other he/she presses the button, releasing the groove 107 from the abutment means 103.

[0049] In the embodiment described and illustrated herein, the blocking system 102 acts on the single common support 10. In particular, the blocking system 102 interacts with the support 2 of the single common support 10 which is arranged higher.

[0050] A method for mounting the rail described above on a bed having a headboard or a footboard and a housing afforded in the headboard or in the footboard, according to the present invention, is described below.

[0051] The method comprises the step of installing the support 2 in the housing. If the housing 107 is a groove, such step takes place by inserting the support 2 in one end of the groove 107 and making the support 2 slide in the groove 107.

[0052] Once the support 2 has been installed, the end 3a of the bar 3 of the rail 1 is configured in the first position for which it is coupled mechanically or magnetically to the support 2.

[0053] Preferably, the method further comprises a step of locking the end 3a in the first position so that its uncoupling from the support 2 is prevented.

[0054] Preferably, such step takes place by the mechanical stop means 7. In particular, during the step of configuring the end 3a in the first position, the mechanical stop means 7 is brought into the rest position to enable the coupling between the end 3a and the support 2. Subsequently, once the coupling has taken place, the step of locking the end 3a is performed by bringing the mechanical stop means 7 from the rest position to the operating position.

[0055] In the embodiment described and illustrated herein, the mechanical stop means 7 comprises an abutment element 8 movable at least between the operating position and the rest position.

[0056] According to one embodiment, the passage of the abutment element 8 from the operating position to the rest position, and vice versa, takes place by rotating the abutment element 8 about a hinging bar.

[0057] According to an alternative embodiment, the passage of the abutment element 8 from the operating position to the rest position, and vice versa, takes place by making the abutment element 8 slide along a predetermined direction.

[0058] Preferably, the rest position is defined by a recess afforded in the end 3a.

[0059] According to one embodiment, the passage of the abutment element 8 to the rest position takes place due to an external thrust. Preferably, the thrust is exercised by the pin 4 during the coupling between the end 3a and the support 2. Alternatively, the thrust is performed manually. Preferably, the mechanical stop means 7 comprises an elastic element (not illustrated) associated with the abutment element 8. The passage from the rest position to the operating position takes place by the elastic element, once the thrust action has finished.

[0060] From the above description, the characteristics of the rail for a bed, the bed comprising such rail and the method for mounting such rail on a bed, according to the present invention, are clear, as are the advantages.

[0061] In particular, the fact that the support and the bar are made as two distinct components, installed on the bed separately, greatly facilitates the mounting and dismounting operations.

[0062] Furthermore, the slidable mounting of the support in the groove, the provision of the mechanical stop means and the arched shape of the hooking element contribute to increasing the safety both of the person mounting/dismounting the rail and of the person in the bed.

Claims

1. A rail (1) for a bed (100), comprising:

- at least one support (2) that can be installed in a housing (107) of the bed (100);
- a bar (3) with a prevalently longitudinal extension, said bar (3) having at least one end (3a) that can be configured in a first position, wherein it is mechanically or magnetically coupled to the support (2), and in a second position, wherein said end (3a) is uncoupled from said support (2).

2. The rail (1) according to claim 1, wherein the support (2) comprises at least one pin (4) and the end (3a) of the bar (3) comprises at least one hooking element (5) for which, in the first end position (3a), the hooking element (5) is engaged with the pin (4) and in the second end position (3a), the hooking element (5) is disengaged from the pin (4).

3. The rail (1) according to claim 2, wherein the support (2) comprises a flat block (6) and two pins (4) arranged on opposite sides of the flat block (6), said at least one end (3a) of the bar (3) comprising two hooking elements (5) so that each hooking element (5) can be engaged in one of the pins (4) of the support (2).

4. The rail (1) according to any one of the preceding claims, comprising a mechanical stop means (7) movable at least between an operating position, wherein it maintains said end (3a) coupled to the support (2), and a rest position, wherein it allows the uncoupling between the end (3a) and the support (2).

5. A bed (100), comprising:

- a frame (101) having at least one headboard (101a) and one footboard (101b),
- at least one housing (107) afforded in the headboard (101a) or in the footboard (101b);

- at least one rail (1) according to any one of the preceding claims, the support (2) of the rail (1) being installed in said housing (107).

6. The bed (100) according to claim 5, wherein the housing (107) is a groove afforded in the headboard (101a) or in the footboard (101b) wherein said support (2) is slidably mounted.

7. The bed (100) according to claim 5 or 6, comprising two housings of which a first housing (107) afforded in the headboard (101a) and a second housing (107) afforded in the footboard (101b), said rail (1) comprising two supports (2a, 2b) of which a first support (2a) that can be installed in the first housing (107) and a second support (2b) that can be installed in the second housing (107), said bar (3) of the rail (1) comprising two ends (3a, 3b) of which a first end (3a) can be mechanically or magnetically coupled to the first support (2a) and a second end (3b) can be mechanically or magnetically coupled to the second support (2b).

8. The bed (100) according to any one of claims 5 to 7, comprising at least two rails (1) for each side, the rails (1) of the same side having a single common support (2, 10) for each end of the corresponding bars (3).

9. A method for mounting the rail (1) according to any one of claims 1 to 4 on a bed (100) having at least one headboard (101a) and a footboard (101b) and a housing (107) afforded in the headboard (101a) or in the footboard (101b), said method comprising the steps of:

- installing the support (2) of the rail (1) in said housing (107);
- after installing the support (2), configuring the end (3a) of the bar (3) of said rail (1) in the first position for which it is coupled mechanically or magnetically to the support (2).

10. The method according to claim 9, wherein the housing (107) is a groove afforded in the headboard (101a) or in the footboard (101b), for which the step of installing the support (2) in the housing (107) takes place by making the support (2) slide in the groove (107).

11. The method according to claim 9 or 10, further comprising a step of locking the end (3a) in the first position so that its uncoupling from the support (2) is prevented.

FIG. 1

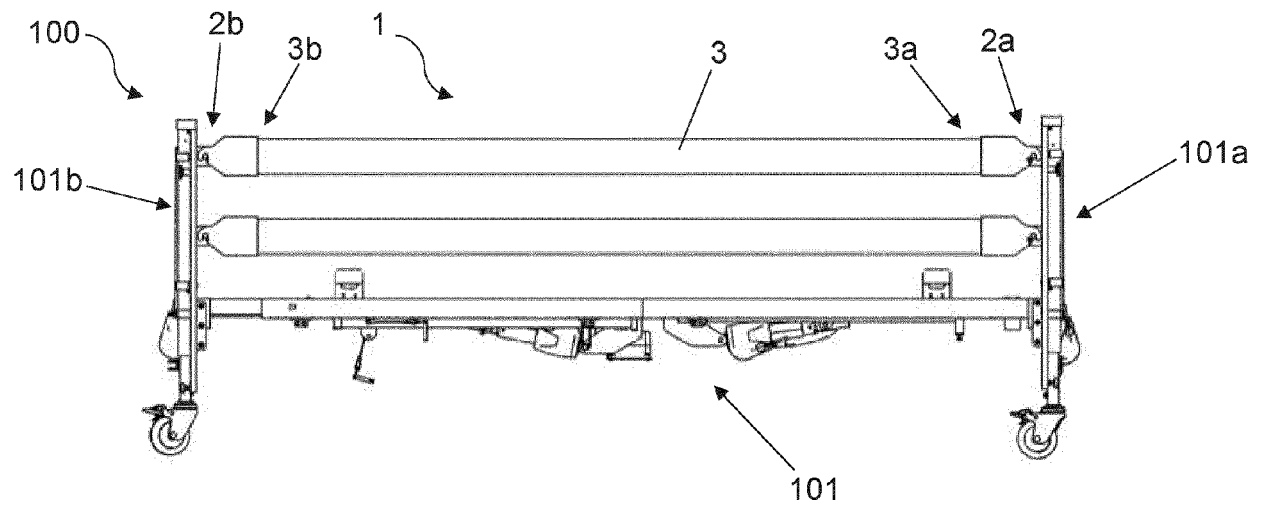


FIG. 2

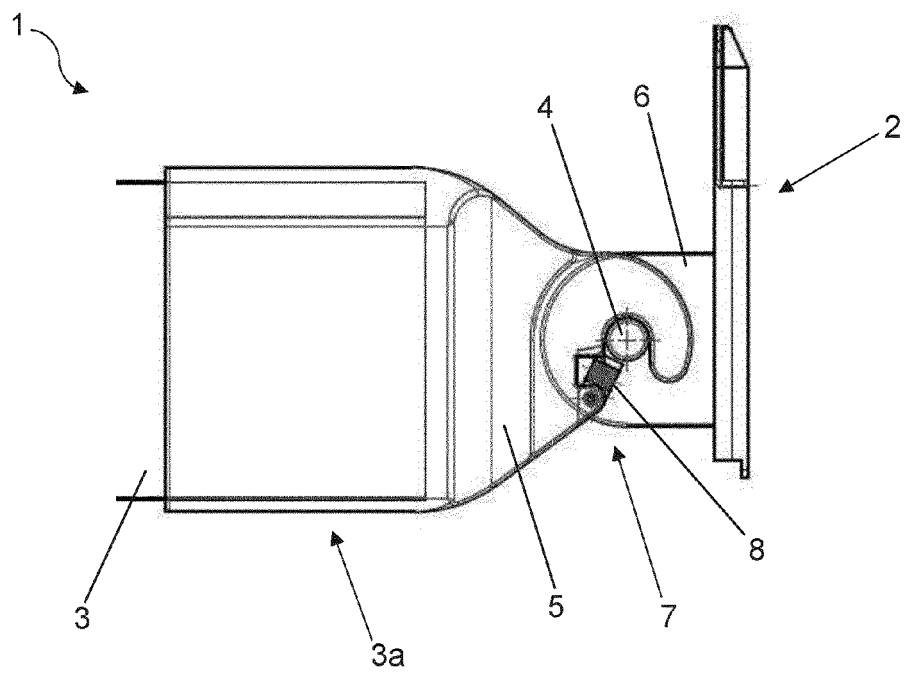


FIG. 3

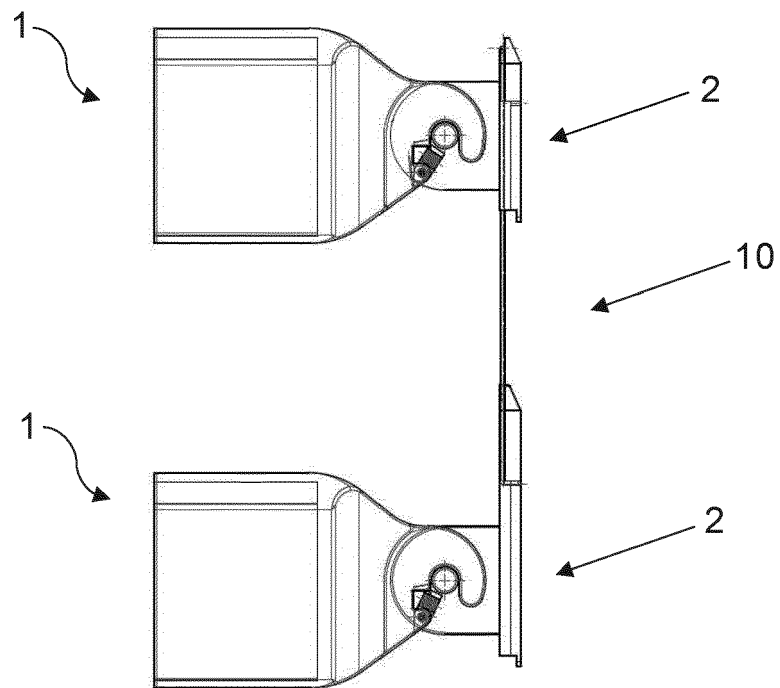


FIG. 4a

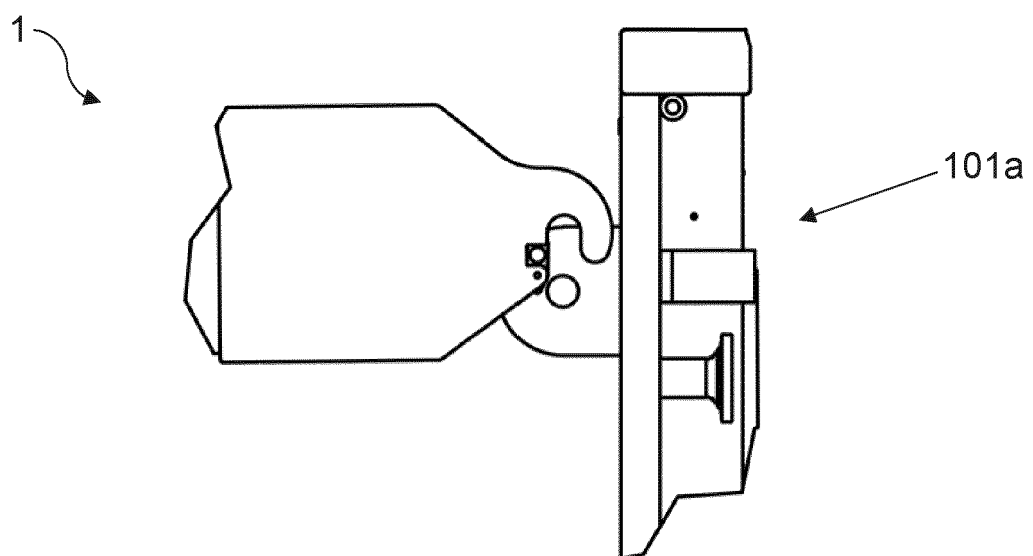


FIG. 4b

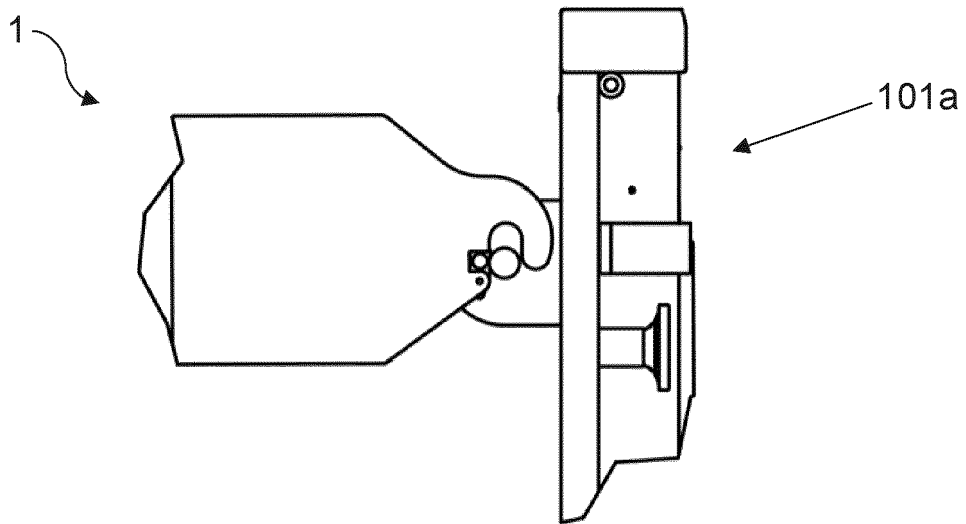


FIG. 4c

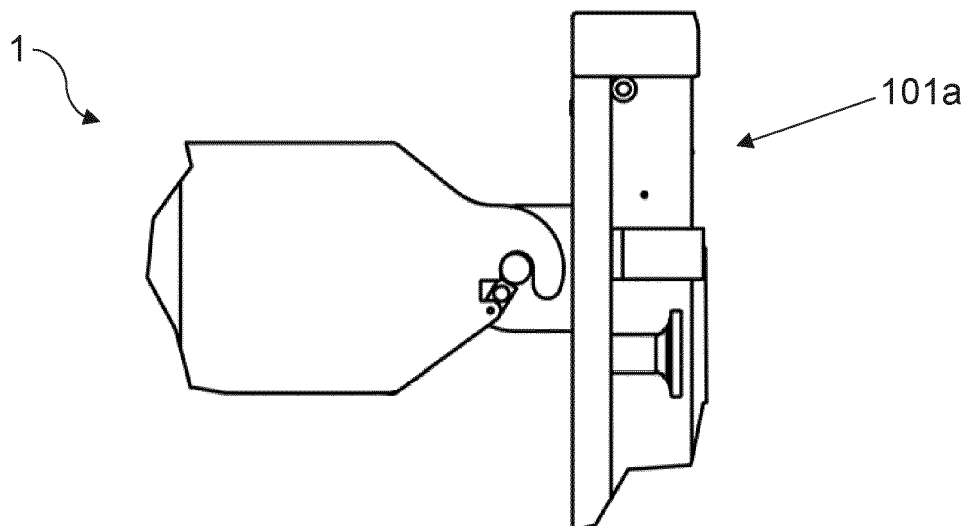


FIG. 5

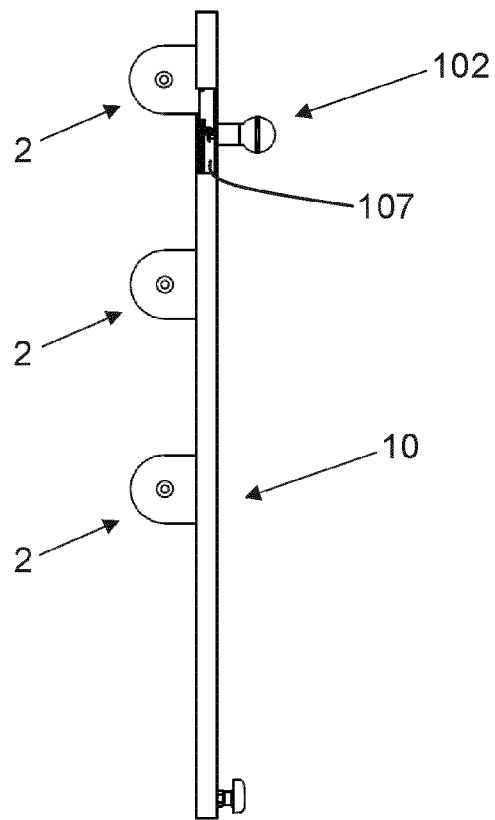


FIG. 6

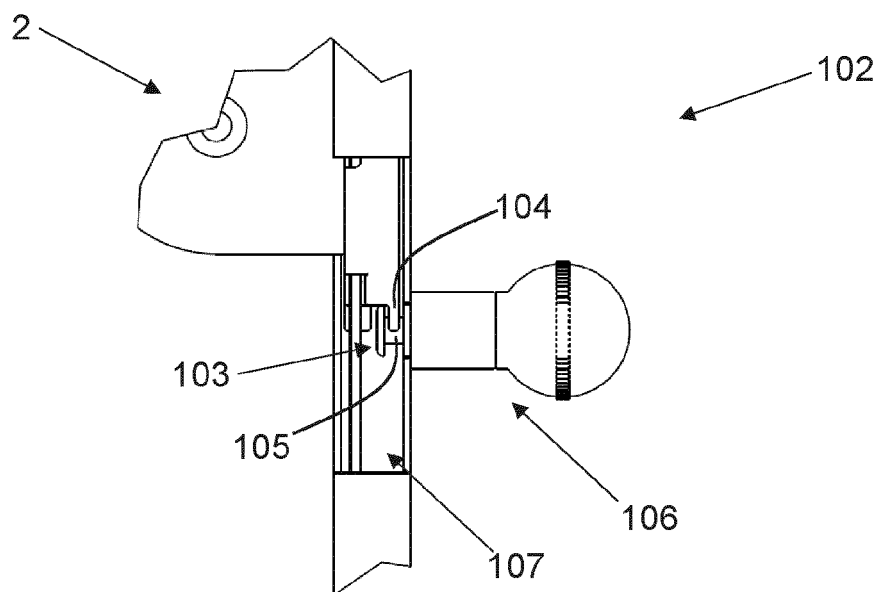


FIG. 7

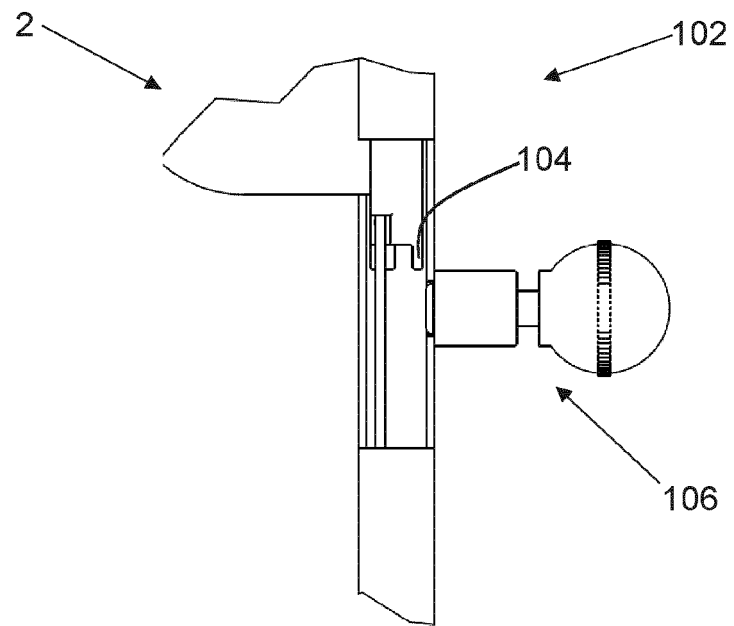


FIG. 8

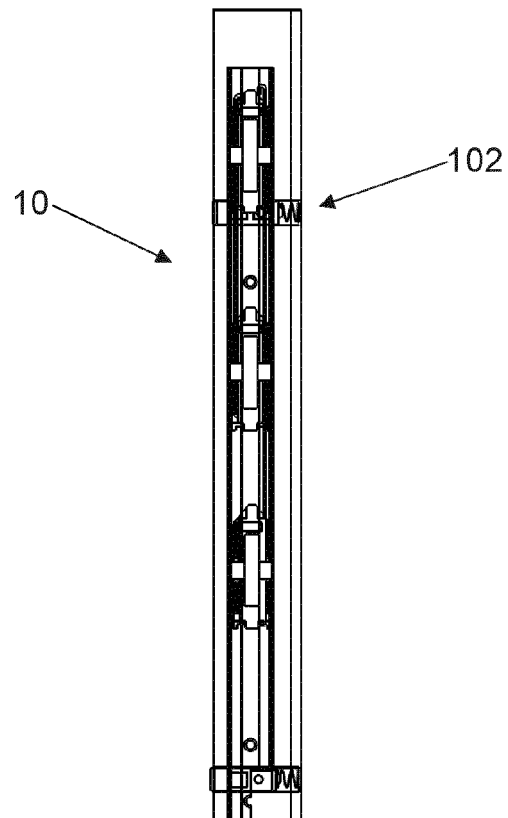


FIG. 9

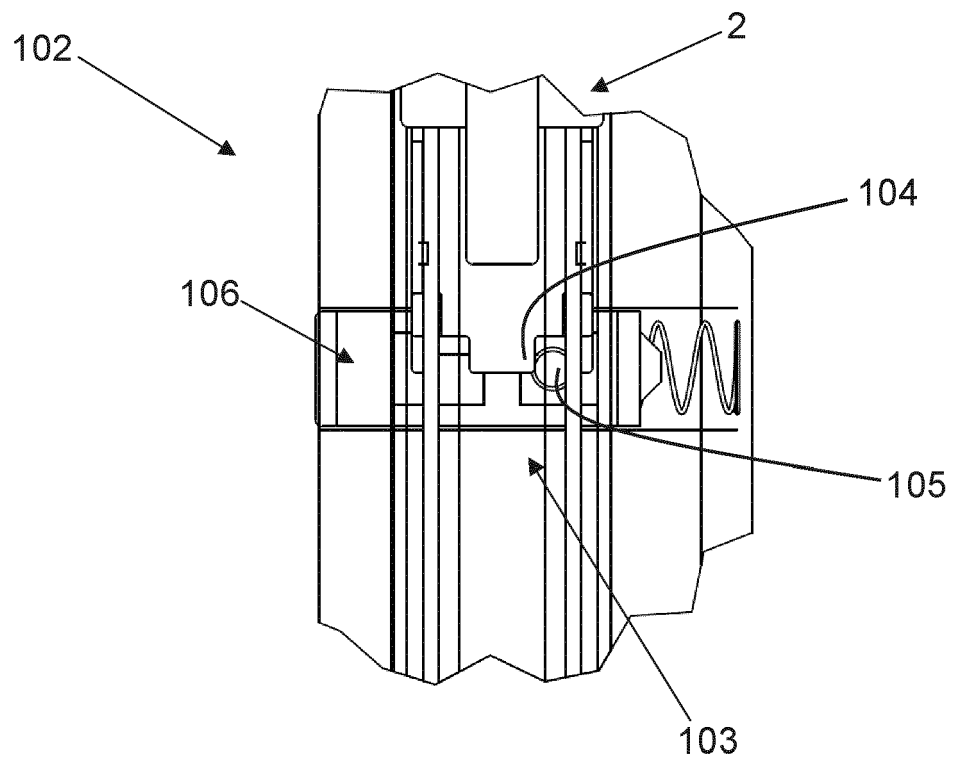
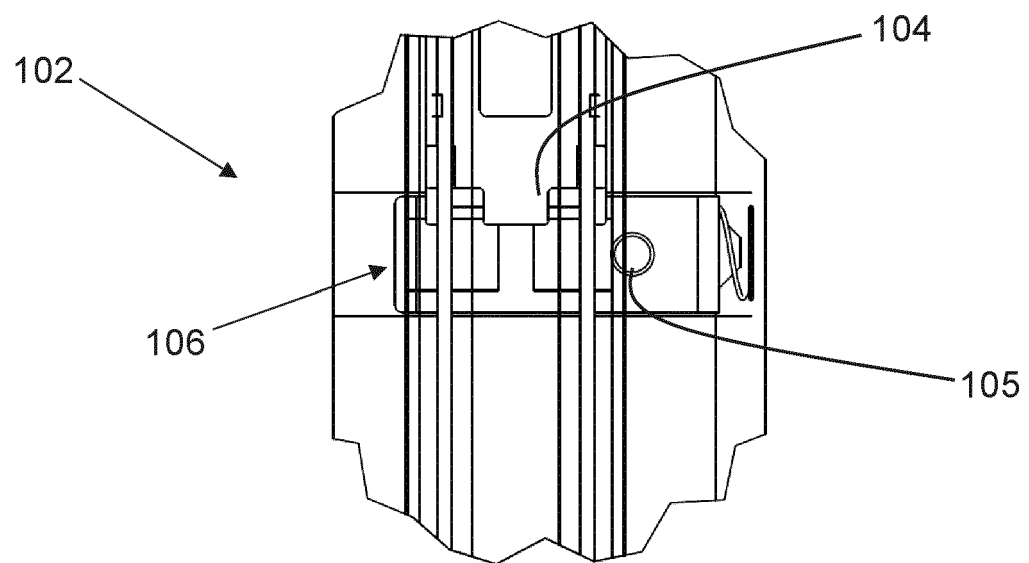


FIG. 10





EUROPEAN SEARCH REPORT

 Application Number
 EP 21 17 1278

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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	US 6 349 435 B1 (MITCHELL HERBERT L [US]) 26 February 2002 (2002-02-26) * claims 1,8; figures *	1-3,5-7,9,10 4,8,11	INV. A47C21/08
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X	US 23525 A (LEVI W. BUXTON) 5 April 1859 (1859-04-05) * column 2; figures *	1,5,10	
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			TECHNICAL FIELDS SEARCHED (IPC)
			A47C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 September 2021	Examiner Amghar, Norddin
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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EP 21 17 1278

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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22-09-2021

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82