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(54) **A CHAIR ADJUSTMENT DEVICE**

STUHLINSTELLUNGSVORRICHTUNG

DISPOSITIF D'AJUSTEMENT DE CHAISE

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Description

Field of the invention

[0001] The invention relates to adjustment devices for chairs, and more specifically, an adjustment device for a backrest and/or a seat of a chair, as set out by the preamble of claim 1.

Background of the invention

[0002] Mechanisms and devices for adjusting the seat depth of chairs are well known. Generally, the seat may either be adjustable (back and forth) in relation to a fixed backrest, or the backrest may be movable with respect to the seat.

[0003] The prior art includes JP 9322837 A which discloses a seat provided with guiding grooves, and a slider which slides relatively in the guiding grooves such that the seat may slide back and forth freely against a seat receiving member. The guiding groove(s) is/are provided with a horizontal part sufficient to slide in a horizontal direction, and an inclination part which at the same time gives a vertical displacement. A hook means is provided to connect the seat and the seat receiving member for fixing in the sliding direction. Thereby, the seat can be adjusted to a suitable depth or inclined according to kinds of work, physique of persons, or ways of sitting. Another example of a chair adjustment device is known from US2005140195 A1.

Summary of the invention

[0004] The invention is set forth and characterized in the main claim, while the dependent claims describe other characteristics of the invention.

[0005] It is thus provided a chair adjustment device having a housing configured for connection to one of a seat and a backrest, and having a first actuating member slidably arranged in the housing and configured for connection to the other one of the seat and the backrest, characterized by

- a second actuating member slidably arranged in the housing;
- locking means configured for releasably holding the first actuating member in a fixed position in relation to the housing and being operable by the second actuating member;
- force-transmitting means configured for releasably holding the first actuating member and being operable by the second actuating member so as to move the first actuating member in relation to the housing.

[0006] In one embodiment, the locking means are operable by the second actuating member via locking control means.

[0007] The force-transmitting means comprise an en-

gagement member which is movable into a least one gripping position with the first actuating member via an element connected to the second actuating member.

[0008] The force transmitting means and the element are in one embodiment configured such that the engagement member is moved into a first gripping position when the second actuating member is moved in a first input direction and into a second gripping position when the second actuating member is moved in a second input direction.

[0009] In one embodiment, the locking means comprise

- first locking means configured to releasably prevent the first actuating member from moving in a first output direction; and
- second locking means configured to releasably prevent the first actuating member from moving in a second output direction.

[0010] The locking control means comprise in one embodiment a locking control member movably supported by the housing and configured for interaction with the second actuation member; and configured for selectively unlocking the first locking means or the second locking means.

[0011] In one embodiment, the locking control member comprises a control element configured for interaction with guiding means on the second actuation member, and a release element arranged and configured to selectively unlock the first or the second locking means when the second actuating member is slidably moved in the housing.

[0012] In one embodiment, first biasing means are configured for releasably maintaining the locking means in a locked state. In one embodiment, second biasing means are configured for releasably maintaining the force-transmitting means in a non-engaging position with respect to the first actuating member.

[0013] In one embodiment, the guiding means comprise a slot having a portion that is inclined with respect to the second actuation member longitudinal axis; said inclined portion interconnecting two slot portions that are parallel and aligned with the second actuation member longitudinal axis.

[0014] In one embodiment, the first and second input directions are collinear and opposite directions. In one embodiment, the first and second output directions are collinear and opposite directions.

[0015] In one embodiment, the first input direction and the first output direction are parallel and the same directions. In one embodiment, the second input direction and the second output direction are parallel and the same directions.

Brief description of the drawings

[0016] These and other characteristics of the invention

will become clear from the following description of a preferential form of embodiment, given as a non-restrictive example, with reference to the attached schematic drawings, wherein:

Figure 1 is a perspective view, illustrating a chair (partly) in which the invented adjustment device is used;

Figure 2 is a close-up view of a part of the chair in which the invented adjustment device is assembled;

Figure 3A is an isometric drawing of the invented adjustment device, in a neutral and locked state;

Figure 3B is an enlarged view of the area marked "T" in figure 3a;

Figure 4A is a figure similar to figure 3, but where a rocker arm has been removed to illustrate other components;

Figure 4B is a perspective and partly cut-away drawing of a portion of the adjustment device, illustrating details of the rocker arm and an engagement plate;

Figure 5 is a figure similar to figure 4A, but where even more parts have been removed in order to illustrate other components;

Figure 6 is an isometric drawing of an input rod; and

Figure 7 is an isometric drawing of the invented adjustment device in an activated state.

Detailed description of a preferential embodiment

[0017] The following description may use terms such as "horizontal", "vertical", "lateral", "back and forth", "up and down", "upper", "lower", "inner", "outer", "under", "over", "forward", "rear", etc. These terms generally refer to the views and orientations as shown in the drawings and that are associated with a normal use of the invention. The terms are used for the reader's convenience only and shall not be limiting.

[0018] Figure 1 shows an office chair having a backrest 42 and a seat 44. It will be understood that, in use, a pedestal (e.g. equipped with wheels) supports a column which is connected to the underside of the seat 44. These parts have been removed from the figure in order to better illustrate the invention. The backrest 42 comprises at its lower end a frame 41 which is slidably supported by rails 45 (only one illustrated) connected to the seat. The backrest 42 is thereby movable back and forth (indicated by the double arrow A) with respect to the seat 44. The distance between the seat leading edge and the backrest is hence adjustable, whereby the chair may be adjusted to suit users of different sizes and heights. An adjustment

device 48 is connected to the seat 44, and operated via an operating lever 46.

[0019] The adjustment device 48 comprises a housing 1 which is connected to the underside of the seat 44 as illustrated in figure 2, using conventional bolts and screws. The operating lever 46 is rotatably connected to the underside of the seat via a lever bolt 49a and is connected to the adjustment device 48 in a manner which is described below. The adjustment device comprises an output rod 3, which at one end comprises an angled portion 51 which is connected to a bracket 43 on the backrest frame 41. When a user operates the lever 46, the lever motion is transferred to the output rod 3 via components in the adjustment device 48, inside the housing 1, and the backrest 42 is thus moved (backwards or forwards, depending on the direction of movement of the lever 46). [0020] Figure 3A is an illustration of the adjustment device 48 and the operating lever 46, as they may be viewed when removed from the seat. Compared to figure 2, which shows the adjustment device from below (i.e. its underside), figure 3A shows the adjustment device from the generally opposite direction, i.e. looking into the housing 1 from above. The output rod 3 is arranged in and supported by the housing 1 and is configured for sliding in the directions indicated by the arrows B1 and B2. The angled portion 51, which is configured for connection to the backrest as described above, is arranged at a first free end 3a of the output rod which extends outside the housing 1. The second free end 3b of the output rod extends outside the housing on the opposite side. The operating lever 46 comprises a hole 49b which, together with the bolt 49a (not shown in figure 3A; see figure 2) forms the lever fulcrum when the adjustment device and operating lever are assembled on the seat. The operating lever 46 is thus movable as indicated by the arrows C1 and C2 in figure 3A.

[0021] The operating lever 46 comprises a peg 47a which is releasably connected to a corresponding slot 47b near the free end of an input rod 2. The input rod 2 is arranged in and supported by the housing 1 and is configured for sliding in the directions indicated by the arrows D1 and D2 in figure 3A. The input rod 2 is held in a longitudinally neutral position (as shown in figure 3A) by means of a first spring device 5a which connects the input rod 2 to the housing 1. The input rod 2 comprises a guiding structure 15a that is configured for interaction with an input pin 13 (described in more detail below with reference to figures 5 and 6).

[0022] The output rod 3 is arranged to slide in two cut-outs 16a, 16b in the housing 1, and is releasably restrained from translation in a longitudinal direction by two sets of movable locking plates 8a, 8b. Each plate has a central opening through which the output rod extends. The first set of locking plates 8a restrains the output rod 3 from translation in the direction indicated by arrow B1 in figure 3A. The second set of locking plates 8b restrains the output rod 3 from translation in the opposite direction, indicated by arrow B2 in figure 3A. Such restraining of

rod movement by inclined plates is well known per se. The restraining force is generated by friction between the locking plate(s) and the rod, and the friction is thus determined by factors such as material properties (e.g. metal-to-metal), biasing force and contact area. It should therefore be understood that although the illustrated embodiment uses two locking plates per set, the invention shall not be limited to this number. The locking plates are preferably made of a high-tensile steel material. The operation of the movable sets of locking plates is described in further detail later.

[0023] A rocker arm 4 is rotatably supported on a housing pin which is connected to the housing. The housing pin is not shown per se in figure 3A, but its position is indicated in figure 3A by reference number 19b placed in parentheses (The housing pin 19b is shown in figure 4A and discussed below). The rocker arm 4 is held in a neutral position as shown in figure 3A by means of a second spring device 5b which is installed between a portion of the rocker arm near the housing pin 19b and a portion of the housing wall.

[0024] All the different parts of the adjustment device are assembled in the housing without the use of screws, glue or other external fastening means, but the parts are fitted firmly together by means of snap locks (not shown) and friction.

[0025] Figure 3B is an enlargement of the section marked "T" in figure 3A. In the adjustment device's neutral and locked state, as shown in figures 3A and 3B, the first set of locking plates 8a restrains the output rod 3 from translation in the direction indicated by arrow B1. The first set of locking plates 8a is movably supported at a first end in a housing slot 20a, and can rotate about this end. A first spring 9a, positioned between the second end of the first set of locking plates 8a and a supporting element 18a (connected to the housing), provides the first set of locking plates 8a with a preloading force that holds the plates at an inclined angle in a manner which is generally known in the art. Because of friction between the first set of locking plates 8a and the output rod 3, the output rod 3 is restrained from translation in the direction indicated by arrow B1. If an attempt to move the rod in the direction indicated by arrow B1, this "locking grip" is increased even more. This principle of restraining a rod from translation in one direction is well known.

[0026] The second set of locking plates 8b restrains the output rod 3 from translation in the direction indicated by arrow B2, i.e. in the direction opposite of the one described above (B1). The second set of locking plates 8b is rotatably supported at a first free end, in a housing slot 20b in the housing, and can rotate about this end. A second spring 9b, positioned between the second free end of the second set of locking plates 8b and a supporting element 18b, provides the second set of locking plates 8b with a preloading force in a manner similar to the one described above with reference to the first set of locking plates. Because of friction between the second set of locking plates 8b and the output rod 3, the output rod 3

is restrained from translation in the direction indicated by arrow B2.

[0027] The gaps g between the output pin 14 and sets of locking plates 8a, 8b when the adjustment device is in the neutral state is advantageous because the sets of locking plates 8a, 8b are subjected to wear (due to friction) during use, causing their angle of inclination with respect to the output rod 3 to increase and hence lean more towards the output pin 14 when in the neutral position. The gaps g permit contact to be established between the sets of locking plates 8a, 8b and the output rod 3, even if the sets of locking plates wear and lean more towards the output pin 14.

[0028] An output pin 14 (which is described in more detail with reference to figure 5, below) is arranged between the respective second ends of the two sets of locking plates 8a,b.

[0029] The components for transferring movements from the input rod 2 to the output rod 3 will now be described with reference to figures 4A and 4B. Figure 4A differs from figure 3A in that the rocker arm 4 has been removed for illustrating purposes, and the aforementioned housing pin 19b (on which the rocker arm 4 is rotatably supported), is thus visible. An engagement plate 10 is arranged inside a sleeve 11, both having a central opening through which the output rod extends. The engagement plate material is typically high-tensile steel, while the sleeve material preferably is of a resilient material, such as plastic or neoprene. As seen in figure 4A, the plate-and-sleeve assembly 10, 11 is at one end rotatably supported by a rod slot 21 on the input rod 2. Referring to figure 4B, where a portion of the housing wall has been removed for illustrative purposes, the other end of the plate-and-sleeve assembly 10, 11 is held between a pair of fingers 24a,b that are connected to the free end of the rocker arm and extend downwardly and project partly into an arcuate slot 23. Figure 4A illustrates how the engagement plate 10 and sleeve 11 are oriented substantially perpendicular to the output rod 3 longitudinal axis when the rocker arm 4 is in the neutral position, as described previously.

[0030] In figure 5 the input rod has been removed in order to illustrate a trigger element 6 (shown in figure 5 in a neutral and unbiased position). The trigger element 6 is in the illustrated embodiment a plate-shaped element comprising the aforementioned input pin 13 and output pin 14. The trigger element 6 is rotatably supported on a housing pin 19a, and in the neutral position of the trigger element 6, the output pin 14 is located between, and not touching, the sets of locking plates 8a, 8b.

[0031] Figure 6 shows the reverse side of the input rod 2 (i.e. the side facing down into the housing when assembled), with a guiding slot 15b configured for receiving the output pin 14 (not shown in figure 6; see e.g. figure 3A) when the input rod 2 is assembled on top of the trigger element 6. The slot 15b has two straight portions, aligned with the longitudinal axis of the input rod 2, and an inclined portion interconnecting the two straight portions. When

the adjustment device is in the neutral position, the output pin 14 is located in the middle of the inclined portion, as seen in figure 3A.

[0032] The invented adjustment device has now been described with its components in an unactuated state. Both sets of locking plates 8a,b are forced (by their respective springs 9a,b) against the output rod 3, preventing output rod movement in either direction. The engagement plate 10 is in a non-activated and non-engaging position. Thus, in this locked state of the adjustment device, the backrest is prevented from moving relative to the seat.

[0033] Operation of the adjustment device, in order to move the backrest with respect to the seat, will now be described with reference to figure 7. In this figure, the input rod is slightly modified compared to the variant shown in figure 3A, in that the guiding slot 15b is open, whereby the movement of the input pin 13 is better illustrated. Moving the operating lever 46 from an initial position (cf. figure 3A) in the direction C1 causes the input rod 2 to move in the direction indicated by arrow D1. This movement of the input rod 2 forces the input pin 13 to move in the guiding slot 15b from the middle of the inclined portion (cf. figure 3A) to (as seen in the figure) the left-hand part of the straight portion of the guiding slot 15b. This movement of the input pin 13 causes the trigger element 6 to rotate about the housing pin 19a (not shown in figure 7, cf. figure 5), whereby the output pin 14 also moves and engages with the first set of locking plates 8a. This movement of the output pin 14 causes the first set of locking plates 8a to rotate in the housing slot 20a (in the drawing: towards the left) and provides the first set of locking plates 8a with an angle which is more perpendicular (i.e. less inclined than in figure 3A) relative to the output rod 3. As an effect of the rotation of the first set of locking plates 8a, the first spring 9a is compressed. This rotation of the first set of locking plates 8a releases the grip on the output rod 3 and allows it to slide in the direction B1.

[0034] When the input rod 2 is moved even further in the direction indicated by arrow D1, the input pin 13 is guided from the inclined portion of the guiding slot 15b to the longitudinally straight portion of the slot 15b, resulting in that the trigger element 6 and the output pin 14 are held in a fixed position. Hence, further translation in the direction indicated by arrow D1 of the input rod 2 does not affect the angle of the locking plates 8a or the compression of the spring 9a. In figure 7, the input pin 13 has reached the end stop of the longitudinally straight slot portion, and the output rod 3 has been moved in the direction indicated by the arrow B1.

[0035] whereas the preceding paragraphs have described how the first set of locking plates have been caused to release its grip on the output rod, thereby allowing it to be moved in the B1 direction, the actual movement of the output rod will be explained in the following. Simultaneously with the release operation described above, as the input rod 2 is moved in the direction indi-

cated by arrow D1, the input rod slot 21 acts on the sleeve 11 and engagement plate 10, moving them in the D1 direction. As the engagement plate 10 and sleeve 11 are moved proportionally equally to the translation of the input rod 2 at the one end, and at the other end held by the rocker arm fingers 24a,b, the engagement plate 10 is rotated between the rocker arm fingers 24a,b. The engagement plate 10 is rotated until it engages with the output rod 3 and the output rod 3 prevents further rotation. The engagement plate 10 is thus locked to the output rod 3 and establishes a rigid connection between the input rod and output rod, whereby the output rod is pushed in the B1 direction. The rocker arm fingers 24a,b no longer support the rotation of the engagement plate 10, and the rocker arm is thus forced to move along in the same direction (the fingers moving in the arcuate slot 23), causing the second spring device 5b to compress. In effect, the rocker arm fingers 24a,b performs an arcuate movement (corresponding to the slot 23) having the housing pin 19b as its center of rotation.

[0036] As the output rod 3 is moved in the direction indicated by arrow D1, the second set of locking plates 8b will not prevent the movement, but due to friction between the second set of locking plates 8b and the output rod 3, the second set of locking plates 8b will be slightly rotated in a clockwise direction about the housing slot 20b. The second spring 9b will in effect also be slightly compressed. To ensure a smooth translation of the output rod 3, a flexible member 27b supports the locking second set of plates 8b and together with the second spring 9b it provides more constant friction between the second set of locking plates 8b and the output rod 3, by allowing slight movement of the second set of locking plates 8b.

[0037] The translation of the input rod 2 in direction D1 is halted when the first spring device 5a is fully compressed. The operating lever 46 can at this point be released. The first spring device 5a forces the input rod 2 (and the operating lever 46) back to the neutral position, but the second set of locking plates 8b prevents translation of the output rod 3. The engagement plate 10 connected to the input rod 2 at the one end and the rocker arm 4 at the other end, is pushed back and slides along the stationary output rod 3. The input rod 2 comes to rest in the neutral position as previously described, and the rocker arm 4 also comes to a rest in the neutral position as previously described, the engagement plate again being positioned substantially perpendicular to the output rod 3. The operating lever 46 can now be engaged again in the same direction as indicated by arrow C1 to further translate the output rod 3 in the direction indicated by arrow D1, or the operating lever 46 can be engaged in an opposite direction to translate the output rod 3 in an opposite direction.

[0038] If the input rod 2 is engaged in the opposite direction of what has been described above, the same sequence of actions apply, but the trigger element 6 will rotate in an opposite direction, the second set of locking

plates 8b will be "unlocked" to allow translation of the output rod 3, and the engagement plate 10 will rotate in a opposite direction before engaging with the output rod 3, which will be translated in the opposite direction.

[0039] The invented adjustment device is thus bidirectional, in that the seatback may easily be moved in either direction (see "A" in figure 1) by operating the lever 46 in either the C1 direction or the C2 direction.

[0040] Although the invention has been described with reference to a movable seatback and a fixed seat, it should be understood that the invention also covers a reverse assembly, i.e. where the adjustment device is mounted on a fixed seatback and the output rod is connected to a movable seat.

Claims

1. A chair adjustment device (48) having a housing (1) configured for connection to one of a seat (44) and a backrest (42), and having a first actuating member (3) slidably arranged in the housing and configured for connection to the other one of the seat and the backrest, wherein
 - a second actuating member (2) is slidably arranged in the housing; and
 - locking means (8a, 8b) are configured for releasably holding the first actuating member (3) in a fixed position in relation to the housing and being operable by the second actuating member said chair adjustment device (48) being **characterized by**
 - force-transmitting means (10, 4) configured for releasably holding the first actuating member (3) and being operable by the second actuating member (2) so as to move the first actuating member in relation to the housing.
2. The chair adjustment device of claim 1, wherein the locking means (8a, 8b) are operable by the second actuating member (2) via locking control means (6; 13, 14, 15a,b).
3. The chair adjustment device of claim 1 or claim 2, wherein the force-transmitting means (10, 4) comprise an engagement member (10) which is movable into a least one gripping position with the first actuating member (3) via an element (21) connected to the second actuating member (2).
4. The adjustment device of claim 3, wherein the force transmitting means (10, 4) and the element (21) are configured such that the engagement member (10) is moved into a first gripping position when the second actuating member (2) is moved in a first input direction (D1) and into a second gripping position when the second actuating member (2) is moved in a second input direction (D2).
5. The chair adjustment device of any one of the preceding claims, wherein the locking means comprise
 - first locking means (8a) configured to releasably prevent the first actuating member (3) from moving in a first output direction (B1); and
 - second locking means (8b) configured to releasably prevent the first actuating member (3) from moving in a second output direction (B2).
6. The chair adjustment device of any one of the preceding claims, wherein the locking control means comprise a locking control member (6) movably supported by the housing and configured for interaction with the second actuation member (2); and configured for selectively unlocking the first locking means (8a) or the second locking means (8b).
7. The chair adjustment device of claim 6, wherein the locking control member (6) comprises a control element (13) configured for interaction with guiding means (15a,b) on the second actuation member (2), and a release element (14) arranged and configured to selectively unlock the first or the second locking means (8a,b) when the second actuating member (2) is slidably moved in the housing.
8. The chair adjustment device of any one of the preceding claims, further comprising first biasing means (9a,b) configured for releasably maintaining the locking means (8a,b) in a locked state.
9. The chair adjustment device of any one of the preceding claims, further comprising second biasing means (5b) configured for releasably maintaining the force-transmitting means (10, 4) in a non-engaging position with respect to the first actuating member.
10. The chair adjustment device of any one claims 7 - 9, wherein the guiding means comprises a slot (15b) having a portion that is inclined with respect to the second actuation member (2) longitudinal axis; said inclined portion interconnecting two slot portions that are parallel and aligned with the second actuation member (2) longitudinal axis.
11. The chair adjustment device of any one of claims 4 - 10, wherein the first and second input directions (D1, D2) are collinear and opposite directions.
12. The chair adjustment device of any one of claims 5 - 11, wherein the first and second output directions (B1, B2) are collinear and opposite directions.
13. The chair adjustment device of any one of claims 5

- 12, wherein the first input direction (D1) and the first output direction (B1) are parallel and the same directions.

14. The chair adjustment device of any one of claims 5 - 13, wherein the second input direction (D2) and the second output direction (B2) are parallel and the same directions.

Patentansprüche

1. Stuhleinstellungsvorrichtung (48), welche ein Gehäuse (1) aufweist, das zur Verbindung mit einem aus einem Sitz (44) und einer Rückenlehne (42) ausgelegt ist, und ein erstes Betätigungselement (3) aufweist, das in dem Gehäuse gleitbar angeordnet ist und zur Verbindung mit dem anderen aus dem Sitz und der Rückenlehne ausgelegt ist, wobei

- ein zweites Betätigungselement (2) in dem Gehäuse gleitbar angeordnet ist; und
 - Verriegelungsmittel (8a, 8b) ausgelegt sind, um das erste Betätigungselement (3) in einer relativ zum Gehäuse festen Position lösbar zu halten und durch das zweite Betätigungselement betätigt zu werden, und Stuhleinstellungsvorrichtung (48) **gekennzeichnet ist durch**;
 - kraftübertragende Mittel (10, 4), die zum lösbaren Halten des ersten Betätigungselements (3) und zur Betätigung **durch** das zweite Betätigungselement (2) ausgelegt sind, damit das erste Betätigungselement relativ zum Gehäuse bewegt werden kann.

2. Stuhleinstellungsvorrichtung nach Anspruch 1, wobei die Verriegelungsmittel (8a, 8b) über Verriegelungssteuerungsmittel (6; 13, 14, 15a,b) durch das zweite Betätigungselement (2) betätigbar sind.
3. Stuhleinstellungsvorrichtung nach Anspruch 1 oder Anspruch 2, wobei die kraftübertragenden Mittel (10, 4) ein Eingriffselement (10) aufweist, das mit dem ersten Betätigungselement (3) über ein mit dem zweiten Betätigungselement (2) verbundenes Element (21) in mindestens eine Greifposition bewegbar ist.
4. Einstellungsvorrichtung nach Anspruch 3, wobei die kraftübertragenden Mittel (10, 4) und das Element (21) derart ausgelegt sind, dass das Betätigungselement (10) in eine erste Greifposition bewegt wird, wenn das zweite Betätigungselement (2) in eine erste Eingangsrichtung (D1) bewegt wird, und in eine zweite Greifposition bewegt wird, wenn das zweite Betätigungselement (2) in eine zweite Eingangsrichtung (D2) bewegt wird.

5. Stuhleinstellungsvorrichtung nach einem der vorgehenden Ansprüche, wobei die Verriegelungsmittel folgendes umfassen:

- erste Verriegelungsmittel (8a), die ausgelegt sind, um das erste Betätigungselement (3) vor einem Bewegen in eine erste Ausgangsrichtung (B1) zu verhindern; und
 - zweite Verriegelungsmittel (8b), die ausgelegt sind, um das erste Betätigungselement (3) vor einem Bewegen in eine zweite Ausgangsrichtung (B2) zu verhindern.

6. Stuhleinstellungsvorrichtung nach einem der vorgehenden Ansprüche, wobei die Verriegelungssteuerungsmittel ein Verriegelungssteuerungselement (6) umfassen, das durch das Gehäuse beweglich unterstützt ist und zum Zusammenwirken mit dem zweiten Betätigungselement (2) ausgelegt ist; und zur wahlweisen Entriegelung des ersten Verriegelungsmittels (8a) oder des zweiten Verriegelungsmittels (8b) ausgelegt ist.

7. Stuhleinstellungsvorrichtung nach Anspruch 6, wobei das Verriegelungssteuerungselement (6) ein Steuerungselement (13) aufweist, das zum Zusammenwirken mit Führungsmitteln (15a,b) des zweiten Betätigungselements (2) ausgelegt ist, und ein Freigabeelement (14) aufweist, das dazu angeordnet und ausgelegt ist, beim gleitbaren Bewegen des zweiten Betätigungselements (2) im Gehäuse das erste oder das zweite Verriegelungsmittel (8a,b) wahlweise zu entriegeln.

8. Stuhleinstellungsvorrichtung nach einem der vorgehenden Ansprüche, ferner umfassend ein erstes Vorspannmittel (9a,b), das zum lösbaren Festhalten der Verriegelungsmittel (8a,b) in einem verriegelten Zustand ausgelegt ist.

9. Stuhleinstellungsvorrichtung nach einem der vorgehenden Ansprüche, ferner umfassend ein zweites Vorspannmittel (5b), das zum lösbaren Festhalten der kraftübertragenden Mittel (10, 4) in einer Nicht-Eingriffsposition bezüglich des ersten Betätigungselements ausgelegt ist.

10. Stuhleinstellungsvorrichtung nach einem der Ansprüche 7-9, wobei das Führungsmittel einen Schlitz (15b) mit einem relativ zur Längsachse des zweiten Betätigungselements (2) geneigten Teil aufweist; welches geneigte Teil zwei Schlitzteile verbindet, die parallel und mit der Längsachse des zweiten Betätigungselements (2) ausgerichtet sind.

11. Stuhleinstellungsvorrichtung nach einem der Ansprüche 4-10, wobei die erste und die zweite Eingangsrichtung (D1, D2) kollineare und entgegengerichte

setzte Richtungen sind.

12. Stuhleinstellungsvorrichtung nach einem der Ansprüche 5-11, wobei die erste und die zweite Ausgangsrichtung (B1, B2) kollineare und entgegengesetzte Richtungen sind. 5
13. Stuhleinstellungsvorrichtung nach einem der Ansprüche 5-12, wobei die erste Eingangsrichtung (D1) und die erste Ausgangsrichtung (B1) parallele und die gleichen Richtungen sind. 10
14. Stuhleinstellungsvorrichtung nach einem der Ansprüche 5-13, wobei die zweite Eingangsrichtung (D2) und die zweite Ausgangsrichtung (B1) parallele und die gleichen Richtungen sind. 15

Revendications

1. Dispositif de réglage de chaise (48) comportant un boîtier (1) configuré pour être connecté à l'un d'un siège (44) et d'un dossier (42), et ayant un premier élément d'actionnement (3) agencé de manière coulissante dans le boîtier et configuré pour une connexion à l'autre du siège et du dossier, dans lequel 20

- un deuxième élément d'actionnement (2) est disposé de manière coulissante dans le boîtier; et 25

- des moyens de verrouillage (8a, 8b) sont configurés pour maintenir de façon libérable le premier élément d'actionnement (3) dans une position fixe par rapport au boîtier et pouvant être actionné par le deuxième élément d'actionnement, ledit dispositif de réglage de chaise (48) étant **caractérisé par**; 30

- des moyens de transmission de force (10, 4) configurés pour maintenir de manière libérable le premier élément d'actionnement (3) et pouvant être actionnés par le deuxième élément d'actionnement (2) de manière à déplacer le premier élément d'actionnement par rapport au boîtier. 35

2. Dispositif de réglage de chaise selon la revendication 1, dans lequel les moyens de verrouillage (8a, 8b) peuvent être actionnés par le deuxième élément d'actionnement (2) par l'intermédiaire de moyens de commande de verrouillage (6; 13, 14, 15a,b). 40
3. Dispositif de réglage de chaise selon la revendication 1 ou revendication 2, dans lequel les moyens de transmission de force (10, 4) comprennent un élément d'engagement (10) qui est mobile dans au moins une position de préhension avec le premier élément d'actionnement (3) par l'intermédiaire d'un élément 21) relié au deuxième élément d'actionnement (2). 45

ment (2).

4. Dispositif de réglage de chaise selon la revendication 3, dans lequel les moyens de transmission de force (10, 4) et l'élément (21) sont configurés si bien que l'élément d'engagement (10) est déplacé dans une première position de préhension lorsque le deuxième élément d'actionnement (2) est déplacé dans une première direction d'entrée (D1) et dans une deuxième position de préhension lorsque le deuxième élément d'actionnement (2) est déplacé dans une deuxième direction d'entrée (D2). 50

5. Dispositif de réglage de chaise selon l'une quelconque des revendications précédentes, dans lequel les moyens de verrouillage comprennent 55

- des premiers moyens de verrouillage (8a) configurés pour empêcher de façon libérable le premier élément d'actionnement (3) de se déplacer dans une première direction de sortie (B1); et
- des deuxièmes moyens de verrouillage (8b) configurés pour empêcher de façon libérable le premier élément d'actionnement (3) de se déplacer dans une deuxième direction de sortie (B2). 60

6. Dispositif de réglage de chaise selon l'une quelconque des revendications précédentes, dans lequel les moyens de commande de verrouillage comprennent un élément de commande de verrouillage (6) supporté de façon mobile par le boîtier et configuré pour une interaction avec le deuxième élément d'actionnement (2); et configuré pour déverrouiller sélectivement les premiers moyens de verrouillage (8a) ou les deuxièmes moyens de verrouillage (8b). 65

7. Dispositif de réglage de chaise selon la revendication 6, dans lequel l'élément de commande de verrouillage (6) comprend un élément de commande (13) configuré pour coopérer avec des moyens de guidage (15a,b) sur le deuxième élément d'actionnement (2), et un élément de libération (14) agencé et configuré pour déverrouiller sélectivement les premiers ou les deuxièmes moyens de verrouillage (8a, b) lorsque le deuxième élément d'actionnement (2) est déplacé de manière coulissante dans le boîtier. 70

8. Dispositif de réglage de chaise selon l'une quelconque des revendications précédentes, comprenant en outre des premiers moyens de sollicitation (9a,b) configurés pour maintenir de façon libérable les moyens de verrouillage (8a,b) dans un état verrouillé. 75

9. Dispositif de réglage de chaise selon l'une quelconque des revendications précédentes, comprenant en outre des deuxièmes moyens de sollicitation (5b) 80

configurés pour maintenir de façon libérable les moyens de transmission de force (10, 4) dans une position de non engagement par rapport au premier élément d'actionnement.

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10. Dispositif de réglage de chaise selon l'une quelconque des revendications 7 à 9, dans lequel le moyen de guidage comprend une fente (15b) ayant une partie qui est inclinée par rapport à l'axe longitudinal du deuxième élément d'actionnement (2); ladite partie inclinée interconnectant deux parties de fente qui sont parallèles et alignées avec l'axe longitudinal du deuxième élément d'actionnement (2). 10
11. Dispositif de réglage de chaise selon l'une quelconque des revendications 4 à 10, dans lequel les première et deuxième directions d'entrée (D1, D2) sont des directions colinéaires et opposées. 15
12. Dispositif de réglage de chaise selon l'une quelconque des revendications 5 à 11, dans lequel les première et deuxième directions de sortie (B1, B2) sont des directions colinéaires et opposées. 20
13. Dispositif de réglage de chaise selon l'une quelconque des revendications 5 à 12, dans lequel la première direction d'entrée (D1) et la première direction de sortie (B1) sont parallèles et dans les mêmes directions. 25
14. Dispositif de réglage de chaise selon l'une quelconque des revendications 5 à 13, dans lequel la deuxième direction d'entrée (D2) et la deuxième direction de sortie (B2) sont parallèles et dans les mêmes directions. 30 35

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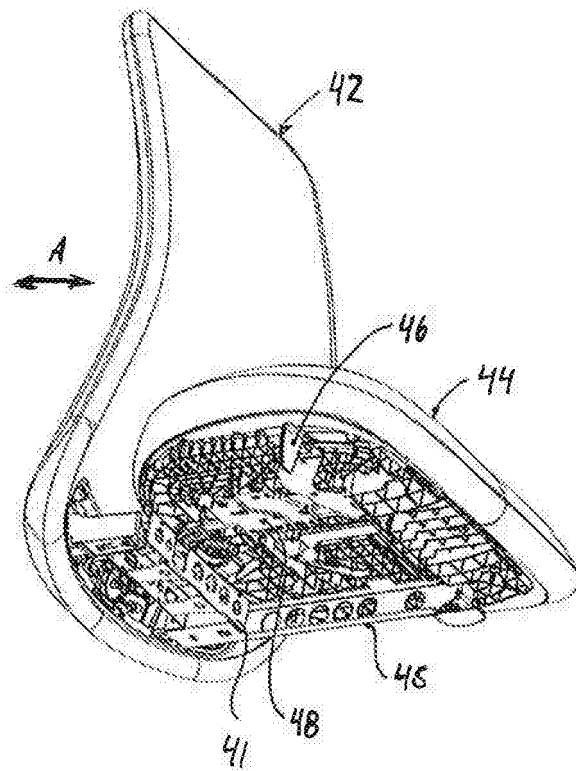


Fig. 1

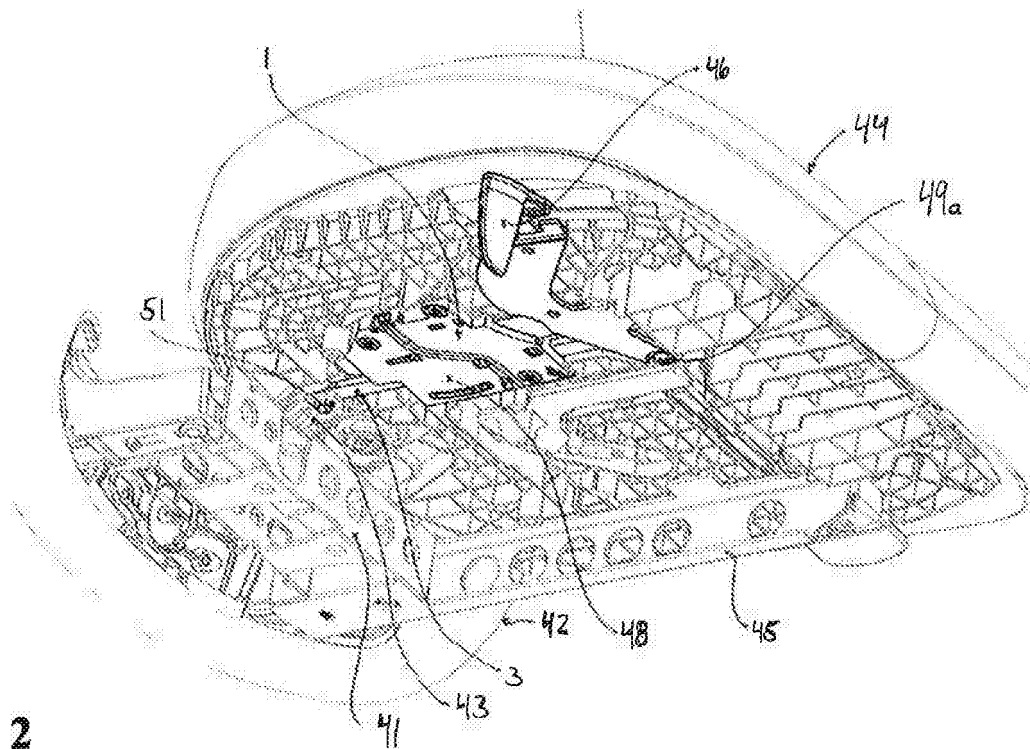


Fig. 2

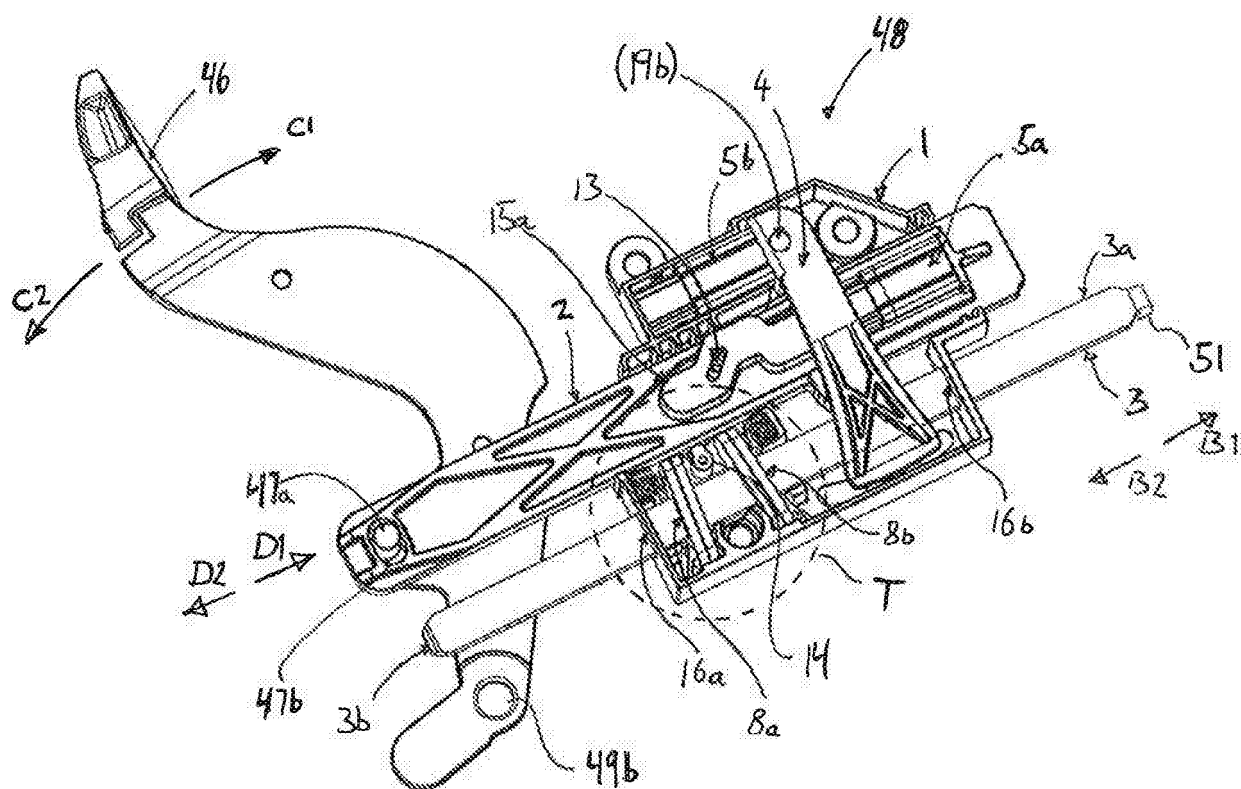


Fig. 3A

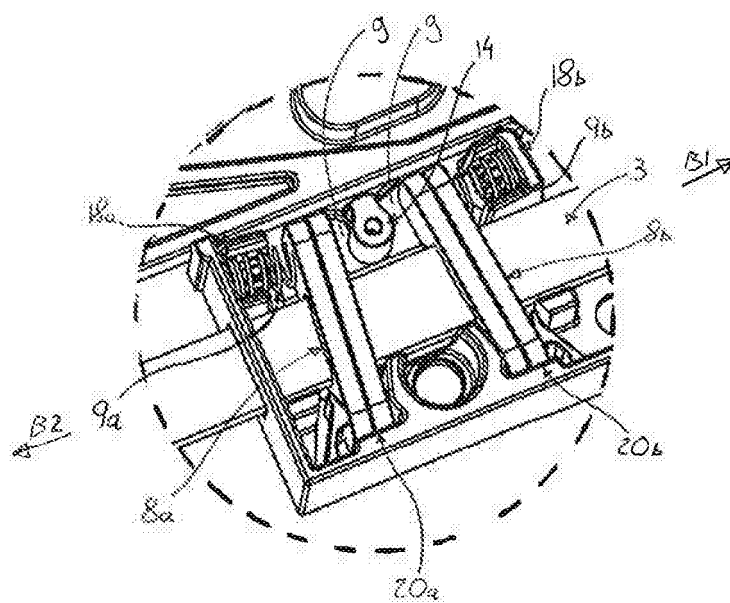


Fig. 3B

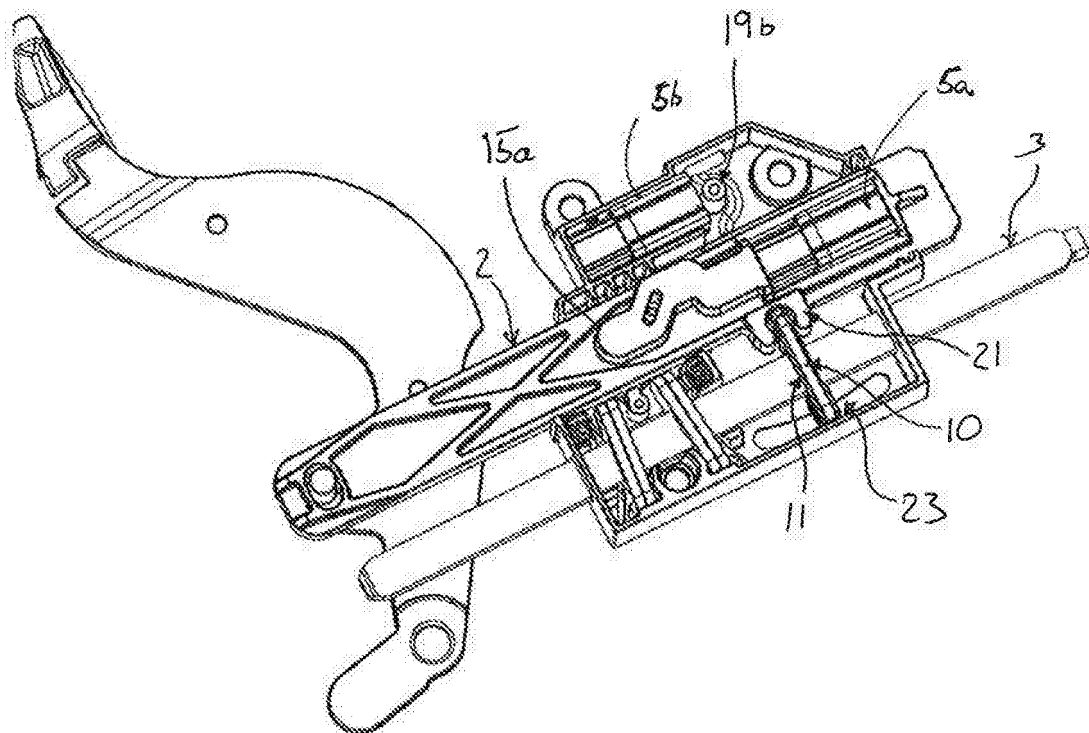


Fig. 4A

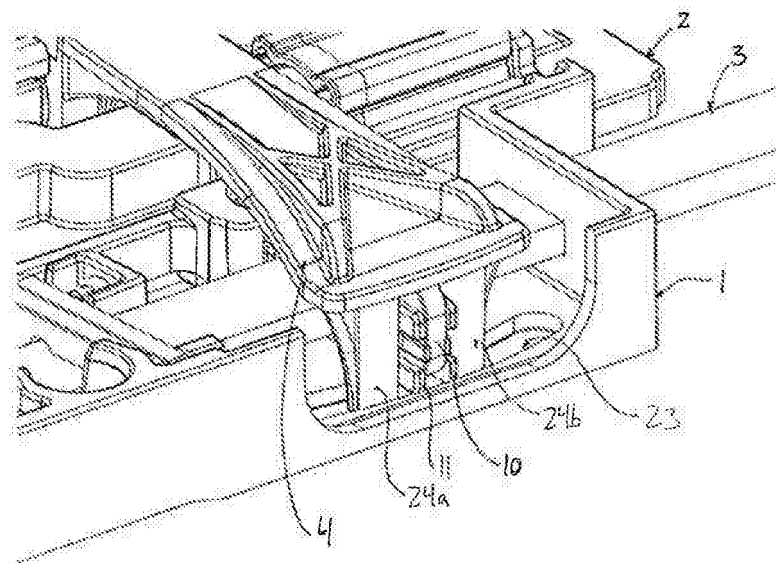


Fig. 4B

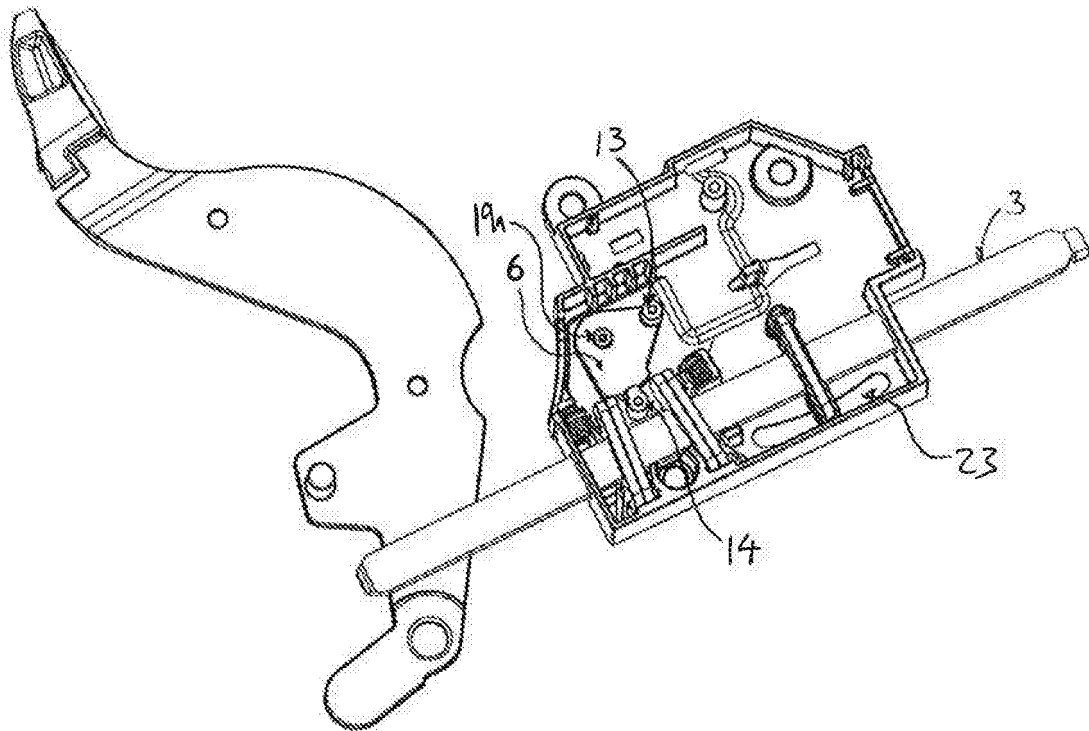


Fig. 5

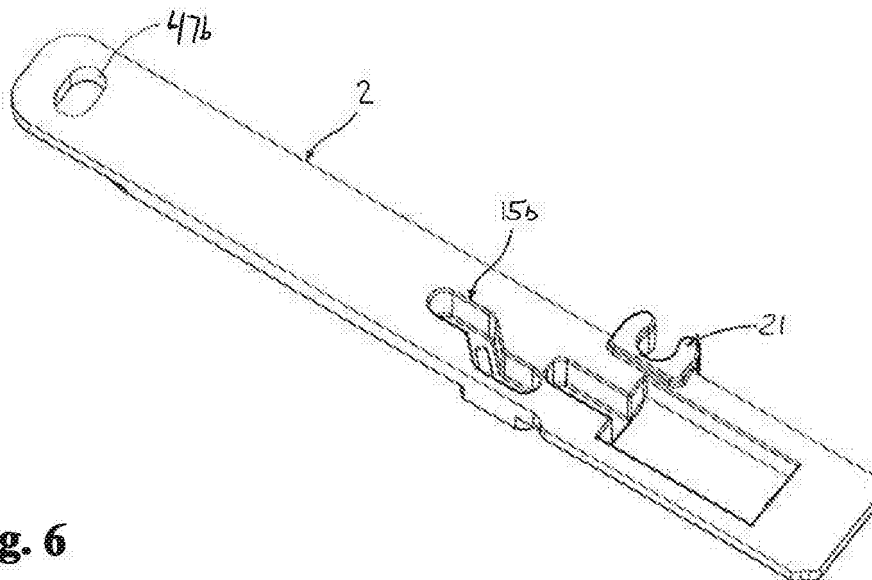


Fig. 6

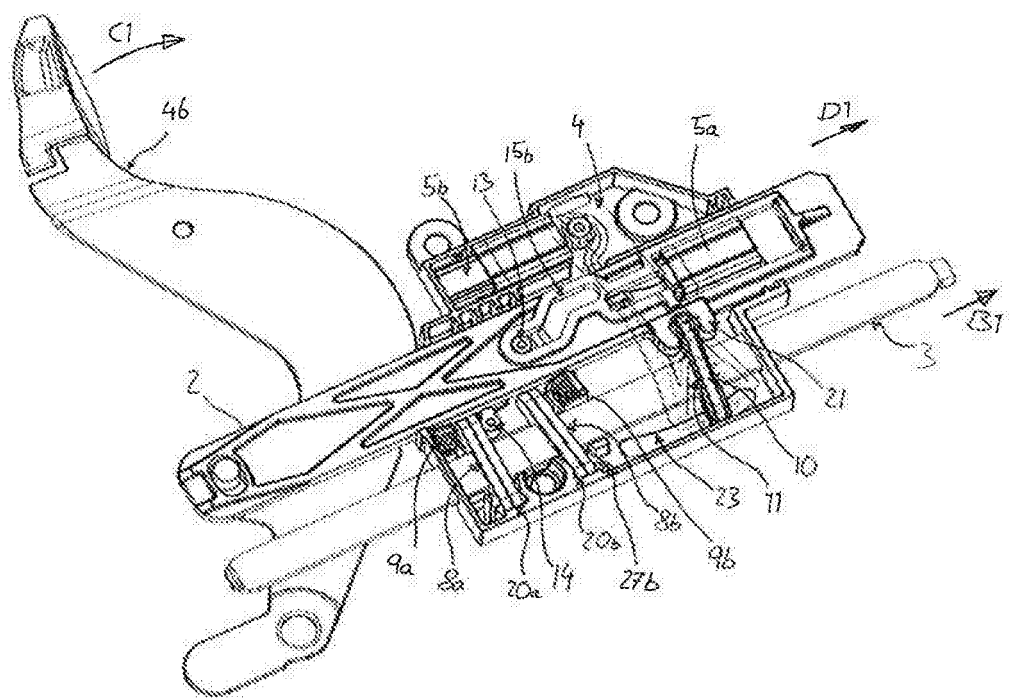


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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