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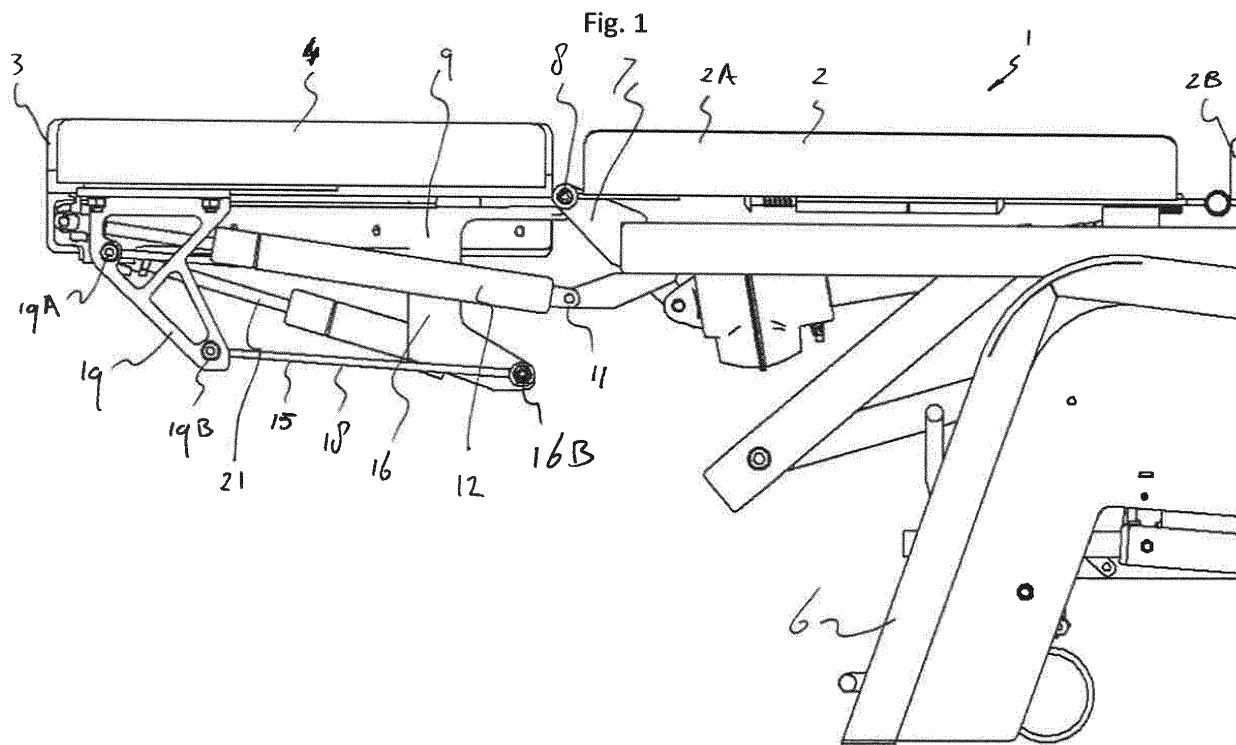
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(54) **TREATMENT COUCH**

(57) Treatment couch comprising a body support and adjustable head and arm supports, wherein both arm supports are supported by a floating link of a four bar linkage allowing adjustment of the position of the arm supports.



Description

[0001] The present invention relates to a treatment couch comprising adjustable head and arm supports. Such treatment couches are for example used for physiotherapeutic treatment of a patient.

[0002] A drawback of the present treatment couches is that it is difficult for a patient to find a comfortable position for his or her arms after adjustment of the head support. It is an object of the invention to overcome this problem.

[0003] The object of the invention is achieved with a treatment couch comprising a body support and adjustable head and arm supports. The arm supports are supported by a floating link of a four bar linkage allowing adjustment of the position of the arm supports.

[0004] In a four bar linkage two opposite ends of a fixed ground link are hingingly connected to respective crank links hingingly supporting a floating link or coupler. It has been found that using a four bar linkage allows easy and accurate adjustment of the arm supports.

[0005] In a specific embodiment, the head support comprises the ground link of the four bar linkage. This way, the arm supports are movable together with the head support but also relative to the head support.

[0006] The head support may be connected to a front end of a main frame supporting the body support in an adjustable manner, e.g., in a hingeable manner.

[0007] In a particularly advantageous embodiment, the four bar linkage may be a parallelogram linkage. This makes it possible to move the arm supports between two positions in such way that they maintain their parallel orientation relative to the head support. Other types of four bar linkages can also be used, if so desired.

[0008] The ground link may for example comprise a downwardly extending flange or arm of the head support. Similarly, the floating link may comprise downwardly extending flanges or arms of the respective arm supports. Downwardly extending ground and floating links offer a suitable movement path for adjustment of the arm support.

[0009] To guide movement of the head support during adjustment the treatment couch may for example comprise one or more gas springs between the head support and the main frame. Similarly, to guide movement of the arm supports during adjustment the treatment couch may for example comprise one or more gas springs between the head support and the respective arm supports. The gas springs may for example be blockable gas springs allowing to block the arm supports in any intermediate position.

[0010] The arm supports may for example be movable between a first position with the arm supports being at the level of the head support, and a second position with the arm supports being parallel to the head support at a distance below the head support.

[0011] In a specific embodiment, the positions of the head and arm supports can be jointly adjustable, e.g.,

hingeable, when the arm supports are at the level of the head support.

[0012] In the second position of the arm supports the vertical distance between the head support and the arm supports may for example be about 120 - 350 mm, e.g., about 200 - 300 mm, e.g., about 250 mm.

[0013] The arm supports have rear ends which, at least in some embodiments, are below the front edge of the body support when the arm supports are in their second position. This offers full support of the arms from the patient's elbow.

[0014] The arm supports may be jointly adjustable or they may be separately adjustable. For example, the left and right arm supports may be linked and be adjustable by a single handle with a single gas spring.

[0015] The treatment couch typically comprises two parallel arm supports at both opposite sides of the head support, in a substantially symmetrical configuration.

[0016] The invention will be further explained with reference to the accompanying drawings.

Figure 1: shows an exemplary embodiment of a treatment couch in side view;

Figure 2: shows the couch of Figure 1 with the arm supports in a second position;

Figure 3: shows the couch of Figure 1 with the head support tilted downward;

Figure 4: shows the couch of Figure 1 with the head support tilted upward;

Figure 5: shows a bottom view of the treatment couch of Figure 1.

[0017] Figure 1 shows a treatment couch or table 1 comprising a body support 2, a head support 3 and two arm supports 4 at two opposite sides of the head support 3 in a symmetrical arrangement. In Figure 1 the head and arm supports 3, 4 are aligned and coplanar with the body support 2, the head support 3 being mainly hidden from view by the shown arm support 4.

[0018] The body support 2 is carried by a main frame 6 and has a torso section 2A for supporting a patient's torso, and a leg section 2B for supporting the patient's legs. At a front side the main frame 6 comprises a flange 7 with an upper hinge joint 8 connecting to a frame 9 of the head support 3 and a lower hinge joint 11 connecting to one end of a first gas spring 12 facilitating upward and downward movement of the head and arm supports 3, 4. The opposite end of the gas spring 12 is hingingly connected to the frame 9 of the head support 3. This makes it possible to tilt the head support between the upwardly tilted position shown in Figure 4 and a downwardly tilted position, as shown in Figure 3. If the gas spring 12 is a blockable gas spring, the head support 3 can be blocked in any desirable intermediate position.

[0019] The arm supports 4 are connected to the head support 3 by means of a four bar linkage 15. In the shown embodiment, the four bar linkage is a parallelogram linkage 15, as is particularly shown in Figure 2 and Figure

5. The parallelogram linkage 15 comprises a ground link, formed by two symmetrically arranged and downwardly extending flanges 16 of the frame 9 linked by a bar 16C, two symmetrically arranged upper crank links 17, two symmetrically arranged lower crank links 18 and a floating link 19, also formed by two symmetrically arranged and downwardly extending flanges 19. The flanges 19 are linked by a first rotating axle 19C and a second rotating axle 19D. Both upper crank links 17 extend between the first rotating axle 19C and a first hinging point 16A on the respective flange 16. Both lower crank links 18 extend between the second rotating axle 19D and a second hinging point 16B on the respective flange 16. Notwithstanding the symmetrical double geometry of the four bar linkage 15, the linkage will act as a single four bar linkage.

The four bar linkage does not necessarily have to be a parallelogram linkage. For example, in alternative embodiments the lengths of the crank links 17, 18 does not have to be the same. Neither does the distance between the hinge points 16A and 16B be the same as the distance between hinge points 19A and 19B. Opposite links of the linkage do not need to be parallel and the angles between the links may vary.

[0020] The parallelogram linkage 15 allows adjustment of the position of the arm supports 4 relative to the head support 3 between a coplanar first position, shown in Figure 1, and a downward position, shown in Figure 2. A second gas spring 21 extends between the frame 9 of the head support 3 and the frame 19 of the respective arm support 4. One end of the second gas spring 21 is hingingly connected to the downwardly extending flange 16 of the head support frame 9, at the same hinge joint as the lower crank link 18. The opposite end of the gas spring 21 is hingingly connected to the flange 19 downwardly extending from the respective arm support 4 at the upper hinge joint 19A.

[0021] When the head support 3 is horizontal, the arm supports 4 are movable between the position of Figure 1 with the arm supports 4 being coplanar with the head support 3, and the position of Figure 2 with the arm supports 4 still being parallel to the head support 3, but now offset at a distance below the head support 3. In both positions the head and arm supports can be tilted downward jointly (see, e.g., Figure 3).

support, wherein the head support comprises a ground link of the four bar linkage.

3. Treatment couch according to claim 2, wherein the four bar linkage is a two-bar/four-point linkage, such as for example a parallelogram linkage.
4. Treatment couch according to claim 2 or 3, wherein the ground link comprises a downwardly extending flange or arm of the head support.
5. Treatment couch according to claim 2, 3 or 4 comprising at least one gas spring between the head support and the main frame.
6. Treatment couch according to claim 2, 3, 4 or 5, comprising at least one gas spring between either one of the arm supports and the head support.
7. Treatment couch according to any preceding claim, wherein the arm supports are movable between a first position with the arm supports being at the level of the head support, and a second position with the arm supports being at a distance below the head support.
8. Treatment couch according to claim 7, wherein the positions of the head and arm supports are jointly adjustable, e.g., hingeable, when the arm supports are coplanar with the head support.

Claims

1. Treatment couch comprising a body support and adjustable head and arm supports, wherein both arm supports are supported by a floating link of a four bar linkage allowing adjustment of the position of the arm supports.
2. Treatment couch according to claim 1, wherein the head support is adjustably, e.g., hingingly connected to a front end of a main frame supporting the body

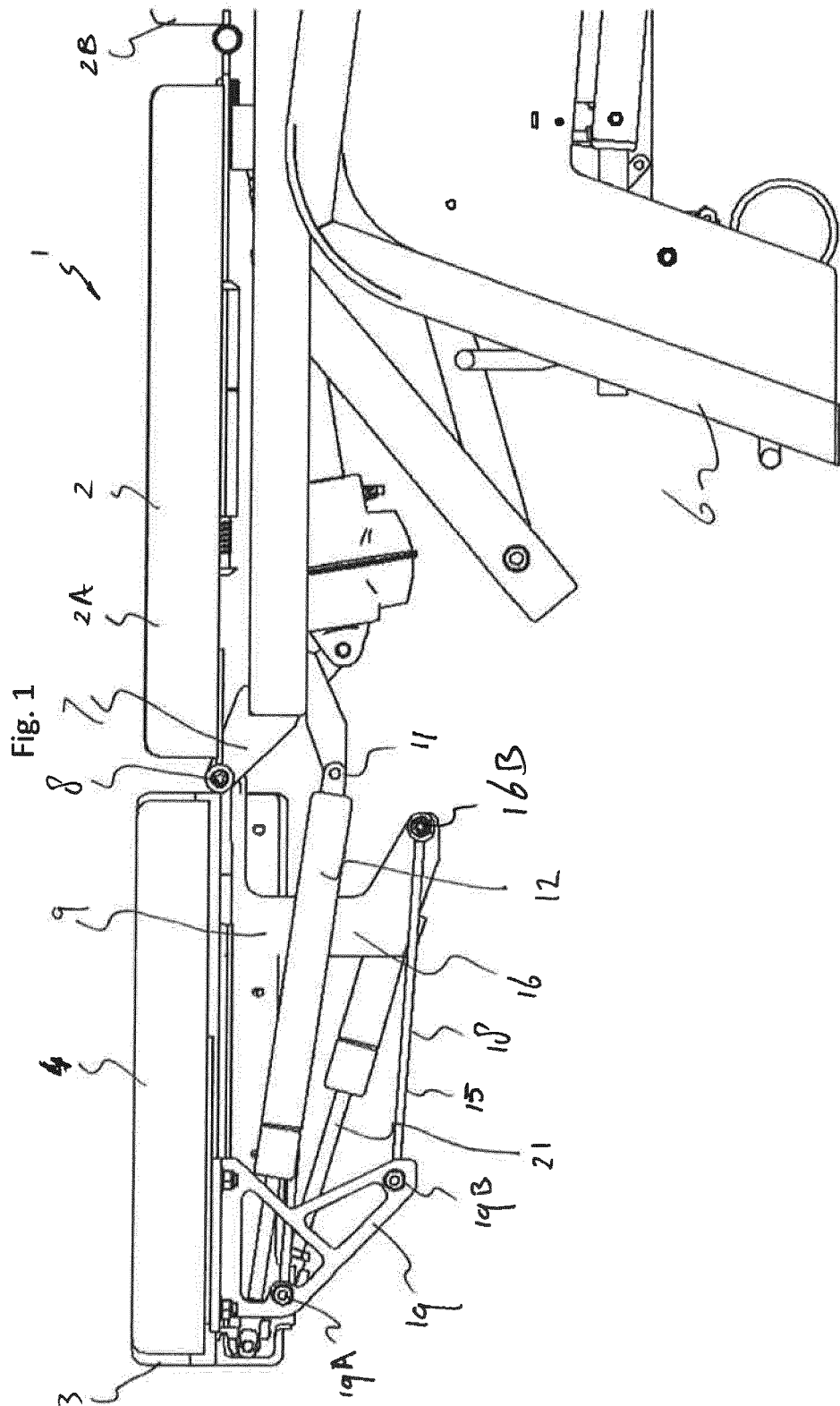


Fig. 2

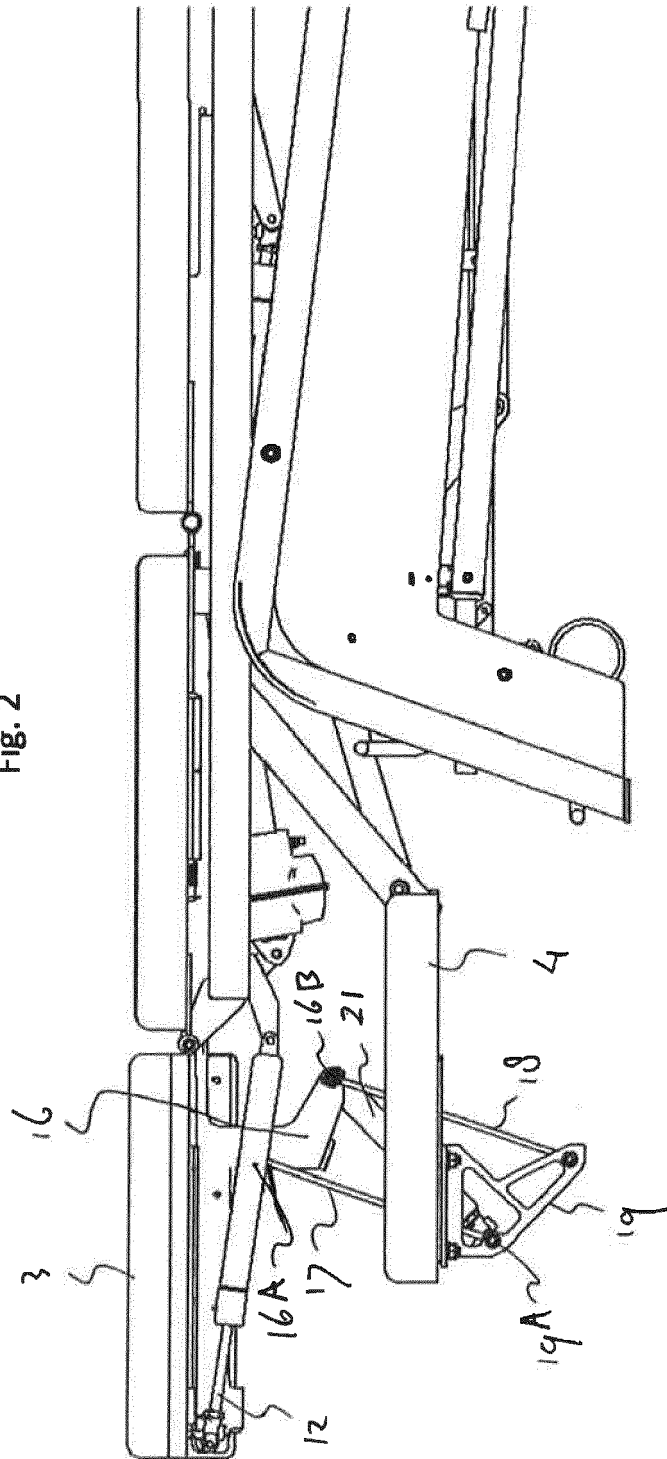
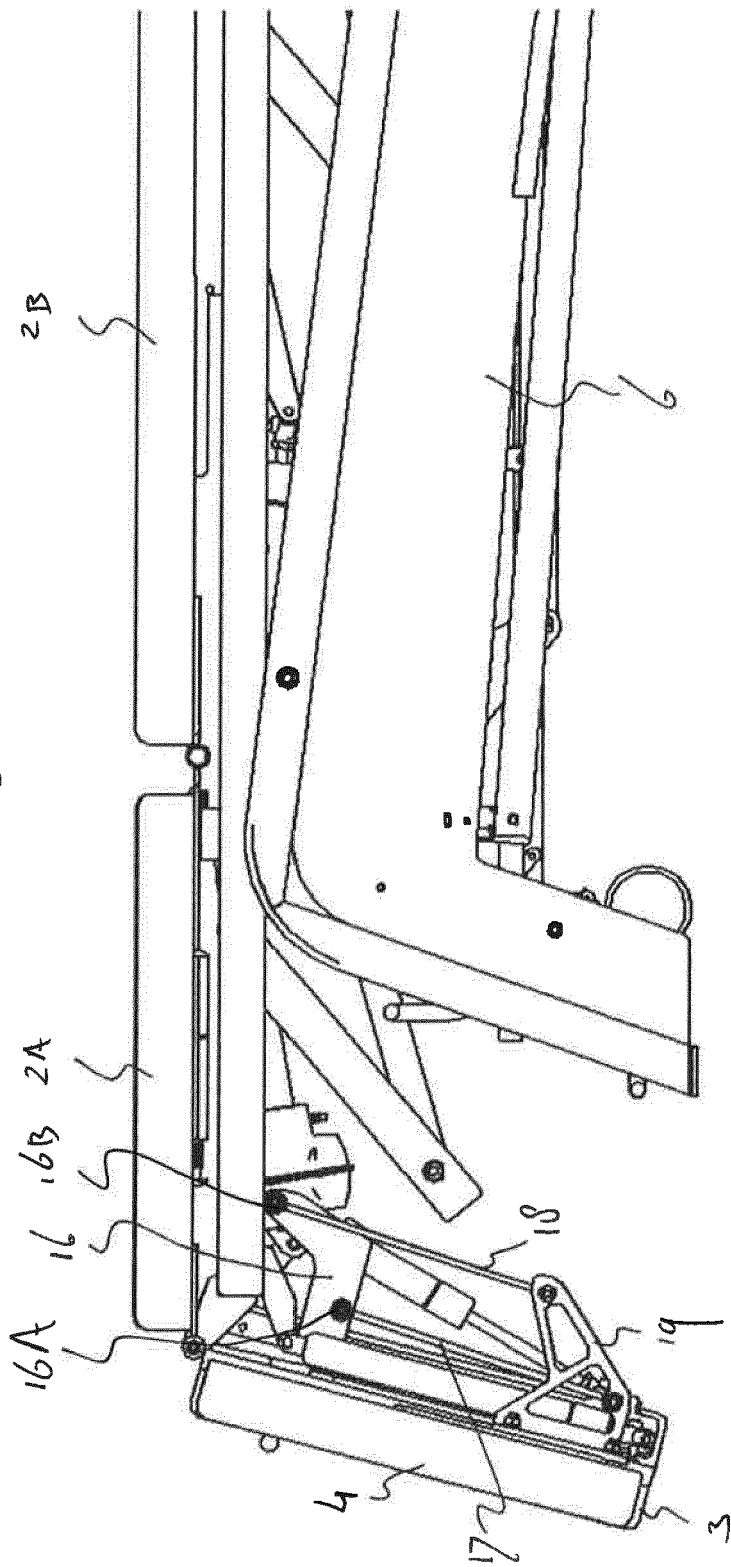


Fig. 3



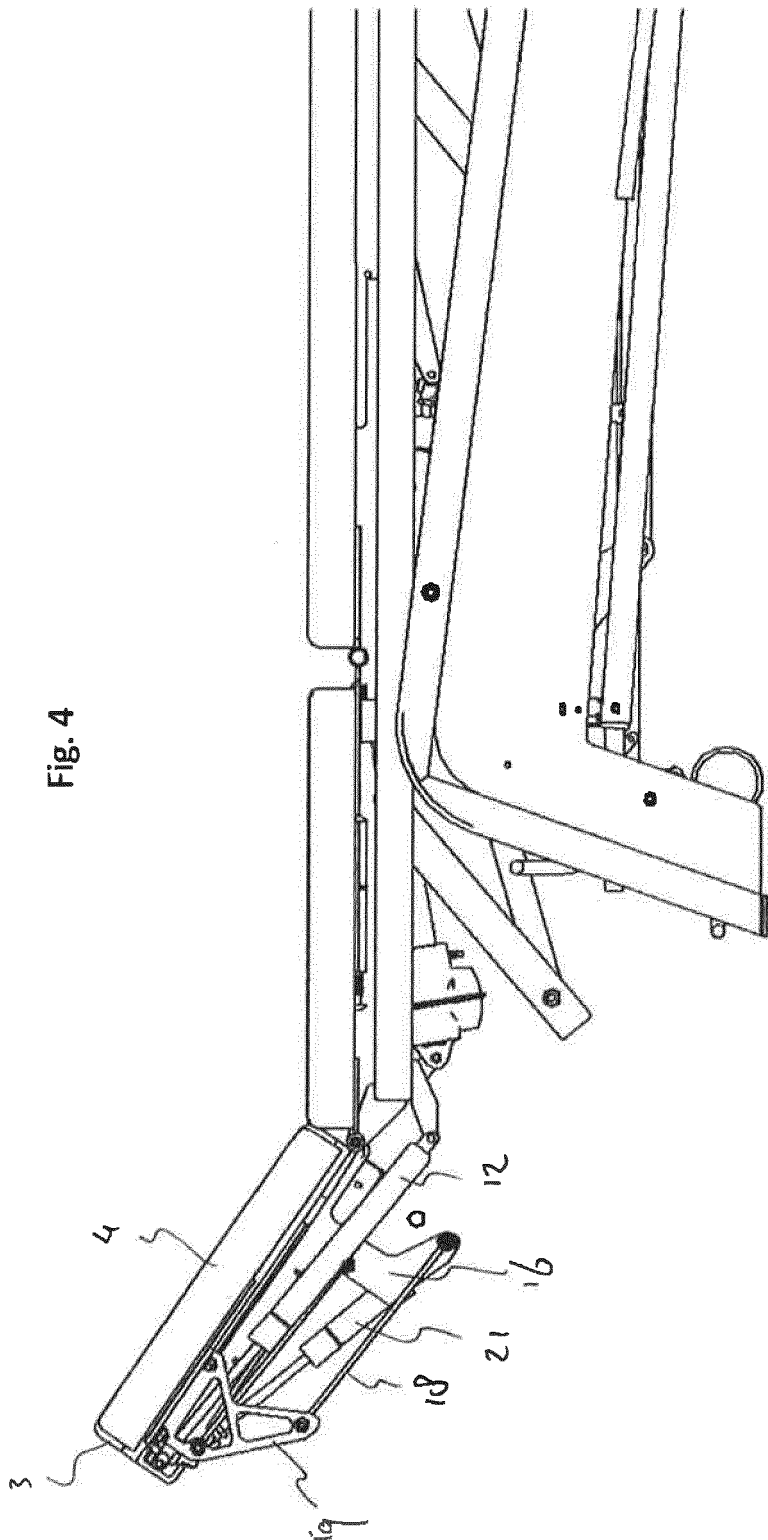
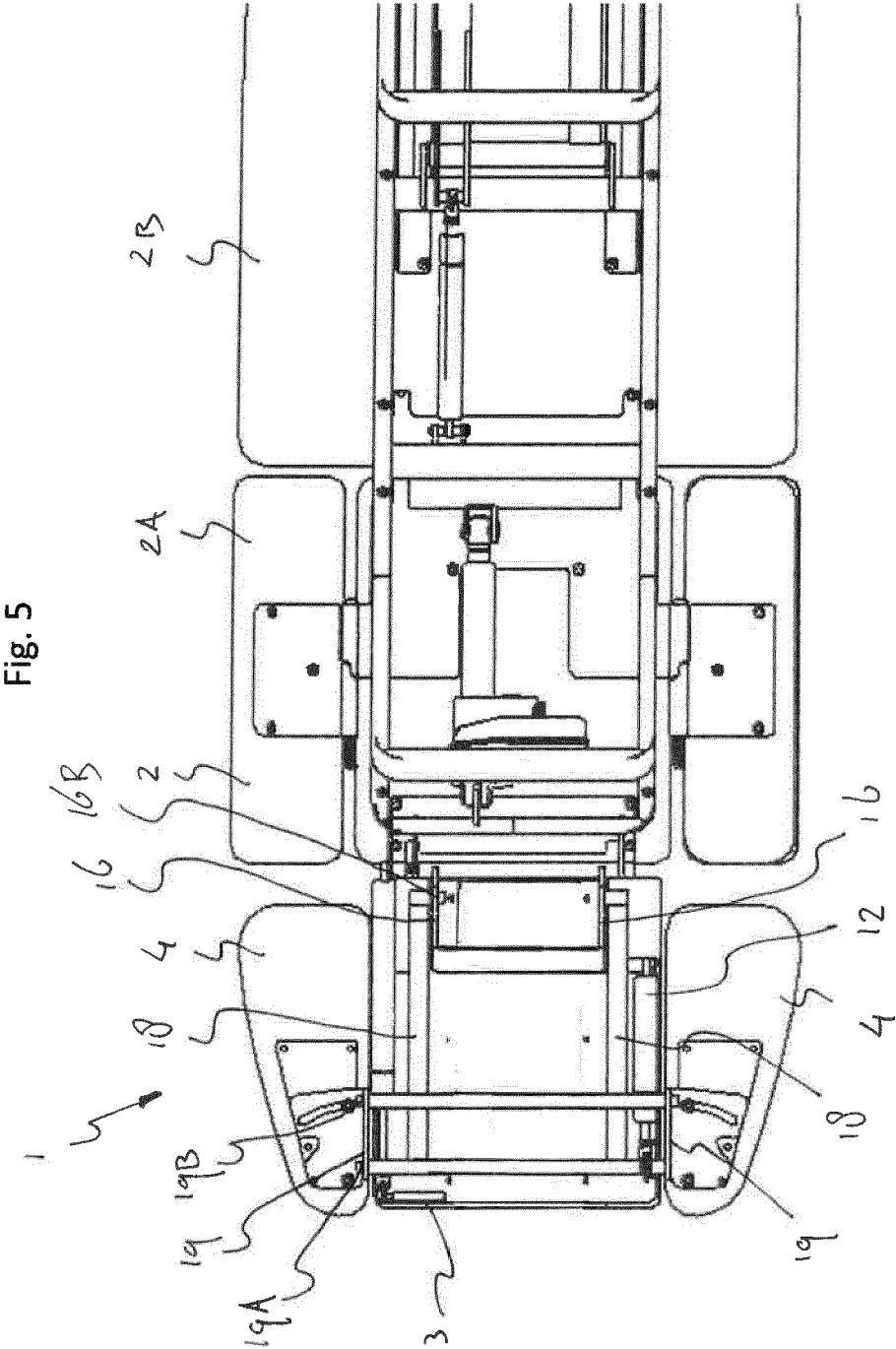


Fig. 4





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 Application Number
 EP 16 19 6862

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 April 2017	Examiner Kousouretas, Ioannis
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 16 19 6862

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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