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(54) **KIT FOR ADJUSTING THE HEIGHT OF A DOOR WITH RESPECT TO THE FLOOR**

BAUSATZ ZUR HÖHENVERSTELLUNG EINER TÜR IM VERHÄLTNIS ZUM BODEN

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Description

Field of invention

[0001] The present invention is generally applicable to the technical field of the accessories for doors, in particular for reinforced doors, and relates to a kit that includes a device for adjusting the height of a door, in particular a reinforced door, with respect to the floor, as well as to a system that includes such a kit.

[0002] The invention further relates to a method for adjusting the height of a door, in particular a reinforced door, with respect to the floor.

Background of the invention

[0003] It is known that the mounting of a door, in particular a reinforced door, is accomplished by first mounting the movable leaf of the hinges on the door and the fixed body on the support frame thereof and subsequently connecting the door to the frame by means of mutual coupling of movable leaf to the fixed bodies, generally by sliding the former with respect to the latter.

[0004] Subsequently, as shown in Figures 1a and 1b, it is carried out the adjustment of the height **h** of the door **D** with respect to the floor **FL** by means of a suitable lifting device **L** interposed between the floor **FL** and the door **D**.

[0005] By acting on the lifting device **L**, the operator applies a lifting force **F1**, which is imparted to all the components rigidly connected to the door **D**, and in particular to movable leafs **MM** of the hinges **H**.

[0006] Therefore, the force **F1** besides to raise the door **D** from the floor **FL** tends to lift the movable leafs **MM** of the hinges **H** with respect to the fixed bodies **FM**, which are rigidly connected to the frame **F**. Subsequently, the manual repositioning of the fixed bodies **FM** at the desired height occurs.

[0007] One of the apparent drawbacks of the use of the lifting devices **L** is the fact that they do not ensure the maintenance of the original height with time.

[0008] In fact, the manual repositioning of the fixed bodies **FM** of the hinges **H** does not ensure that the weight of the door **D** is homogeneously distributed on both hinges **H**. This causes besides to the gradual lowering of the door **D** possible misalignments and/or malfunctioning thereof. Therefore, a frequent maintenance of the door **D** is needed, which is an economic burden.

[0009] Moreover, the high weight of the door requires the use of several operators for such an height adjustment. In fact, while one or more operators lift the door, another operator adjusts the hinges to the desired height.

[0010] Another well-known drawback of such lifting devices **L** is that they wear the floor on which the device rests. This drawback is particularly felt with delicate floorings, for example made of tiles or wooden floors.

[0011] Further, these known lifting devices **L** are rather expensive and complicated to use, so that any height adjustment of the door must be done by expert operators.

[0012] Moreover, in case of slippery floor or wrong position between the floor and the door, these lifting devices **L** are rather dangerous for the operators.

[0013] Last but not least, the frame **F** may deform with use, with consequent misalignment of the door or the need for maintenance or replacement of the same frame **F**.

[0014] The European patent application EP1215357 discloses a concealed hinge with a fixed element that includes a longitudinal guide hole for a pivot that rotates unitary with the movable element of the same hinge. The fixed element includes a screw adapted to act on the pivot to adjust its position with respect to the fixed element.

[0015] This known hinge does not solve the above mentioned drawbacks.

[0016] In particular, this hinge does not ensure that the weight of the door is homogeneously distributed between the hinges, with the consequent need for frequent maintenance of the door.

Summary of the invention

[0017] Object of the present invention is to overcome at least partly the above mentioned drawbacks, by providing a device for adjusting the height of a door, in particular a reinforced door, of high functionality, constructional simplicity and/or low cost.

[0018] A particular object of the invention is to provide a kit comprising two hinges and a device for adjusting the height of a door, in particular a reinforced door, which allows to maintain the position of the door during time.

[0019] Another object of the invention is to provide a kit comprising a device which allows the adjustment of the height of a door, in particular a reinforced door, by a single operator.

[0020] Another object of the invention is to provide a kit comprising a device for adjusting the height of a door, in particular a reinforced door, which allows to preserve the floor below the door.

[0021] Another object of the invention is to provide a device which allows immediate and simple adjustment of the height of a door, in particular a reinforced door, even by unskilled operators.

[0022] Another object of the invention is to provide a kit comprising a device for adjusting the height of a door, in particular a reinforced door, which is safe for the operators involved in the mounting thereof.

[0023] These objects, as well as others that will appear more clearly hereinafter, are achieved by a kit comprising a device for adjusting the height of a door, in particular a reinforced door, with respect to the floor having one or more of the features herein described and/or claimed and/or shown.

[0024] The kit is provided for height adjustment of a door already mounted or to be mounted on a tubular support structure, the kit having one or more of the features defined by the appended claims.

[0025] In a further aspect, a system may be provided for height adjustment of a door mounted on a tubular support structure, the system having one or more of the features defined by the appended claims.

[0026] In a further aspect, a method may be provided for adjusting the height of a door mounted or to be mounted on a tubular support structure, the method having one or more of the features defined by the appended claims.

[0027] Advantageous embodiments of the invention are defined in accordance with the dependent claims.

Brief description of the drawings

[0028] Further features and advantages of the invention will appear more evident upon reading the detailed description of a preferred, non-exclusive embodiment of a device **300** for adjusting the height of a door, which is described as non-limiting examples with the help of the annexed drawings, in which:

FIG. 1a is a schematic front view of a lifting system of a door **D** belonging to the state of the art, with in **FIG. 1b** some enlarged details;

FIG. 2a is an exploded isometric view of a preferred but not exclusive embodiment of the system **1**, with in **FIG. 2b** some enlarged details;

FIG. 2c is an assembled isometric view of the embodiment of the system **1** of **FIG. 2a**;

FIG. 3 is an exploded isometric view of a preferred but not exclusive embodiment of an actuator device **300** to be used in the embodiment of the system **1** of **FIG. 2a**;

FIG. 4a is a front view of the embodiment of the actuator device **300** of **FIG. 3** in which the slider **320** is in a proximal position;

FIGs. 4b and **4c** are views of the embodiment of the actuator device **300** of **FIG. 3** sectioned along respective planes indicated *IVb - IVb* and *IVc - IVc* in **FIG. 4a**;

FIG. 5a is a front view of the embodiment of the actuator device **300** of **FIG. 3** in which the slider **320** is in a distal position;

FIGs. 5b and **5c** are views of the embodiment of the actuator device **300** of **FIG. 3** sectioned along respective planes indicated *Vb - Vb* and *Vc - Vc* in **FIG. 5a**;

FIG. 6a is an axially sectioned view of the embodiment of the system **1** of **FIG. 2a** in an assembled configuration, with the lower hinge **100** resting on the actuator device **300**;

FIGs. 6b and **6c** are enlarged views of some details of **FIG. 6a**, in which the slider **320** is respectively in a proximal and a distal position;

FIG. 7 is an isometric view of a further preferred but not exclusive embodiment of an actuator device **300**;

FIG. 8 is an axially sectioned view of a preferred but not exclusive embodiment of the system **1** that includes the embodiment of the actuator device **300**

of **FIG. 7**;

FIG. 9 is an exploded isometric view of a further preferred but not exclusive embodiment of an actuator device **300**;

FIGs. 10a and **10b** are axially sectioned views of the embodiment of the actuator device **300** of **FIG. 9**, in which the slider **320** is respectively in a proximal and a distal position;

FIGs. 10a and **10b** are axially sectioned views of the embodiment of the actuator device **300** of **FIG. 9**, in which the slider **320** is respectively in a proximal and a distal position;

FIG. 11 is an axially sectioned view of a preferred but not exclusive embodiment of the hinge **100**, with in **FIG. 12** some enlarged details;

FIG. 13 is a partially exploded isometric view of a preferred but not exclusive embodiment of the hinge **100**.

Detailed description of a preferred embodiment

[0029] With reference to figures 2a to 10b, the system **1** is particularly useful for adjusting the height *h* of a door **D** with respect to the floor **FL**.

[0030] In particular, the door **D** may be a reinforced door, and can be fixed to a support structure formed by a tubular frame **F** and a counterframe **CF**, mutually coupled to each other.

[0031] However, the system **1** may be useful to adjust the height *h* of any door **D**, connected to any type of tubular support structure, without departing from the scope of the appended claims.

[0032] Essentially, in addition to the tubular support structure, the system **1** includes two or more hinges **100**, **200** connected to the door **D** for rotatably moving thereof about a rotation axis **Y'** and at least one actuator device **300**, whose function will be explained later.

[0033] The at least one actuator device **300** is spaced apart from the hinges **100**, **200**, and does not belong thereto.

[0034] Preferably, a single actuator device **300** may be provided.

[0035] The hinges **100**, **200** are slidably mounted on the tubular support structure for sliding along an axis **Y** substantially parallel to the rotation axis **Y'** of the door **D**, and can be removably fastened on the tubular support structure **F**, **CF**.

[0036] To do this, the hinges **100**, **200** may be mounted by means of suitable screws **101**, **201** which pass through elongated slots **A**, **A'** passing through the frame **F**, which elongated slots **A**, **A'** may define the sliding axis **Y**.

[0037] Therefore, when the screws **101**, **201** are unfastened the hinges **100**, **200** are free to slide along the axis **Y** for a stroke defined by the elongated slots **A**, **A'**. Conversely, by fastening the screws **101**, **201** it is possible to block the sliding of the hinges **100**, **200** with respect to the tubular support structure **F**, **CF**.

[0038] In particular, as shown in the attached figures,

the hinges **100**, **200** are of the concealed type. Each hinge **100**, **200** may include a respective fixed element **110**, **210** mounted within the tubular support structure **F**, **CF** and a respective movable element **120**, **220** pivoted on the respective fixed element **110**, **210** to rotate about the rotation axis **Y'** between an open door **D** position and a closed door **D** position.

[0039] Further, each movable element **120**, **220** includes a fixing leaf **130**, **230** for fixing to the door **D** susceptible to concealedly retract within the tubular support structure **F**, **CF** in the closed door **D** position and to visibly extend from the same tubular support structure **F**, **CF** in the open door **D** position.

[0040] Advantageously, the hinges **100**, **200** may be made of two parts cooperating with each other.

[0041] FIGs. 11, 12 and 13 for sake of simplicity show only the structure of the hinge **100**. It is understood that in a preferred but not exclusive embodiment of the invention the hinge **200** also may have the same structure.

[0042] In particular, the fixed element **110** of the hinge **100** may be defined by a lower half-hinge with a first box-shaped hinge body **112**, while the movable element **120** thereof may be defined by an upper half-hinge with a pivot **121** defining the rotation axis **Y'** of the door **D**.

[0043] The box-shaped hinge body **112** may include a passing-through hole **114** within which the pivot **121** can be inserted to rotatably support it.

[0044] Advantageously, means **115** may be provided for blocking the axial sliding of the pivot **121** with respect to the box-shaped hinge body **112**, so as to prevent the slipping and/or the misalignment thereof upon the sliding of the hinges **100**, **200** along the first axis **Y**.

[0045] Suitably, as particularly shown in FIG. 12, such means **115** for blocking the axial sliding may include an axial blind hole **116** made at the lower end **121'** of the pivot **121** adapted to receive a blocking screw **117**, with the possible interposition of a pressing element **118**, for example a washer.

[0046] In the event of forces that promote the lifting of the pivot **121**, the impact of the blocking screw **117** and possibly of the pressing element **118** against the box-shaped hinge body **112** prevents the slipping of the pivot **121** from the same passing-through hole **114** and/or the misalignment of the same pivot **121**.

[0047] To facilitate the rotation of the pivot **121**, one pair of antifriction elements **119**, **119'** may be provided, for example bearings, preferably of the axial-radial type, at both ends of the same pivot **121**.

[0048] In a preferred but not exclusive embodiment, as particularly shown in FIG. 13, the fixing leaf **130** of the upper half-hinge defining the mobile element **120** of the hinge **100** may include an anchoring plate **131** for anchoring to the door **D**.

[0049] This anchoring plate **131** greatly simplifies the mounting of the door **D** on the hinges **100**, **200**. In fact, as shown in FIG. 13, the anchoring plate **131** is removably coupled to the fixing leaf **130** by means of fastening screws **132**, which may be lockable in suitable locking

elements **133**.

[0050] Therefore, to mount the door **D** it is necessary to fix the hinge **100** to the tubular support structure **F**, **CF** without the anchoring plate **131** (or remove it once the hinge is fixed), to anchor the latter to the door **D** and then coupling the door **D** to the tubular support structure **F**, **CF** by coupling the anchoring plate **131** anchored to the door **D** with the fixing leaf **130** of the hinge **100** anchored to the tubular support structure **F**, **CF**. Once those parts are coupled, it is possible to avoid the mutual decoupling by means of the screws **132** and the locking elements **133**, the latter being in turn engaged in the slots **134**.

[0051] Moreover, by moving the screws **132**, and the locking elements **133** along the directions defined by the slot **134** and suitably acting on the screws **132** it is possible to adjust the position of the door **D** with respect to the tubular support structure **F**, **CF**.

[0052] In case the hinge **200** has the same structure of the hinge **100**, to mount the door **D** it is necessary acting as above also for the hinge **200**.

[0053] The actuator device **300** is configured to act on the operative portion **111** of one of the hinges **100**, **200**, preferably the lower hinge **100**, to move it along the axis **Y**.

[0054] Preferably, the operative portion **111** may be defined by the lower surface of the fixed element **110** of the bottom hinge **100**.

[0055] To this end, the actuator device **300** comprises a main body **310** and a slider **320** which can slidably move along the axis **Y**.

[0056] However, It is understood that the slider **320** can slide along an axis substantially parallel to the axis **Y** without departing from the scope of protection of the appended claims.

[0057] The main body **310** may be fixable within the tubular support structure **F**, **CF** by means of the screws **311**.

[0058] On the other hand, the main body **310** may be fixed within the tubular support structure **F**, **CF**, for example may be monolithic therewith, without departing from the scope of protection of the appended claims.

[0059] The slider **320** can slide in a seat **312** of the main body **310**. Accordingly, the seat **312** may be open at the top side.

[0060] Moreover, the seat **312** may slidably guide the slider **320**. To do this, the latter may have a shaped side wall **321**, while the seat **312** may have a corresponding countershaped side wall **313** which interacts with the shaped side wall **321** of the slider **320** so as to guide the sliding of the latter along the axis **Y**.

[0061] For example, the seat **312** of the main body **310** of the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 2a to 8 may have substantially parallelepiped shape, as well as the slider **320**. In this embodiment, the flat and substantially parallel faced side walls of the seat **312** interacts with the corresponding flat and substantially parallel faced side walls of the slider **320** to guide the sliding thereof along the

axis **Y**.

[0062] On the other hand, in the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 9 to 10b, the seat **312** of the main body **310** may have a substantially cylindrical shape, as well as the slider **320**. In this embodiment, the substantially cylindrical side wall of the seat **312** interacts with the corresponding substantially cylindrical side wall of the slider **320** to guide the sliding thereof along the axis **Y**.

[0063] In any case, the slider **320** may include a first lower portion **322** facing a corresponding second lower portion of the seat **312**, which may be defined by the bottom wall **314**, and an upper portion, which may be defined by the upper flat wall **323**, facing the operative portion of the hinge **100**, which may be defined by the bottom wall **111** of the fixed element **110**, to interact or preferably abuts therewith.

[0064] In order to move the slider **320** along the axis **Y**, the main body **310** may include an adjustment screw **330** interacting therewith. In particular, the adjustment screw **330** may be accessible from outside the tubular support structure **F**, **CF** by a user, which may act thereon by acting on the control portion **331** of the adjustment screw **330**.

[0065] Suitably, the adjustment screw **330** may be slidable along an axis **X** substantially perpendicular to the axis **Y**. Therefore, the action on the control portion **331** promotes the sliding of the adjustment screw **330** along the axis **X**.

[0066] To move the slider **320** along the axis **Y**, the adjustment screw **330** may include a substantially wedge-shaped operative portion **332** susceptible to come into contact with a first substantially countershaped operative zone **324** of the same slider **320**.

[0067] In this way, the sliding of the adjustment screw **330** along the axis **X** corresponds to the sliding of the slider **320** along the axis **Y** and in turn to the variation of the mutual distance **d** between the second lower portion **314** of the seat **312** and the first operative zone **324** of the slider **320**.

[0068] At the same time, the position along the axis **Y** of the upper portion **323** of the slider **320** varies, as well as the position along the axis **Y** of the hinges **100**, **200**. In fact, the upper portion **323** of the slider **320** is in abutment and in contact with the bottom wall **111** of the fixed element **110** of the hinge **100**, and therefore the sliding of the former along the axis **Y** corresponds to the sliding of the latter. Since the other hinge **200** is rigidly connected to the first hinge **100** by means of the door **D**, the sliding of the latter hinge **100** along the axis **Y** (which is promoted by the sliding of the slider **320**, in turn caused by the user through the adjustment screw **330**) corresponds to the sliding of the first hinge **200**.

[0069] Therefore the user, by simply acting on the adjustment screw **330**, may vary in a simple, fast and secure way the height **h** of the door **D** from the floor **FL**.

[0070] An apparent advantage of the system **1** is that the actuator device **300** does not act directly on the door

D as the lifting devices **L** of the state of the art, for example shown in FIGs. 1a and 1b, but acts on the hinges **100**, **200**.

[0071] This allows to distribute in a perfectly homogeneous way the weight of the door **D** on the same hinges **100**, **200**, which is a great advantage in terms of maintaining their original position during time. This allows, in addition, to minimize maintenance on the door **D**, and therefore to minimize costs.

[0072] Thanks to the above mentioned features, the slider **320** may be slidable along the axis **Y** between a first operative position, shown for example in FIGs. 4b and 10a, in which the operative zone **324** thereof is proximal to the bottom wall **314** of the seat **312** and a second operative position, shown for example in FIGs. 5b and 10b, in which the first operative zone **324** of the slider **320** is distal from the bottom wall **314**.

[0073] From the figures it is apparent that the height **h** of the door **D** with respect to the floor **FL** is relatively higher when the slider **320** is in the second operative position.

[0074] In the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 9 to 10b, the first operative zone **324** may coincide with the first lower portion **322**. On the other hand, in the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 2a to 8 the first operative zone **324** may be defined by a recess interposed between two end projections **325'**, **325''**.

[0075] In order to determine the stroke of the slider **320**, the latter may comprise at least one second operative zone cooperating with a corresponding at least one operative area of the main body **310** to define the blocking means of the stroke of the same slider **320**.

[0076] In particular, in the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 9 to 10b, the slider **320** includes a single second operative zone **326**, while the main body **310** may include a single operative zone **315** cooperating therewith. On the other hand, in the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 2a to 8 the slider **320** includes a pair of second operative end zones **326'**, **326''**, while the main body **310** may include a corresponding pair of operative zones **315'**, **315''** cooperating therewith.

[0077] Suitably, in a preferred but not exclusive embodiment, the blocking means may include at least one passing-through slot made on one of the slider **320** and the main body **310** and at least one blocking pin inserted into a seat formed on the other of the slider **320** and the main body **310**.

[0078] More particularly, in the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 9 to 10b, the blocking means include a single passing-through slot **340** made on the operative zone **315** of the main body **310** and a corresponding single blocking pin **341** inserted through a single seat **342** made on the operative zone **326** of the slider **320**.

[0079] On the other hand, in the preferred but not exclusive embodiment of the actuator device **300** shown in FIGs. 2a to 8 the blocking means include a pair of passing-through slots **340'**, **340"** made on the operative end zones **326'**, **326"** of the slider **320** and a corresponding pair of blocking pins **341'**, **341"** inserted through seats **342'**, **342"** made on the operative zones **315'**, **315"** of the main body **310**.

[0080] In any case, the slots **340**, **340'**, **340"** and the blocking pins **341**, **341'**, **341"** are mutually engaged and mutually interacting so as to define the positions of maximum and minimum height **h** of the door **D** from the floor **FL**, shown for example in Figures 5c, 10b and 4c, 10a.

[0081] By suitably dimensioning and/or configuring the system **1**, and in particular the tubular frame **F**, **CF**, the hinges **100**, **200** and the actuator device **300**, it is possible to obtain that when the slider is in the first operative position, as shown for example in Figures 4b and 10a, the door **D** is in contact with the floor **FL**, so as to rest on it.

[0082] This greatly simplifies the installation and adjustment of the door **D**, that may also be carried by a single operator. This makes these operations extremely safe.

[0083] Furthermore, in the case of hinges **100**, **200** that allow other adjustments of the position of the door in addition to the vertical one, the above feature allows these adjustments in a simple and safe way.

[0084] In this case, the hinges **100**, **200** include means for adjusting the horizontal position and the opening angle of the door.

[0085] It is clear that the support to the floor of the door during mounting allows to do all the above adjustments in a simple and safe manner, by further preserving the integrity of both the hinges of the door.

[0086] In a preferred but not exclusive embodiment, shown for example in Figures 7 and 8, the system **1** may include a support element **350** interposed between the actuator device **300** and the floor **FL**, so that the load of the door **D** is completely loaded on the floor **FL**.

[0087] This preserves over time the integrity of both the hinges **100**, **200** and the support structure **F**, **CF**. This as well greatly ensures the maintenance of the original position of the door **D** over time.

[0088] The support element **350** may have an upper surface **351** susceptible to come in contact against an abutment surface **316** of the main body **310** of the actuator device **300** and a lower opposite surface **352** susceptible to rest on the floor **FL**, within the tubular support structure **F**, **CF**.

[0089] From the above description, it is apparent that the system **1** fulfils the intended objects.

[0090] In fact, the system **1** is highly functional, simple to manufacture and/or low cost.

[0091] Thanks to the particular configuration and/or positioning on the tubular support structure **F**, **CF**, the adjusting of the height **h** of the door **D** from the floor **FL** may even be made by a single operator.

[0092] Thanks to the high simplicity and functionality, the system **1** can be used even by unskilled personnel.

[0093] Moreover, thanks to the fact that the system **1** fully loads on the floor the weight of the door **D**, the latter maintains unchanged over time the original position.

[0094] It is further clear that in the system **1** any component, and in particular the actuator device **300**, rests on the floor **FL**. This allows to preserve the latter from scratches and, in general, from wearing.

[0095] Furthermore, in this way the adjusting of the height **h** of the door **D** is extremely safe.

[0096] The system **1** further avoids misalignment and/or malfunction of the door **D** due to an inhomogeneous distribution of the weight thereof on the hinges, which is a usual drawback of the systems of the state of the art.

[0097] While the invention has been described with particular reference to the accompanying figures, the numerals referred to in the disclosure and claims are only used for the sake of a better intelligibility of the invention and shall not be intended to limit the scope of the appended claims in any manner.

Claims

1. A kit for adjusting the height (**h**) of a door (**D**), in particular a reinforced door, with respect to the floor (**FL**), mountable or mounted on a tubular support structure (**F**, **CF**), the kit comprising:

a) at least one pair of hinges (**100**, **200**) connectable to the door (**D**) for the rotatable movement thereof, the hinges being slidably mountable on the tubular support structure (**F**, **CF**) to slide along a first axis (**Y**) parallel to or coincident with the rotation axis (**Y'**) of the door (**D**), the hinges (**100**, **200**) being of the concealed type with a fixed element (**110**, **210**) mountable within said tubular support structure (**F**, **CF**) and a movable element (**120**, **220**) pivoted thereon to rotate about the rotation axis (**Y'**) between an open door (**D**) position and a closed door (**D**) position, the movable element (**120**, **220**) including a fixing leaf (**130**, **230**) for fixing thereof to the door (**D**) susceptible to concealedly retract within the tubular support structure (**F**, **CF**) in the closed door (**D**) position and to visibly extend therefrom (**F**, **CF**) in the open door (**D**) position, at least one of said hinges (**100**) including at least one operative portion (**111**);

b) at least one actuator device (**300**) comprising:

- a main body (**310**) fixable within said tubular support structure (**F**, **CF**), said main body (**310**) including a seat (**312**); and
- a slider (**320**) sliding in said seat (**312**) along a second axis (**Y**) substantially parallel to or coincident with said first axis (**Y**), said slider (**320**) including a first lower portion (**322**) facing a corresponding at least

- one second lower portion (314) of said seat (312) and an upper portion (323) facing said at least one operative portion (111) of said at least one of said hinges (100) to interact therewith;
 wherein said main body (310) includes at least one adjustment screw (330) interacting with said slider (320), said at least one adjustment screw (330) being accessible from the outside of said tubular support structure (F, CF) by a user to allow the variation of the mutual distance (d) between the second lower portion (314) of said seat (312) and the first lower portion (322) of said slider (320) so as to promote the interaction of the upper portion (323) thereof with the at least one operative portion (111) of the at least one of said hinges (100);
characterized in that the fixed element (110) of said at least one of said hinges (100) includes said at least one operative portion (111), the at least one actuator device (300) being spaced apart from said hinges (100, 200) to interact with the at least one operative portion (111) of the fixed element (110) of said at least one of said hinges (100), in such a manner to promote the sliding of the hinges (100, 200) along the first axis (Y) thus correspondingly varying the height (h) of the door (D) with respect to the floor (FL).
2. Kit according to claim 1, wherein the fixed element (110) of the at least one of said hinges (100) is positioned below the corresponding movable element (120), said at least one actuator device (300) being fixable to the tubular support structure (F, CF) below the fixed element (110) of the at least one of the hinges (100) so that the slider (320) of the former (300) interacts with the at least one operative portion (111) of the latter (100) for lifting / lowering the hinges (100, 200) along said first axis (Y).
 3. Kit according to claim 1 or 2, wherein the movable element (220) of the other of said hinges (200) is unitary coupled to the corresponding fixed element (210) so that the sliding along the first axis (Y) of the at least one of the hinges (100) corresponds to the unitary sliding of the fixed (210) and movable (220) elements of the other of the hinges (200).
 4. Kit according to one or more of the claims 1 to 3, wherein the fixed (110, 210) and movable (120, 220) elements of both hinges (100, 200) are mutually unitary coupled.
 5. Kit according to one or more of the claims 1 to 4, wherein the fixed elements (110, 210) of both hinges (100, 200) are placed below the corresponding movable elements (120, 220).
 6. Kit according to one or more of the claims 1 to 5, wherein the fixed element (110) of the at least one of the hinges (100) comprises a first box-shaped hinge body (112), the latter including the at least one operative portion (111).
 7. Kit according to the preceding claim, wherein the fixed element (110) of the at least one of the hinges (100) comprises a first lower half-hinge, the movable element (120) thereof comprising a first upper half-hinge, said first fixed lower half-hinge (110) including the first box-shaped hinge body (112).
 8. Kit according to the preceding claim, wherein the first movable upper half-hinge (120) includes a first pivot (113) defining the rotation axis (Y') of the door (D), the first box-shaped hinge body (112) including a first passing-through hole (114) within which the first pivot (113) is inserted for rotatably supporting thereof, the first pivot (113) and/or the first passing-through hole (114) including first means (115) for blocking the axial sliding of the former (113) with respect to the latter (114), so as to prevent the slipping and/or the misalignment thereof upon the sliding of the hinges (100, 200) along the first axis (Y).
 9. Kit according to one or more of the claims 1 to 8, wherein the fixed element (210) of the other of the hinges (200) comprises a second lower half-hinge, the movable element (220) thereof comprising a second upper half-hinge, the second fixed lower half-hinge (210) including a second box-shaped hinge body (212).
 10. Kit according to the preceding claim, wherein the second movable upper half-hinge (220) includes a second pivot (213) defining the rotation axis (Y') of the door (D), the second box-shaped hinge body (212) including a second passing-through hole (214) within which the second pivot (213) is inserted for rotatably supporting thereof, the second pivot (213) and/or the second passing-through hole (214) including second means (215) for blocking the axial sliding of the former (213) with respect to the latter (214), so as to prevent the slipping and/or the misalignment thereof upon the sliding of the hinges (100, 200) along the first axis (Y).
 11. Kit according to one or more of the claims 1 to 10, wherein the hinges (100, 200) and said at least one actuator device (300) are respectively mountable and fixable on said tubular support structure (F, CF) so that when the slider (320) of said at least one actuator device (300) is in the first operative position the door (D) is in contact with the floor (FL).

12. Kit according to one or more of the claims 1 to 11, comprising a single actuator device (300).
13. A system for adjusting the height (h) of a door (D), in particular a reinforced door, with respect to the floor (FL), the system comprising:
- a) a tubular support structure (F, CF);
 - b) a kit according to one or more of the claims 1 to 12;
- wherein the hinges (100, 200) are connected to the door (D), the hinges (100, 200) and the at least one actuator device (300) being mounted on said tubular support structure (F, CF) so that the latter (300) interacts with the at least one operative portion (111) of the fixed element (110) of at least one of the former (100, 200) to promote the sliding thereof (100, 200) along the first axis (Y), thus correspondingly varying the height (h) of the door (D) with respect to the floor (FL).
14. A method for adjusting the height (h) of a door (D), in particular a reinforced door, with respect to the floor (FL) by means of the system according to the preceding claim, the door (D) being mounted or to be mounted on a tubular support structure (F, CF), comprising the steps of:
- a) providing at least one actuator device (300) and at least one pair of hinges (100, 200) on the tubular support structure (F, CF), the hinges (100, 200) being removably fastenable on the latter;
 - b) acting on the at least one adjustment screw (330) of the at least one actuator device (300) for promoting the interaction of the slider (320) of the latter with at least one operative portion (111) of the fixed element (110) of at least one of the hinges (100), so as to promote the sliding of the hinges (100, 200) along the first axis (Y) thus correspondingly varying the height (h) of the door (D) with respect to the floor (FL);
 - c) fastening of at least one of the hinges (100, 200) on the tubular support structure (F, CF).

Patentansprüche

1. Kit zum Einstellen der Höhe (h) einer Tür (D), insbesondere einer verstärkten Tür, bezüglich des Bodens (FL), anbringbar oder angebracht auf einer röhrenförmigen Stützstruktur (F, CF), das Kit umfassend:
- a) zumindest ein Paar Scharniere (100, 200), die mit der Tür (D) zur Drehbewegung derselben verbindbar sind, wobei die Scharniere gleitbar

auf der röhrenförmigen Stützstruktur (F, CF) zum Gleiten entlang einer ersten Achse (Y), die parallel zur oder übereinstimmend mit der Drehachse (Y') der Tür (D) verläuft, anbringbar sind, wobei die Scharniere (100, 200) von der verborgenen Art sind, mit einem starren Element (110, 210), das innerhalb der röhrenförmigen Stützstruktur (F, CF) anbringbar ist, und einem beweglichen Element (120, 220), das schwenkbar darauf zum Drehen um die Drehachse (Y') zwischen einer offenen Position der Tür (D) und einer geschlossenen Position der Tür (D) angebracht ist, wobei das bewegliche Element (120, 220) ein Befestigungsblatt (130, 230) zum Befestigen desselben an der Tür (D) enthält, das zum verborgenen Zurückziehen in die röhrenförmige Stützstruktur (F, CF) in der geschlossenen Position der Tür (D) und zum sichtbaren Ausstrecken davon (F, CF) in der offenen Position der Tür (D) geeignet ist, wobei zumindest eines der Scharniere (100) zumindest einen Betriebsabschnitt (111) enthält;

b) zumindest eine Betätigungsvorrichtung (300), umfassend:

- einen Hauptkörper (310), der innerhalb der röhrenförmigen Stützstruktur (F, CF) befestigbar ist, wobei der Hauptkörper (310) einen Sitz (312) enthält; und
- ein Gleitstück (320), das im Sitz (312) entlang einer zweiten Achse (Y) gleitet, die im Wesentlichen parallel zur oder übereinstimmend mit der ersten Achse (Y) verläuft, wobei das Gleitstück (320) einen ersten unteren Abschnitt (322), der einem entsprechenden, zumindest einen zweiten unteren Abschnitt (314) des Sitzes (312) zugekehrt ist, und einen oberen Abschnitt (323) enthält, der dem zumindest einen Betriebsabschnitt (111) des zumindest einen der Scharniere (100) zum Zusammenwirken damit zugekehrt ist;

wobei der Hauptkörper (310) zumindest eine Stellschraube (330) enthält, die mit dem Gleitstück (320) zusammenwirkt, wobei die zumindest eine Stellschraube (330) von der Außenseite der röhrenförmigen Stützstruktur (F, CF) für einen Benutzer zugänglich ist, um die Veränderung des wechselseitigen Abstands (d) zwischen dem zweiten unteren Abschnitt (314) des Sitzes (312) und dem ersten unteren Abschnitt (322) des Gleitstücks (320) zu ermöglichen, um die Zusammenwirkung des oberen Abschnitts (323) davon mit dem zumindest einen Betriebsabschnitt (111) des zumindest einen der Scharniere (100) zu unterstützen;

dadurch gekennzeichnet, dass das starre Ele-

- ment (110) des zumindest einen der Scharniere (100) den zumindest einen Betriebsabschnitt (111) enthält, wobei die zumindest eine Betätigungsvorrichtung (300) von den Scharnieren (100, 200) zum Zusammenwirken mit dem zumindest einen Betriebsabschnitt (111) des starren Elements (110) des zumindest einen der Scharniere (100) beabstandet ist, um dadurch das Gleiten der Scharniere (100, 200) entlang der ersten Achse (Y) zu unterstützen, wodurch entsprechend die Höhe (h) der Tür (D) bezüglich des Bodens (FL) variiert wird.
2. Kit nach Anspruch 1, wobei das starre Element (110) des zumindest einen der Scharniere (100) unterhalb des entsprechenden beweglichen Elements (120) angeordnet ist, wobei die zumindest eine Betätigungsvorrichtung (300) an der röhrenförmigen Stützstruktur (F, CF) unterhalb des starren Elements (110) des zumindest einen der Scharniere (100) befestigbar ist, sodass das Gleitstück (320) des ersten (300) mit dem zumindest einen Betriebsabschnitt (111) des letzteren (100) zum Anheben/Ab-senken der Scharniere (100, 200) entlang der ersten Achse (Y) zusammenwirkt.
 3. Kit nach Anspruch 1 oder 2, wobei das bewegliche Element (220) des anderen der Scharniere (200) an das entsprechende starre Element (210) angekuppelt ist, sodass das Gleiten entlang der ersten Achse (Y) des zumindest einen der Scharniere (100) dem einheitlichen Gleiten der starren (210) und beweglichen (220) Elemente des anderen der Scharniere (200) entspricht.
 4. Kit nach einem oder mehreren der Ansprüche 1 bis 3, wobei die starren (110, 210) und beweglichen (120, 220) Elemente beider Scharniere (100, 200) wechselseitig einheitlich verkuppelt sind.
 5. Kit nach einem oder mehreren der Ansprüche 1 bis 4, wobei die starren Elemente (110, 210) beider Scharniere (100, 200) unterhalb der entsprechenden beweglichen Elemente (120, 220) angeordnet sind.
 6. Kit nach einem oder mehreren der Ansprüche 1 bis 5, wobei das starre Element (110) des zumindest einen der Scharniere (100) einen ersten kastenförmigen Scharnierkörper (112) umfasst, wobei der letztere den zumindest einen Betriebsabschnitt (111) enthält.
 7. Kit nach dem vorhergehenden Anspruch, wobei das starre Element (110) des zumindest einen der Scharniere (100) ein erstes unteres Halbscharnier umfasst, wobei das bewegliche Element (120) davon ein erstes oberes Halbscharnier umfasst, wobei das erste starre untere Halbscharnier (110) den ersten kastenförmigen Scharnierkörper (112) enthält.
 8. Kit nach dem vorhergehenden Anspruch, wobei das erste bewegliche obere Halbscharnier (120) ein erstes Drehgelenk (113) enthält, das die Drehachse (Y') der Tür (D) definiert, wobei der erste kastenförmige Scharnierkörper (112) ein erstes Durchgangsloch (114) enthält, in das das erste Drehgelenk (113) zum drehbaren Stützen desselben eingesetzt ist, wobei das erste Drehgelenk (113) und/oder das erste Durchgangsloch (114) erste Mittel (115) zum Blockieren des axialen Gleitens des ersteren (113) bezüglich des letzteren (114) enthält, um das Schlupfen und/oder die Fehlausrichtung davon nach dem Gleiten der Scharniere (100, 200) entlang der ersten Achse (Y) zu verhindern.
 9. Kit nach einem oder mehreren der Ansprüche 1 bis 8, wobei das starre Element (210) des anderen der Scharniere (200) ein zweites unteres Halbscharnier umfasst, wobei das bewegliche Element (220) desselben ein zweites oberes Halbscharnier umfasst, wobei das zweite starre untere Halbscharnier (210) einen zweiten kastenförmigen Scharnierkörper (212) enthält.
 10. Kit nach dem vorhergehenden Anspruch, wobei das zweite bewegliche obere Halbscharnier (220) ein zweites Drehgelenk (213) enthält, das die Drehachse (Y') der Tür (D) definiert, wobei der zweite kastenförmige Scharnierkörper (212) ein zweites Durchgangsloch (214) enthält, in das das zweite Drehgelenk (213) zum drehbaren Stützen desselben eingesetzt ist, wobei das zweite Drehgelenk (213) und/oder das zweite Durchgangsloch (214) zweite Mittel (215) zum Blockieren des axialen Gleitens des ersteren (213) bezüglich des letzteren (214) enthält, um das Schlupfen und/oder die Fehlausrichtung davon nach dem Gleiten der Scharniere (100, 200) entlang der ersten Achse (Y) zu verhindern.
 11. Kit nach einem oder mehreren der Ansprüche 1 bis 10, wobei die Scharniere (100, 200) und die zumindest eine Betätigungsvorrichtung (300) jeweils derart auf der röhrenförmigen Stützstruktur (F, CF) anbringbar und befestigbar sind, dass, wenn das Gleitstück (320) der zumindest einen Betätigungsvorrichtung (300) in der ersten Betriebsposition ist, die Tür (D) in Kontakt mit dem Boden (FL) ist.
 12. Kit nach einem oder mehreren der Ansprüche 1 bis 11, umfassend eine einzelne Betätigungsvorrichtung (300).
 13. System zum Einstellen der Höhe (h) einer Tür (D), insbesondere einer verstärkten Tür, bezüglich des Bodens (FL), das System umfassend:

- a) eine röhrenförmige Stützstruktur (F, CF);
 b) ein Kit nach einem oder mehreren der Ansprüche 1 bis 12;
 wobei die Scharniere (100, 200) mit der Tür (D) verbunden sind, wobei die Scharniere (100, 200) und die zumindest eine Betätigungsvorrichtung (300) auf der röhrenförmigen Stützstruktur (F, CF) angebracht sind, sodass die letztere (300) mit dem zumindest einen Betriebsabschnitt (111) des starren Elements (110) von zumindest einem der ersteren (100, 200) zum Unterstützen des Gleitens derselben (100, 200) entlang der ersten Achse (Y) zusammenwirkt, wodurch entsprechend die Höhe (h) der Tür (D) bezüglich des Bodens (FL) variiert wird.
14. Verfahren zum Einstellen der Höhe (h) einer Tür (D), insbesondere einer verstärkten Tür, bezüglich des Bodens (FL) mithilfe des Systems nach dem vorhergehenden Anspruch, wobei die Tür (D) auf einer röhrenförmigen Stützstruktur (F, CF) angebracht ist oder angebracht werden soll, die folgende Schritte umfassend:
- a) Bereitstellen von zumindest einer Betätigungsvorrichtung (300) und zumindest einem Paar Scharniere (100, 200) auf der röhrenförmigen Stützstruktur (F, CF), wobei die Scharniere (100, 200) abnehmbar auf der letzteren befestigbar sind;
 b) Einwirken auf die zumindest eine Stellschraube (330) der zumindest einen Betätigungsvorrichtung (300) zum Unterstützen der Zusammenwirkung des Gleitstücks (320) der letzteren mit zumindest einem Betriebsabschnitt (111) des starren Elements (110) von zumindest einem der Scharniere (100), um das Gleiten der Scharniere (100, 200) entlang der ersten Achse (Y) zu unterstützen, wodurch entsprechend die Höhe (h) der Tür (D) bezüglich des Bodens (FL) variiert wird;
 c) Befestigen von zumindest einem der Scharniere (100, 200) auf der röhrenförmigen Stützstruktur (F, CF).

Revendications

1. Kit pour régler la hauteur (h) d'une porte (D), en particulier d'une porte renforcée, vis-à-vis du sol (FL), monté ou pouvant être monté sur une structure de support tubulaire (F, CF), le kit comprenant :
- a) au moins une paire de charnières (100, 200) pouvant être raccordées à la porte (D) pour son déplacement rotatif, les charnières pouvant être montées coulissantes sur la structure de sup-

port tubulaire (F, CF) pour coulisser le long d'un premier axe (Y) parallèle à l'axe de rotation (Y') de la porte (D) ou coïncidant avec celui-ci, les charnières (100, 200) étant de type dissimulé avec un élément fixe (110, 210) pouvant être monté au sein de ladite structure de support tubulaire (F, CF) et un élément mobile (120, 220) mis en pivotement dessus pour tourner autour de l'axe de rotation (Y') entre une position de porte (D) ouverte et une position de porte (D) fermée, l'élément mobile (120, 220) comportant une lame de fixation (130, 230) pour sa fixation à la porte (D) apte à se rétracter de manière dissimulée au sein de la structure de support tubulaire (F, CF) dans la position de porte (D) fermée et à s'étendre de manière visible à partir de celle-ci (F, CF) dans la position de porte (D) ouverte, au moins l'une desdites charnières (100) comportant au moins une portion fonctionnelle (111) ;
 b) au moins un dispositif actionneur (300) comprenant :

- un corps principal (310) pouvant être fixé au sein de ladite structure de support tubulaire (F, CF), ledit corps principal (310) comportant un siège (312) ; et
 - une coulisse (320) coulissant dans ledit siège (312) le long d'un second axe (Y) sensiblement parallèle audit premier axe (Y) ou coïncidant avec celui-ci, ladite coulisse (320) comportant une première portion inférieure (322) face à au moins une seconde portion inférieure (314) correspondante dudit siège (312) et une portion supérieure (323) face à ladite au moins une portion fonctionnelle (111) de ladite au moins une desdites charnières (100) pour interagir avec celle-ci ;
- dans lequel ledit corps principal (310) comporte au moins une vis de réglage (330) en interaction avec ladite coulisse (320), ladite au moins une vis de réglage (330) étant accessible depuis l'extérieur de ladite structure de support tubulaire (F, CF) par un utilisateur pour permettre la variation de la distance mutuelle (d) entre la seconde portion inférieure (314) dudit siège (312) et la première portion inférieure (322) de ladite coulisse (320) de façon à favoriser l'interaction de sa portion supérieure (323) avec l'au moins une portion fonctionnelle (111) de l'au moins une desdites charnières (100) ;
caractérisé en ce que l'élément fixe (110) de ladite au moins une desdites charnières (100) comporte ladite au moins une portion fonctionnelle (111), l'au moins un dispositif actionneur (300) étant espacé desdites

- charnières (100, 200) pour interagir avec l'au moins une portion fonctionnelle (111) de l'élément fixe (110) de ladite au moins une desdites charnières (100), de telle sorte à favoriser le coulisement des charnières (100, 200) le long du premier axe (Y), et faire ainsi varier de manière correspondante la hauteur (h) de la porte (D) vis-à-vis du sol (FL).
2. Kit selon la revendication 1, dans lequel l'élément fixe (110) de l'au moins une desdites charnières (100) est positionné sous l'élément mobile (120) correspondant, ledit au moins un dispositif actionneur (300) pouvant être fixé à la structure de support tubulaire (F, CF) sous l'élément fixe (110) de l'au moins une des charnières (100) de sorte que la coulisse (320) de ce dernier (300) interagisse avec l'au moins une portion fonctionnelle (111) de cette dernière (100) pour lever/abaisser les charnières (100, 200) le long dudit premier axe (Y).
3. Kit selon la revendication 1 ou 2, dans lequel l'élément mobile (220) de l'autre desdites charnières (200) est couplé de manière unitaire à l'élément fixe (210) correspondant de sorte que le coulisement le long du premier axe (Y) de l'au moins une des charnières (100) corresponde au coulisement unitaire des éléments fixe (210) et mobile (220) de l'autre des charnières (200).
4. Kit selon une ou plusieurs des revendications 1 à 3, dans lequel les éléments fixe (110, 210) et mobile (120, 220) des deux charnières (100, 200) sont couplés de manière mutuelle et unitaire.
5. Kit selon une ou plusieurs des revendications 1 à 4, dans lequel les éléments fixes (110, 210) des deux charnières (100, 200) sont placés sous les éléments mobiles (120, 220) correspondants.
6. Kit selon une ou plusieurs des revendications 1 à 5, dans lequel l'élément fixe (110) de l'au moins une des charnières (100) comprend un premier corps de charnière en forme de boîtier (112), ce dernier comportant l'au moins une portion fonctionnelle (111).
7. Kit selon la revendication précédente, dans lequel l'élément fixe (110) de l'au moins une des charnières (100) comprend une première demi-charnière inférieure, l'élément mobile (120) de celle-ci comprenant une première demi-charnière supérieure, ladite première demi-charnière inférieure fixe (110) comportant le premier corps de charnière en forme de boîtier (112).
8. Kit selon la revendication précédente, dans lequel la première demi-charnière supérieure mobile (120) comporte un premier pivot (113) définissant l'axe de rotation (Y') de la porte (D), le premier corps de charnière en forme de boîtier (112) comportant un premier trou traversant (114) au sein duquel le premier pivot (113) est inséré pour son support en rotation, le premier pivot (113) et/ou le premier trou traversant (114) comportant des premiers moyens (115) pour bloquer le coulisement axial de celui-ci (113) vis-à-vis de ce dernier (114), pour empêcher son glissement et/ou désalignement lors du coulisement des charnières (100, 200) le long du premier axe (Y).
9. Kit selon une ou plusieurs des revendications 1 à 8, dans lequel l'élément fixe (210) de l'autre des charnières (200) comprend une seconde demi-charnière inférieure, l'élément mobile (220) de celle-ci comprenant une seconde demi-charnière supérieure, la seconde demi-charnière inférieure fixe (210) comportant un second corps de charnière en forme de boîtier (212).
10. Kit selon la revendication précédente, dans lequel la seconde demi-charnière supérieure mobile (220) comporte un second pivot (213) définissant l'axe de rotation (Y') de la porte (D), le second corps de charnière en forme de boîtier (212) comportant un second trou traversant (214) au sein duquel le second pivot (213) est inséré pour son support en rotation, le second pivot (213) et/ou le second trou traversant (214) comportant des seconds moyens (215) pour bloquer le coulisement axial de celui-ci (213) vis-à-vis de ce dernier (214), de façon à empêcher son glissement et/ou désalignement lors du coulisement des charnières (100, 200) le long du premier axe (Y).
11. Kit selon une ou plusieurs des revendications 1 à 10, dans lequel les charnières (100, 200) et ledit au moins un dispositif actionneur (300) peuvent être respectivement montés et fixés sur ladite structure de support tubulaire (F, CF) de sorte que lorsque la coulisse (320) dudit au moins un dispositif actionneur (300) se trouve dans la première position fonctionnelle, la porte (D) soit en contact avec le sol (FL).
12. Kit selon une ou plusieurs des revendications 1 à 11, comprenant un seul dispositif actionneur (300).
13. Système pour régler la hauteur (h) d'une porte (D), en particulier d'une porte renforcée, vis-à-vis du sol (FL), le système comprenant :
- a) une structure de support tubulaire (F, CF) ;
 - b) un kit selon une ou plusieurs des revendications 1 à 12 ;
- dans lequel les charnières (100, 200) sont raccordées à la porte (D), les charnières (100, 200) et l'au moins un dispositif actionneur (300) étant

montés sur ladite structure de support tubulaire (F, CF) de sorte que ce dernier (300) interagisse avec l'au moins une portion fonctionnelle (111) de l'élément fixe (110) d'au moins l'une de ces dernières (100, 200) afin de favoriser leur coulis- 5
 sement (100, 200) le long du premier axe (Y), et faire ainsi varier de manière correspondante la hauteur (h) de la porte (D) vis-à-vis du sol (FL).

14. Procédé pour régler la hauteur (h) d'une porte (D), 10
 en particulier d'une porte renforcée, vis-à-vis du sol (FL) au moyen du système selon la revendication précédente, la porte (D) étant montée ou devant être montée sur une structure de support tubulaire (F, CF), comprenant les étapes : 15

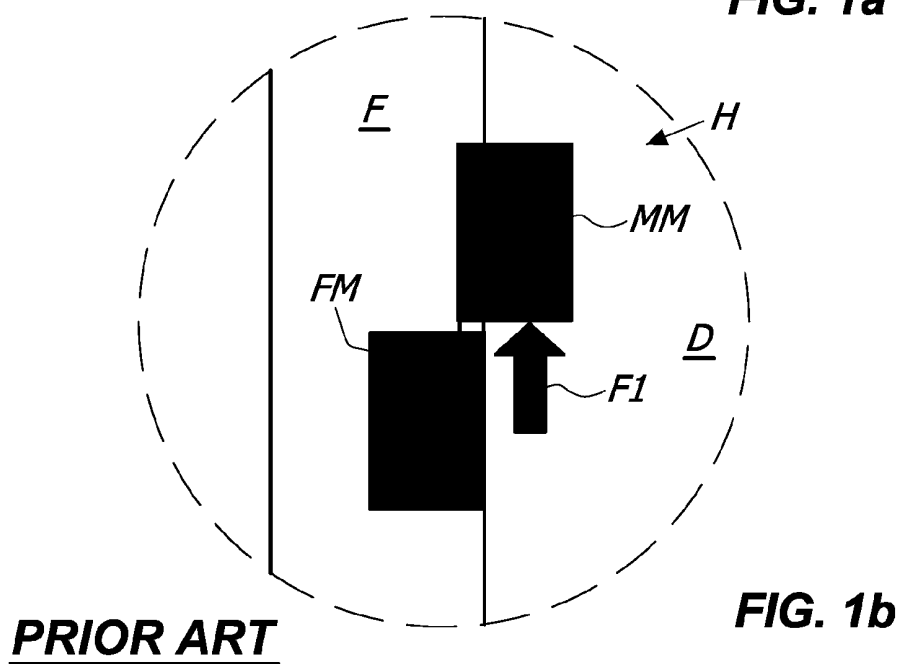
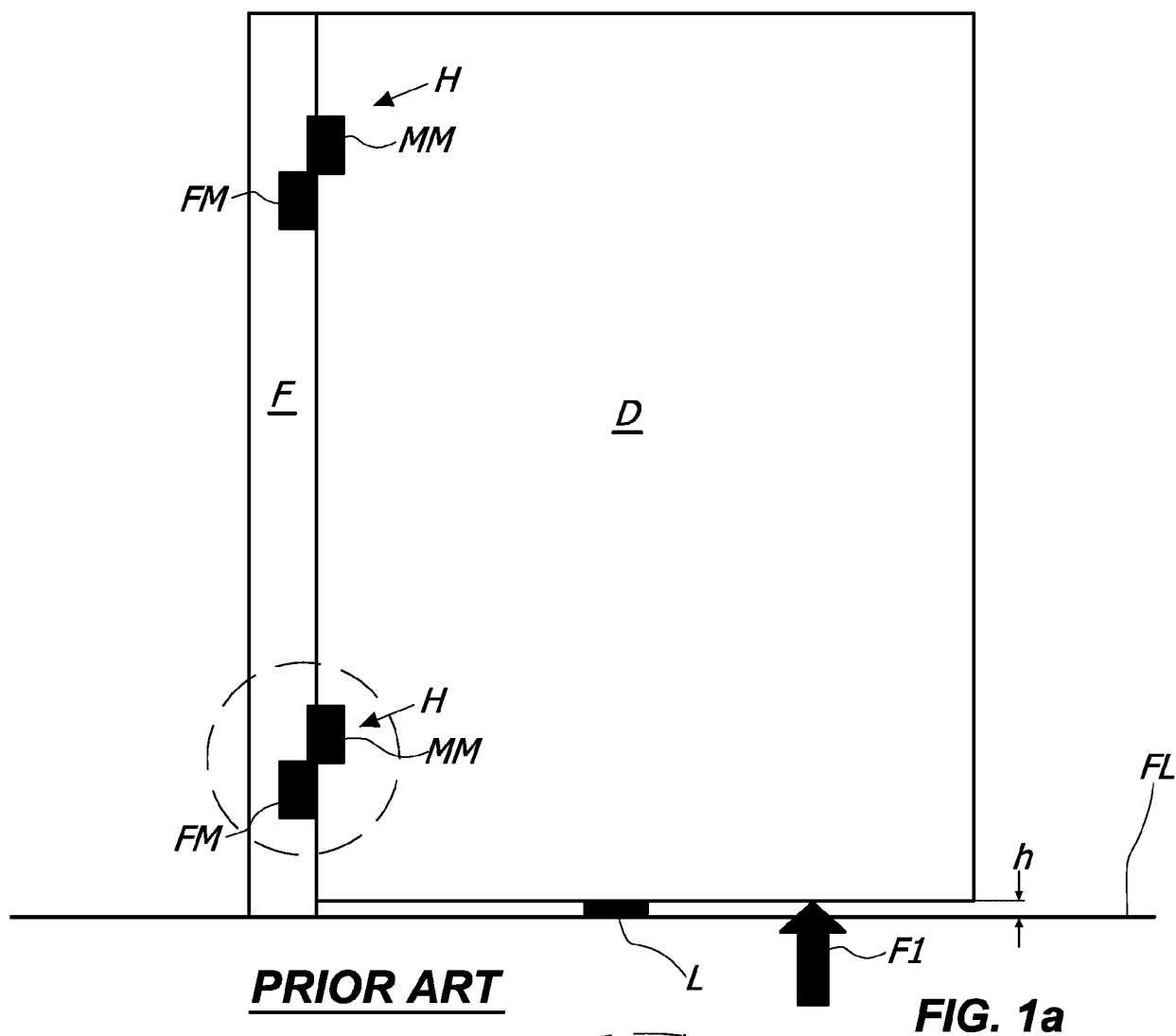
a) de fourniture d'au moins un dispositif action-
 neur (300) et au moins une paire de charnières
 (100, 200) sur la structure de support tubulaire
 (F, CF), les charnières (100, 200) pouvant être 20
 fixées de manière amovible sur cette dernière ;
 b) d'action sur l'au moins une vis de réglage
 (330) de l'au moins un dispositif actionneur (300)
 pour favoriser l'interaction de la coulisse (320)
 de ce dernier avec au moins une portion fonc- 25
 tionnelle (111) de l'élément fixe (110) d'au moins
 l'une des charnières (100), de façon à favoriser
 le coulisement des charnières (100, 200) le
 long du premier axe (Y) et faire ainsi varier de 30
 manière correspondante la hauteur (h) de la por-
 te (D) vis-à-vis du sol (FL) ;
 c) de fixation d'au moins l'une des charnières
 (100, 200) sur la structure de support tubulaire
 (F, CF). 35

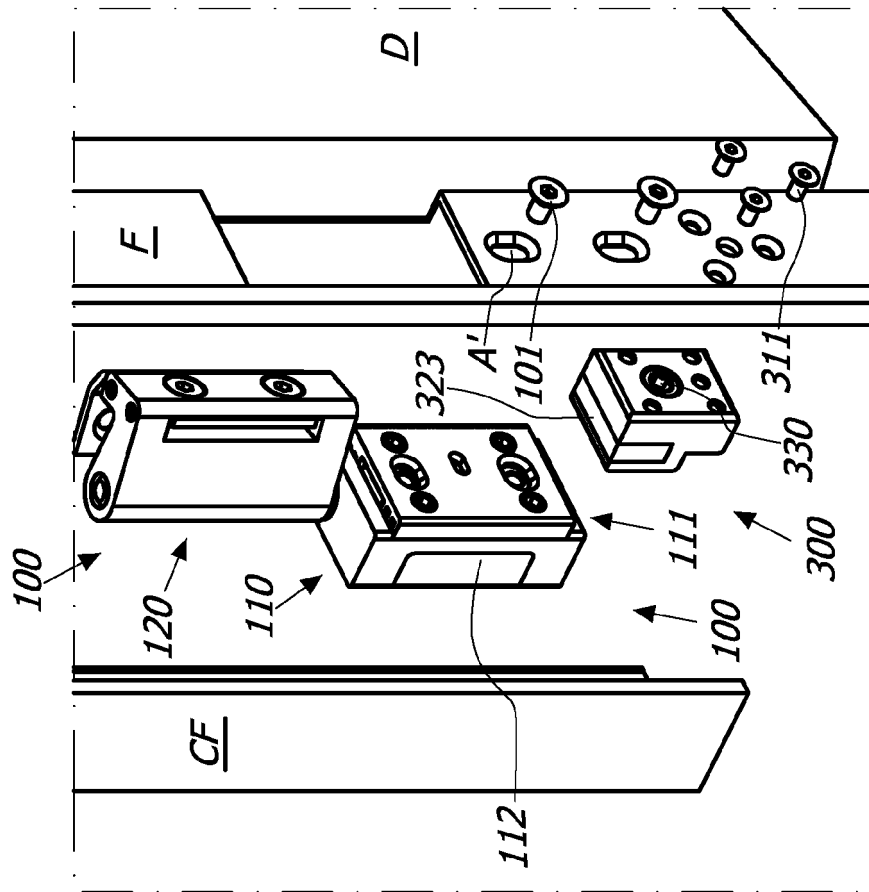
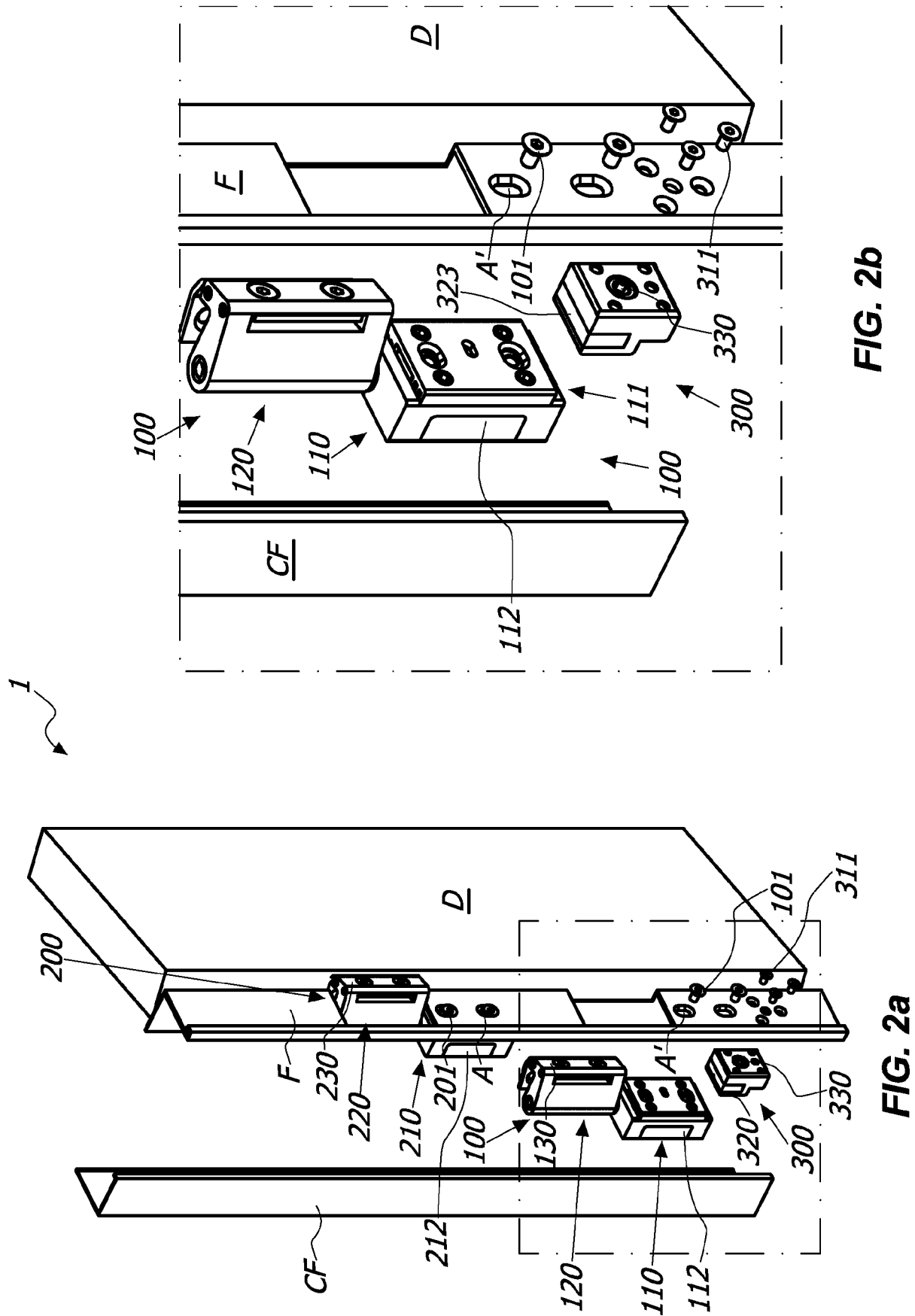
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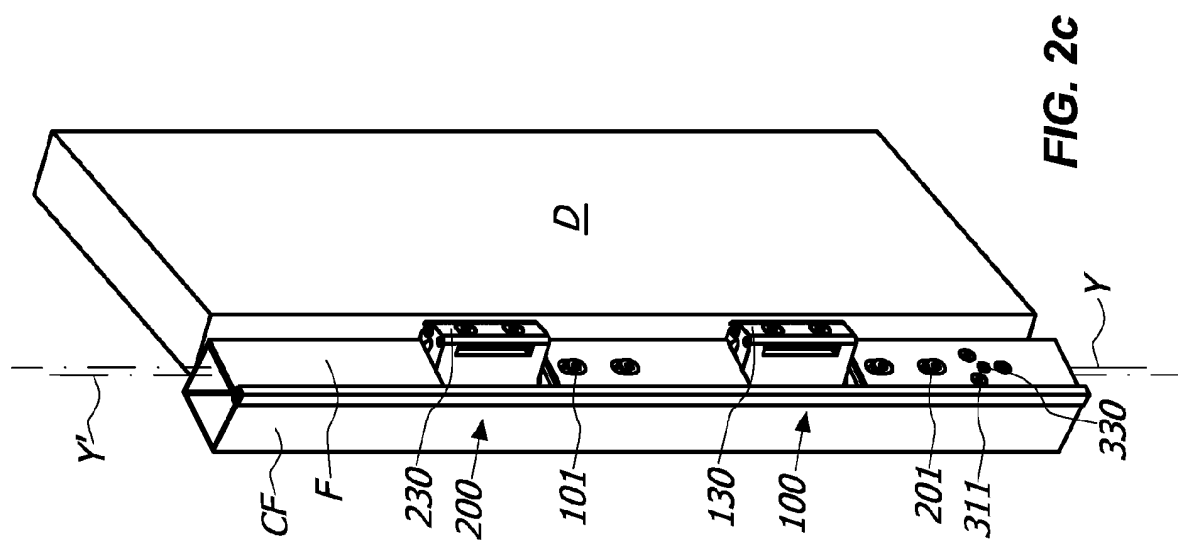
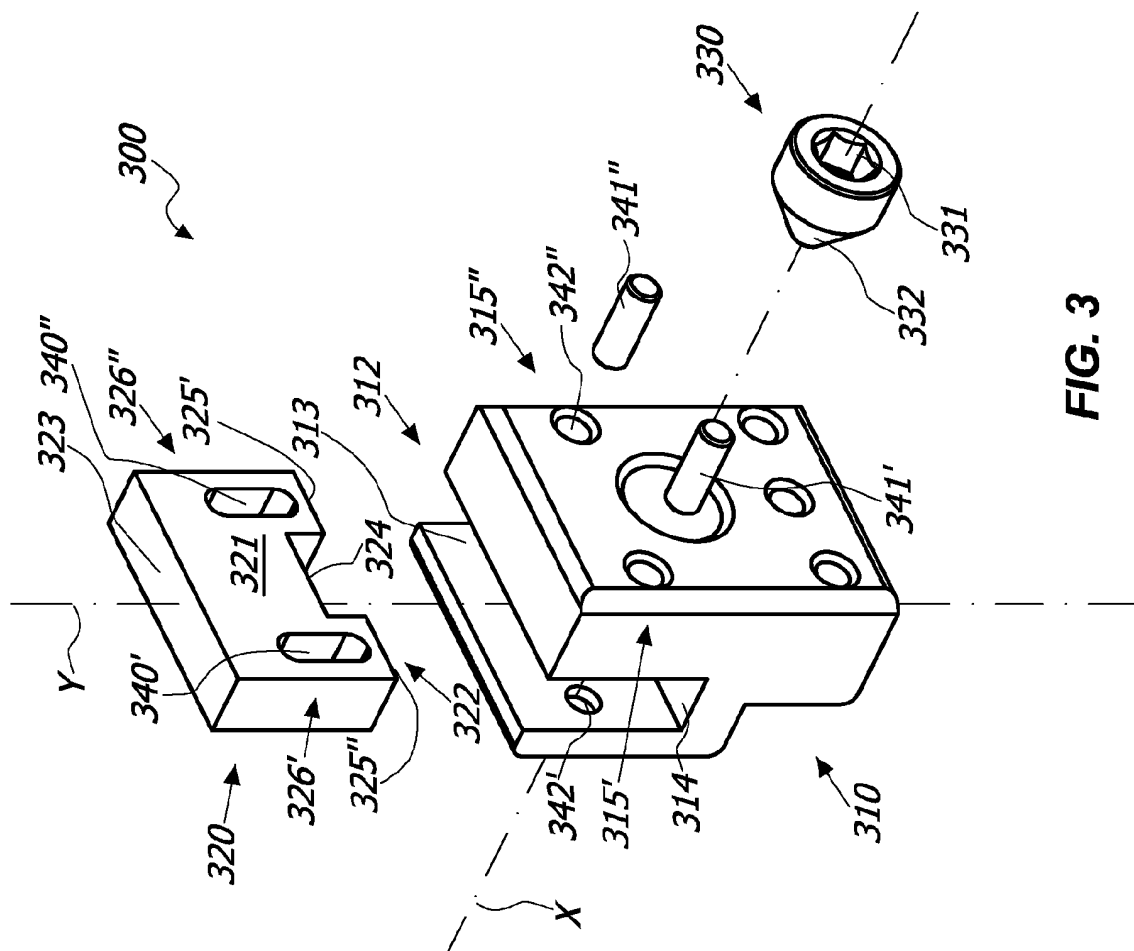
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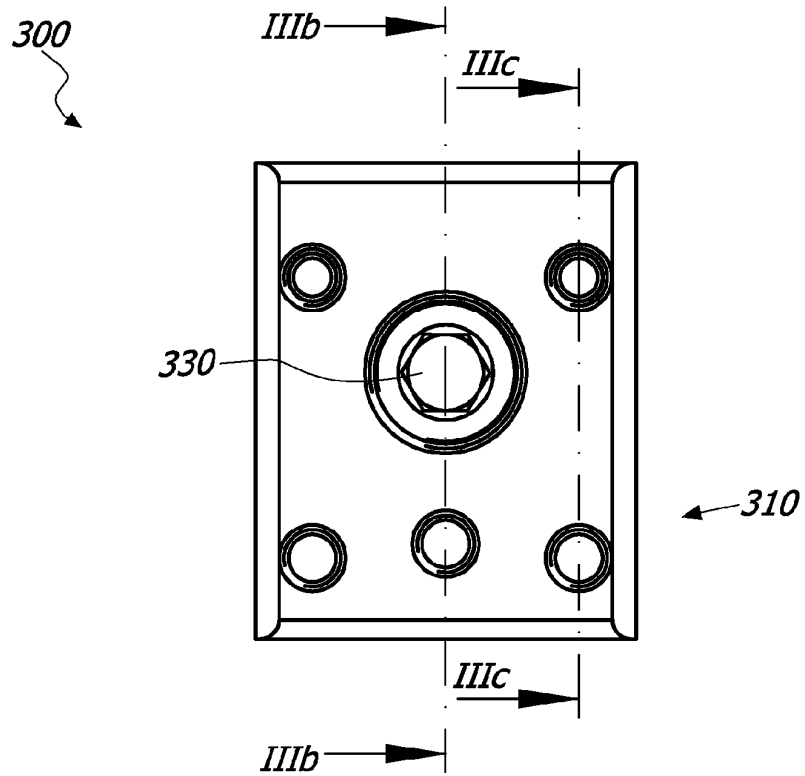


FIG. 4a

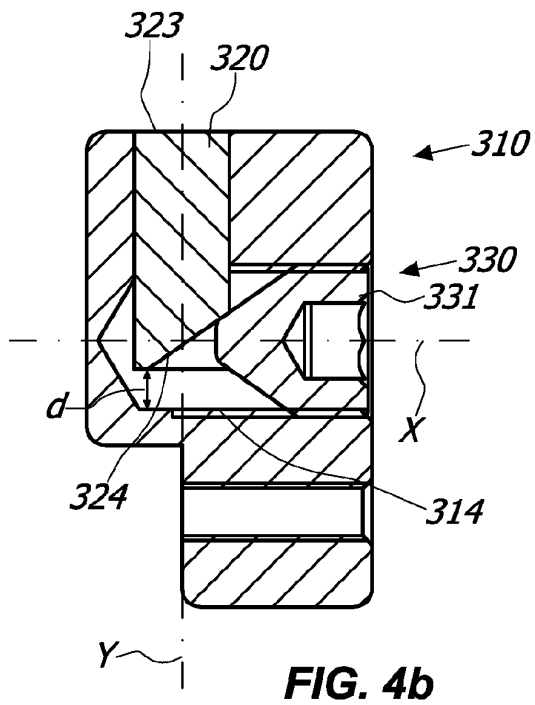


FIG. 4b

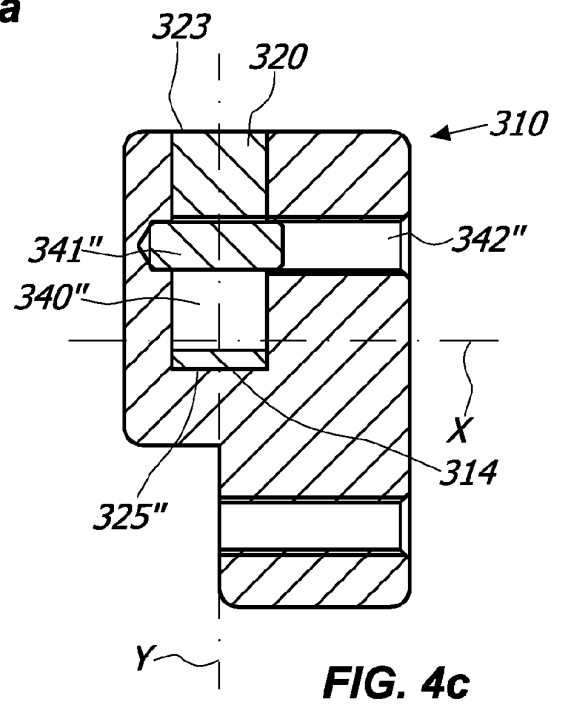


FIG. 4c

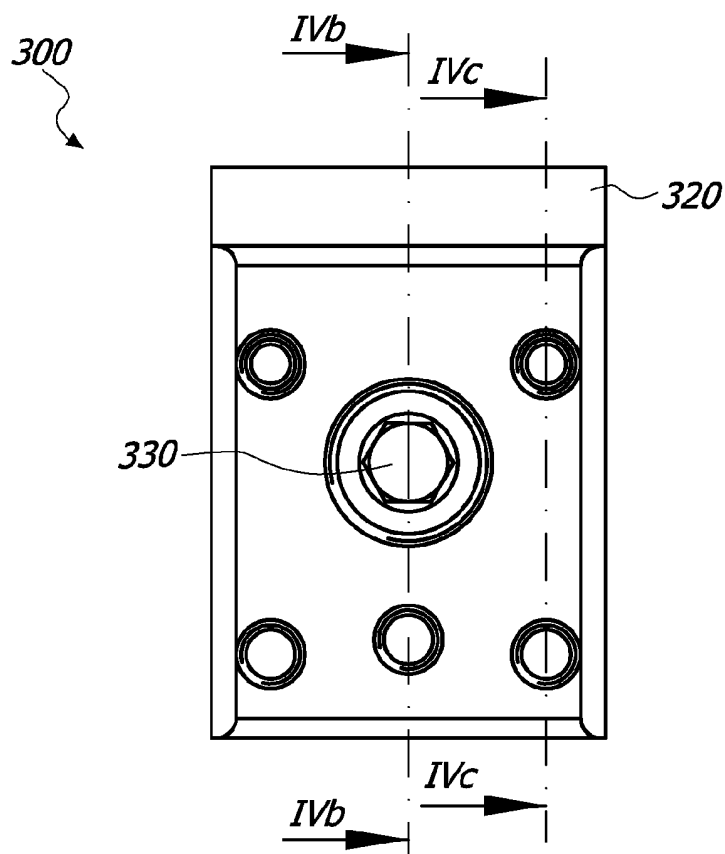


FIG. 5a

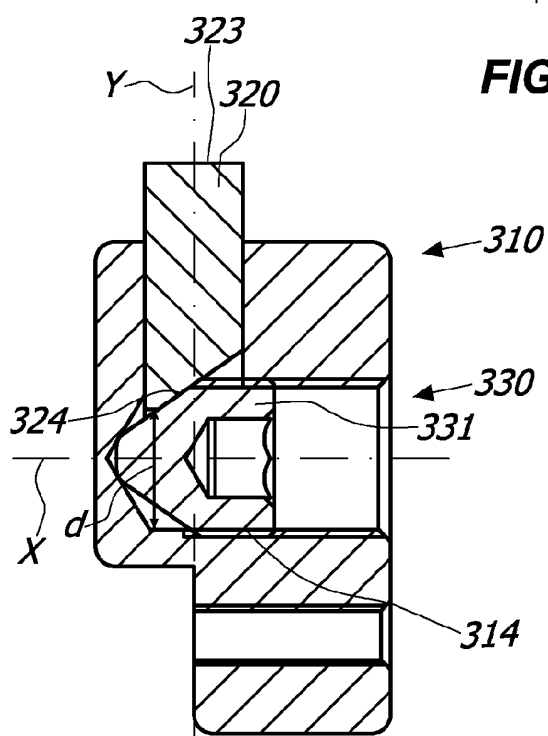


FIG. 5b

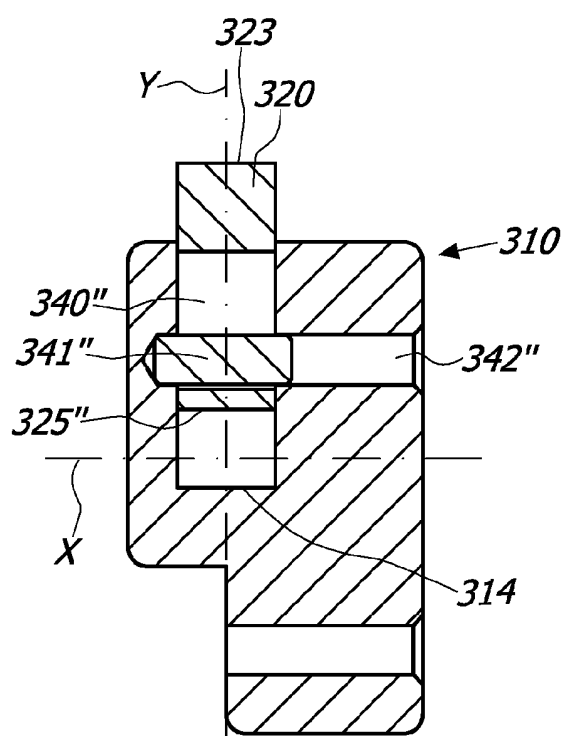
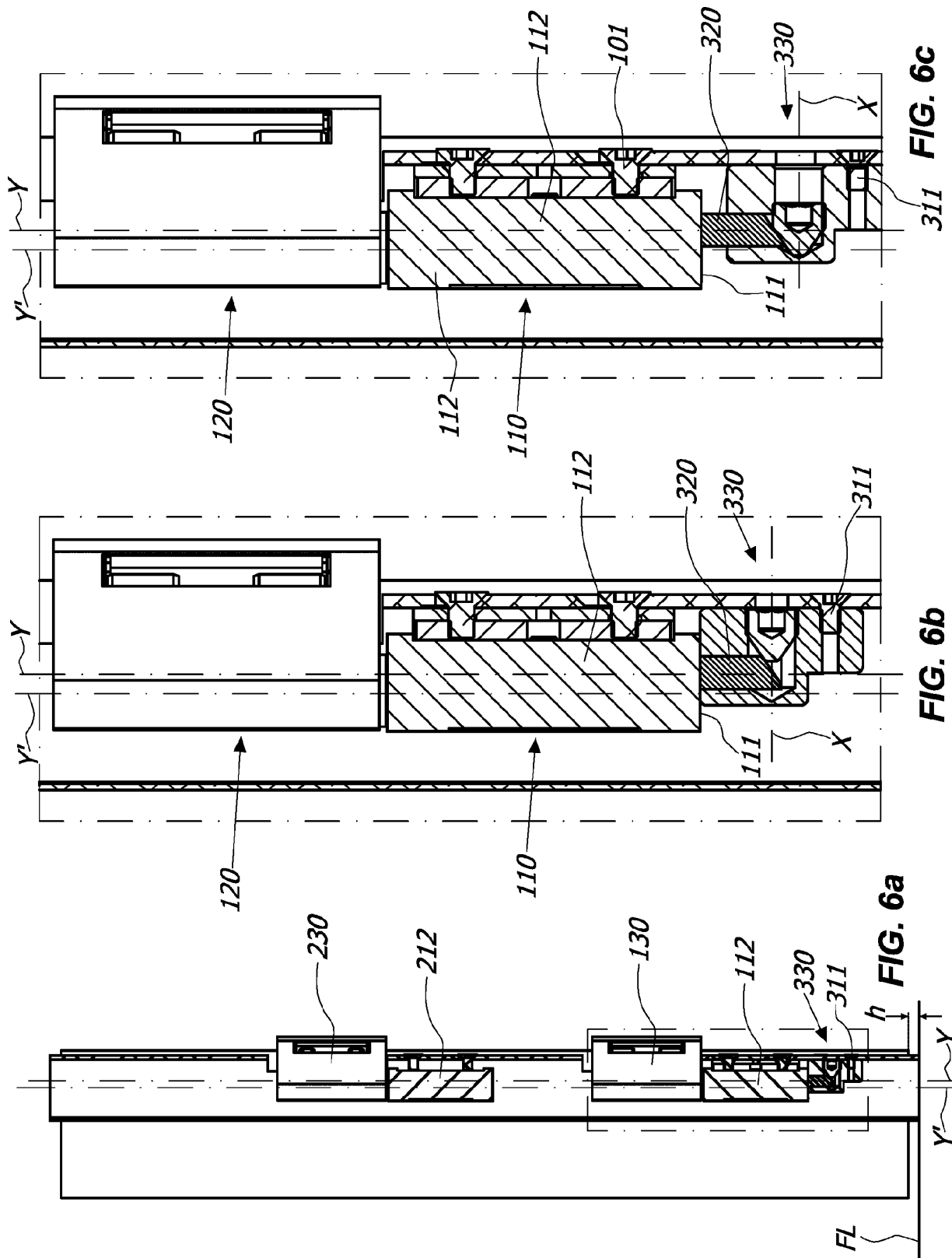


FIG. 5c



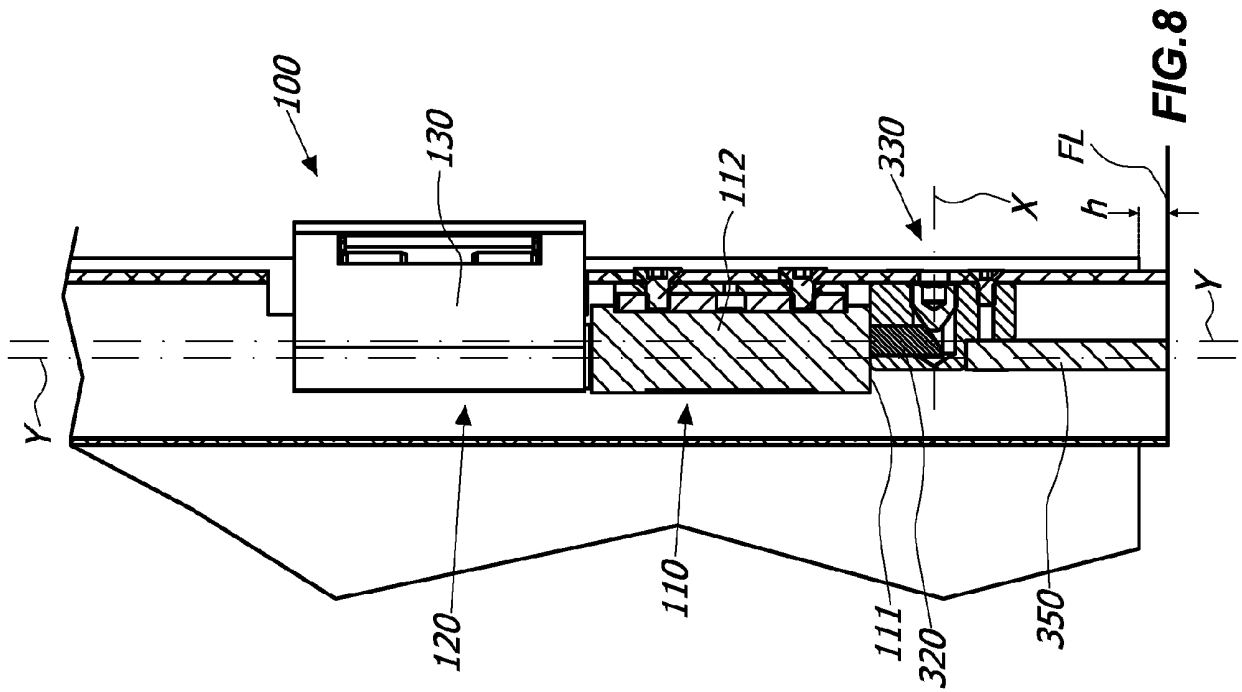


FIG. 8

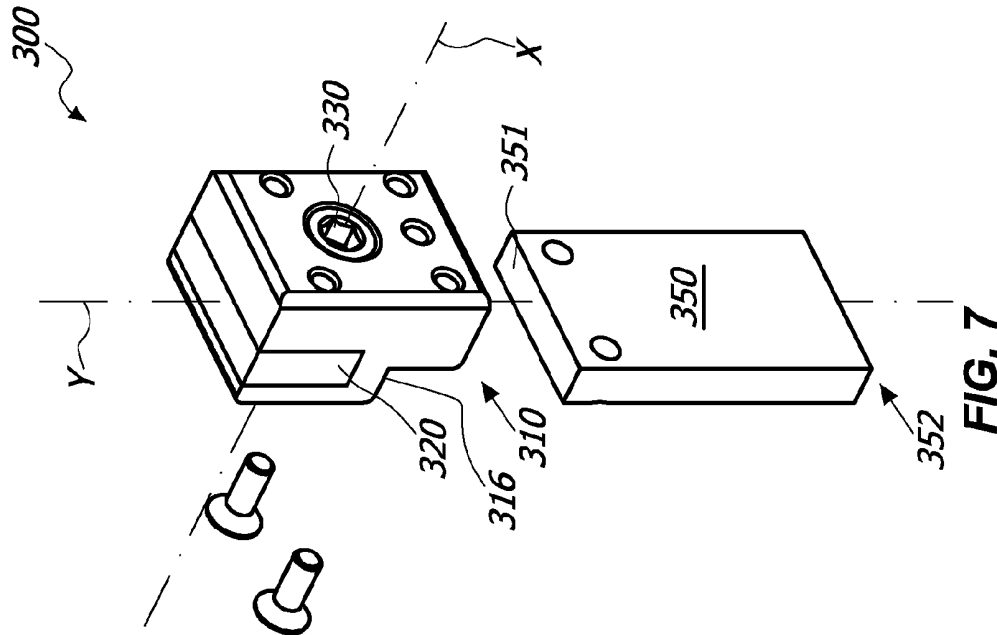


FIG. 7

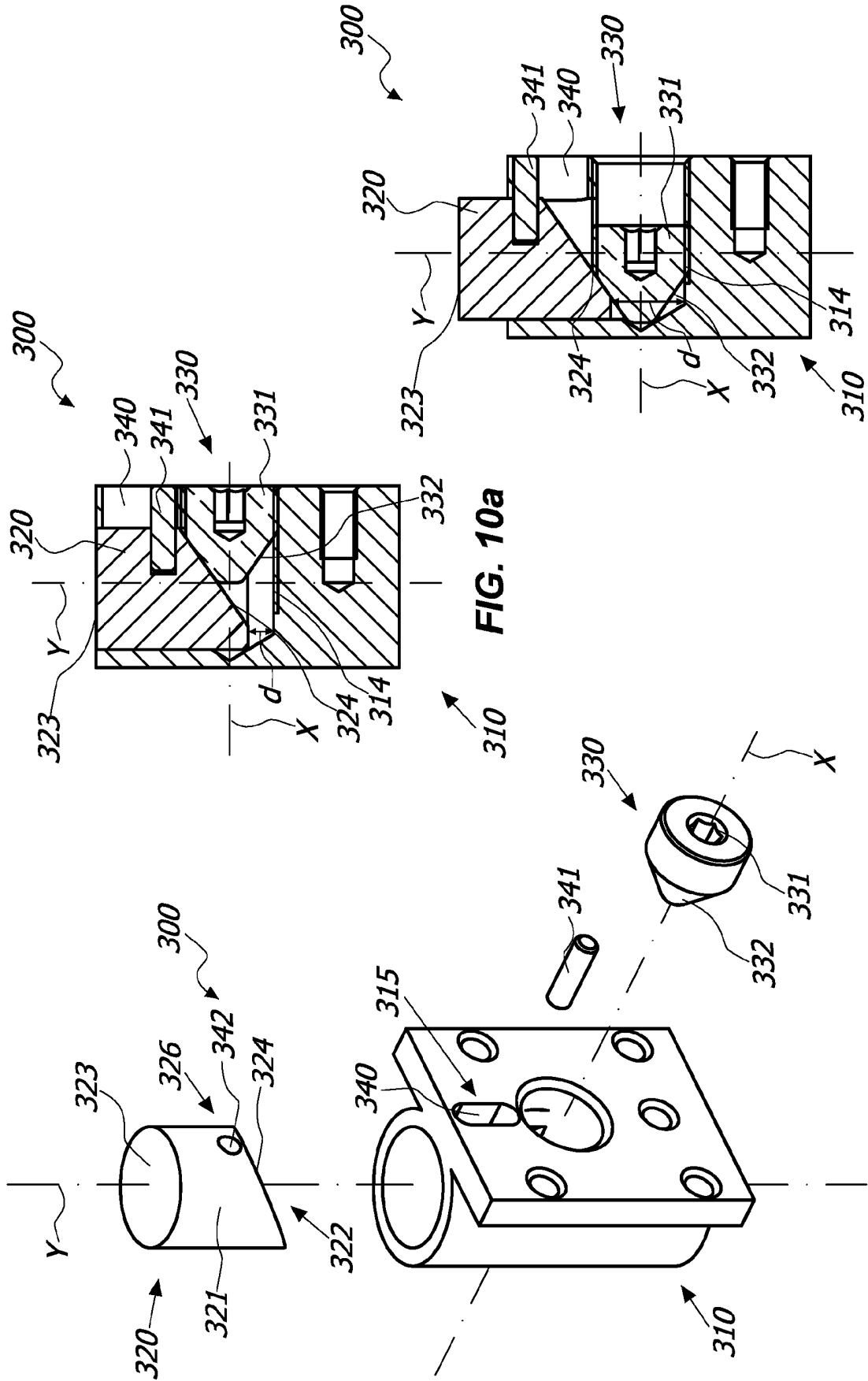


FIG. 10b

FIG. 10a

FIG. 9

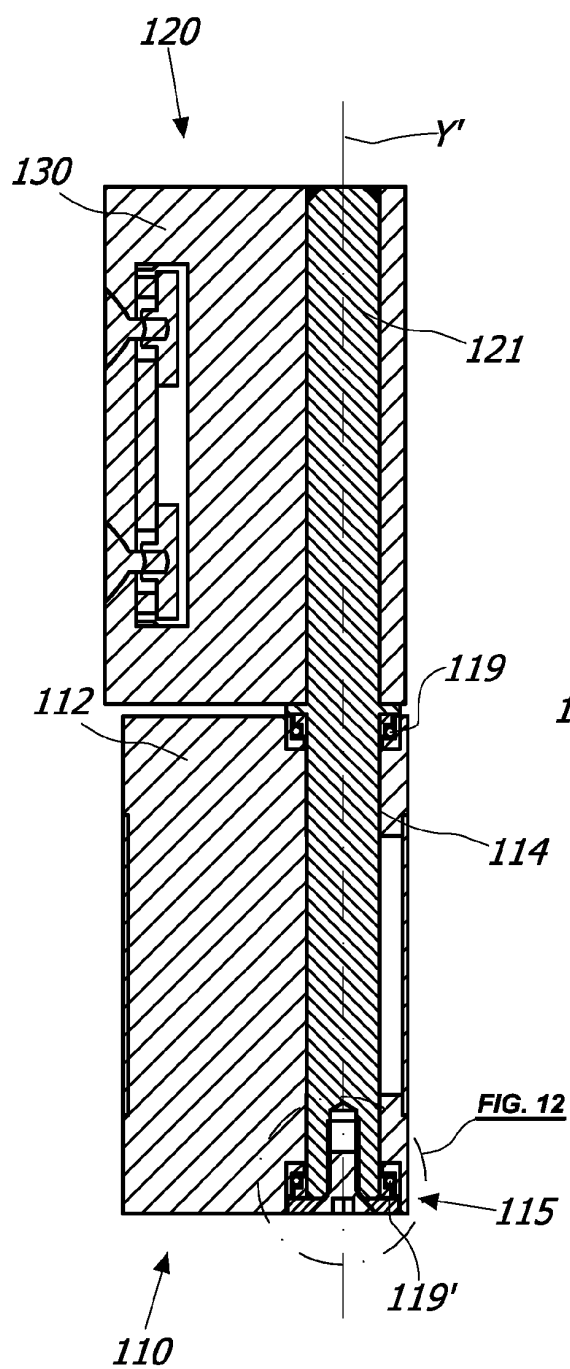


FIG. 11

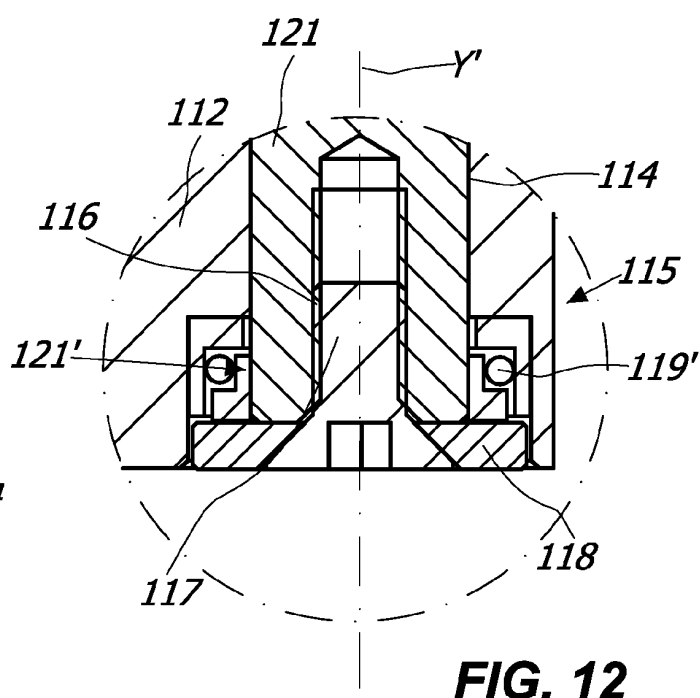


FIG. 12

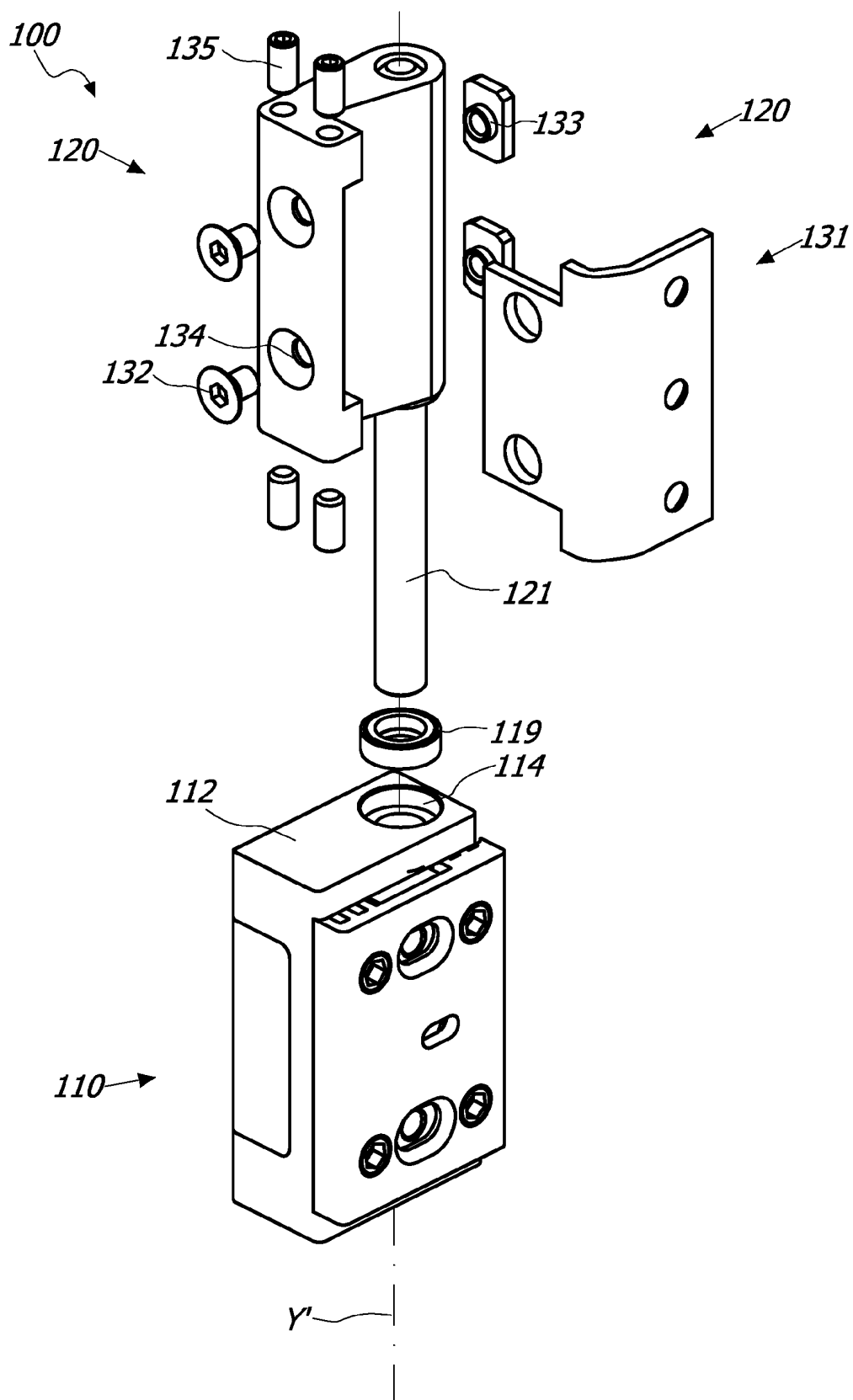


FIG. 13

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 1215357 A [0014]