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(54) **A base for a bed**

Bettgestell

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Description

Technical field

[0001] The present inventive concept relates to a base for a bed, the base comprising a frame and a mattess support.

Background

[0002] For comfort- as well as health-related reasons, beds may be provided with an adjustment function allowing the inclination of a back and head section of the bed to be varied, typically between a horizontal orientation and an upright orientation. The adjustable portion of the bed may thereby act as a back- and head-rest for a user, for example, half-lying or sitting in the bed.

[0003] US4674140 discloses an articulated bedspring and mattress for use with such articulated bedspring.

[0004] However while the inclination of a back and head section of a bed is increased, so is a folding angle of the mattress. As a consequence, bringing a back and head section of a bed towards a more upright orientation may result in the mattress protruding beyond an end (typically a head end) of the mattress support or the frame. This may be referred to as a "mattress overflow" and may result in a loss of mattress support for the protruding mattress portion. It may also contribute to the tendency of the sheet or bed linen becoming loose at the head end.

Summary of the inventive concept

[0005] An objective of the present inventive concept is to address this issue of such prior art beds.

[0006] According to an aspect of the inventive concept there is hence provided a base for a bed, the base comprising a frame and a mattress support extending along a longitudinal direction of the frame and including:

a first set of mattress supporting elements , a second set of mattress supporting elements and a third set of mattress supporting elements,

wherein the first set of mattress supporting elements is pivotable, in relation to the frame, and movable along the longitudinal direction, and wherein the first set of mattress supporting elements is arranged to be moved along the longitudinal direction such that a separation, along the longitudinal direction, between the second set of mattress supporting elements and a mattress supporting element of the first set of mattress supporting elements which is closest to the third set of mattress supporting elements is increased while an inclination of the first set of mattress supporting elements is increased, and

wherein the third set of mattress supporting elements is arranged to be moved along the longitudinal direction of the frame such that a separation, along the longitudinal direction, between said mattress supporting element which is closest to the third set of mattress supporting elements and the third set of mattress supporting elements, and a separation, along the longitudinal direction, between the third set of mattress supporting elements and the second set of mattress supporting elements, are increased, while the inclination of the first set of mattress supporting elements is increased.

[0007] According to the inventive base, a longitudinal position of the first set of mattress supporting elements and a longitudinal position of the third set of mattress supporting elements may change while the inclination of the first set of mattress supporting elements is increased. Thus, the longitudinal position of the first set of mattress supporting elements and the longitudinal position of the third set of mattress supporting elements may be dependent on, or a function of, an angle of the inclination of the third set of mattress supporting elements.

[0008] Arranging the first set of mattress supporting elements to move such that the mattress supporting element of the first set of mattress supporting elements which is closest to the third set of the mattress supporting elements (hereinafter also referred to as "said mattress supporting element of the first set of mattress supporting elements") becomes increasingly separated from the second set of mattress supporting elements enables mattress overflow, which otherwise could occur, to be limited or even eliminated. Moreover, the movement of the third set of mattress supporting elements allows for a gradual compensation for the local reduction of mattress support between the first set of mattress supporting elements and the second set of mattress supporting elements, which is a consequence of the increasing separation between said mattress supporting element of the first set of mattress supporting elements and the second set of mattress supporting elements.

[0009] Hence, the inventive base enables an adequate mattress support to be maintained even for a relatively great displacement of the first set of mattress supporting elements (i.e. a relatively wide gap between the mattress supporting element of the first set of mattress supporting elements which is closest to the third set of mattress supporting elements and the second set of mattress supporting elements). The position of this gap may for example correspond to the mid- or hip portion of a user of the bed. Consequently, the first set of mattress supporting elements may be displaced along the longitudinal direction of the frame to such an extent that mattress overflow is eliminated or at least reduced while maintaining support for the mid- or hip portion of the user.

[0010] In the present disclosure, the longitudinal direction of the frame may be defined as a direction from a foot end of the frame towards a head end of the frame. Thus, the first set of mattress supporting elements may be arranged to move towards the head end of the frame while the inclination of the first set of mattress supporting elements is increased. Correspondingly, the third set of

mattress supporting elements may be arranged to move towards the head end of the frame while the inclination of the first set of mattress supporting elements is increased.

[0011] The first set of mattress supporting elements may be arranged at a longitudinal position along the frame corresponding to an upper section of the mattress support. The upper section may also be referred to as a back and head section of the mattress support. The second set of mattress supporting elements may be arranged at a longitudinal position along the frame corresponding to a lower section of the mattress support. The lower section may also be referred to as a leg section of the mattress support. The third set of mattress supporting elements may be arranged at a longitudinal position along the frame corresponding to a mid section of the mattress support. The mid section may also be referred to as a hip or section of the mattress support.

[0012] Each of the first, second and third set of mattress supporting elements includes one or more supporting elements, each supporting element presenting a mattress supporting surface for bearing against an underside of a mattress.

[0013] A supporting element may extend in a direction transverse to the longitudinal direction of the frame. A supporting element may extend between mutually opposite long sides of the frame.

[0014] By the first set of mattress supporting elements being pivotable in relation to the frame, an inclination of the first set of mattress supporting elements with respect to the second set of mattress supporting elements may be adjusted.

[0015] The inclination of the first set of mattress supporting elements may be adjustable through an adjustment range, wherein a first end point of the adjustment range corresponds to a lowered orientation to and a second end point of the adjustment range corresponds to a raised orientation. In use of the base, the lowered orientation may correspond to a horizontal, or substantially horizontal, orientation. The raised orientation may correspond to a sitting or upright orientation.

[0016] Preferably, the third set of mattress supporting elements is arranged to continuously support a mattress, throughout the inclination adjustment range (e.g. extending from the above-mentioned the first end point to the above-mentioned second end point) of the first set of mattress supporting elements. Hence, the third set of mattress supporting elements may have a corresponding function as the other mattress supporting elements. This also enables a rational production process since existing bases with an adjustment function may be provided with set of movable mattress supporting elements.

[0017] The movement of the first set of mattress supporting elements along the longitudinal direction may be mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements. Thereby, no separate driving means for the movement of the first set of mattress supporting elements is required. Instead the movement may be driven by a same driving means as used for driving the adjustment of the inclination.

[0018] The movement of the third set of mattress supporting elements is mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements. Thereby, no separate driving means for the movement of the third set of mattress supporting elements is required. Instead the movement of the third set of mattress supporting elements may be driven by a same driving means as used for driving the adjustment of the inclination. The movement of the third set of mattress supporting elements may be mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements by a direct coupling between the movement of the third set of mattress supporting elements and a mechanism for adjusting the inclination of the first set of mattress supporting elements. Alternatively, the movement of the third set of mattress supporting elements may be mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements via the movement of the first set of mattress supporting elements.

[0019] The movement of the third set of mattress supporting elements is mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements such that, while the inclination of the first set of mattress supporting elements falls below a predetermined threshold angle, a longitudinal position of the third set of mattress supporting elements is fixed while the inclination of the first set of mattress supporting elements is increased, and while the inclination of the first set of mattress supporting elements exceeds the predetermined threshold angle, the third set of mattress supporting elements moves along the longitudinal direction while the inclination of the first set of mattress supporting elements is increased. Thus, the position of the third set of mattress supporting elements may be fixed during an initial raising of the first set of mattress supporting elements and, as the separation between the mattress supporting element of the first set of mattress supporting elements which is closest to the third set of mattress supporting elements and the second set of mattress supporting elements exceeds a predetermined limit, the third set of mattress supporting elements may begin to move along frame.

[0020] According to one embodiment the base comprises a coupling element arranged to pull the third set of mattress supporting elements along the frame while the inclination of the first set of mattress supporting elements is increased. This provides a reliable and relatively inexpensive means for causing the third set of mattress supporting elements to move when the inclination of the first set of mattress supporting elements is adjusted. In particular, the coupling element may pull the third set of mattress supporting elements towards a head end of the frame while the inclination of the first set of mattress supporting element is increased. Conversely, the coupling element may be arranged to push the third set of mattress

supporting elements towards a foot end of the frame while the inclination of the first set of mattress supporting elements is decreased.

[0021] The base may further comprise a support member which is arranged on the frame and movable along the longitudinal direction, wherein the third set of mattress supporting elements is carried by the support member, and wherein the coupling element is connected to the support member and arranged to pull the support member along the frame while the inclination of the first set of mattress supporting elements is increased. Thereby, the coupling element may pull the third set of mattress supporting elements along the frame. The coupling element may be pivotally connected to the support member. The coupling element may further be pivotally connected to a pivoting member which is arranged to pivot when the first set of mattress supporting elements pivots and pull the coupling element along the longitudinal direction.

[0022] A rate of movement of the third set of mattress supporting elements in relation to the frame may be less than a rate of movement of the first set of mattress supporting elements in relation to the frame. Thereby the third set of mattress supporting elements may lag behind the movement of the first set of mattress supporting elements.

[0023] The third set of mattress supporting elements may be arranged to trace a straight path while the inclination of the first set of mattress supporting elements is increased, the straight path having a main component which is parallel to the longitudinal direction of the frame. The straight path may be parallel to a plane in which the third set of mattress supporting elements supports the mattress. Thus, the third set of mattress supporting elements may support the mattress in a same plane while the inclination of the first set of mattress supporting elements is varied. Generally, during use of the frame, the straight path may be parallel to a horizontal plane.

[0024] The base may comprise guide means provided along a side support structure of the frame and arranged to guide a movement of the third set of mattress supporting elements along the side support structure. Especially, the guide means may be arranged to guide the movement along the above-mentioned straight path. The guide means may include a guide track, a guide rail or a guide groove.

[0025] The base may further comprise a support member which engages with the guide means and is movable along the guide means, and wherein the third set of mattress supporting elements is carried by the support member. The third set of mattress supporting elements may thus be moved along the longitudinal direction by causing the support member to move.

[0026] According to one embodiment the base comprises a pivotable support structure arranged to support the first set of mattress supporting elements and being pivotally connected to a side support structure of the frame, wherein a pivot connection between the pivotable support structure and the side support structure of the frame is arranged to move along the longitudinal direction of the frame while the inclination of the first set of mattress supporting elements is increased. During the movement of the pivot connection, a separation, along the longitudinal direction, between the pivot connection and the second set of mattress supporting elements may increase. This provides a reliable and simple mechanism for coupling an adjustment of the inclination of the first set of mattress supporting elements to the movement of the first set of mattress supporting elements along the longitudinal direction. The pivotable support structure may include a set of arms, for example a pair of arms arranged on opposite side support structures of the frame.

[0027] The base may further comprise guide means provided along a side support structure of the frame and arranged to guide a movement of the pivot connection between the pivotable support structure and the side support structure along the guide means. The guide means for the pivot connection may be the same as the guide means for the third set of mattress supporting elements, or a separate guide means. The guide means may include a guide track, a guide rail or a guide groove.

[0028] The pivot connection between the pivotable support structure and the side support structure may be arranged to trace a straight path while the inclination of the first set of mattress supporting elements is increased, the straight path having a main component which is parallel to the longitudinal direction of the frame. The straight path may be parallel to a plane in which the third set of mattress supporting elements supports the mattress. Generally, during use of the frame, the straight path may be parallel to a horizontal plane.

[0029] The base may further comprise a coupling member which is pivotally connected to the frame and to the pivotable support structure and arranged to cause the pivot connection between the pivotable support structure and the side support structure to move along the longitudinal direction when the inclination of the pivotable support structure is increased. The coupling member may be arranged to transfer a torque acting on the pivotable support structure to a force causing the pivot connection to move along the longitudinal direction. This provides a reliable and relatively inexpensive means for causing the pivot connection to move when the inclination of the first set of mattress supporting elements is adjusted.

[0030] According to one embodiment the base comprises a pivotable support structure arranged to support the first set of mattress supporting elements and the base further comprising a pair of angled links which are pivotally connected to a side support structure of the frame and to the pivotable support structure, wherein the pair of links are arranged to cooperate to allow the pivotable support structure to pivot in relation to the frame and simultaneously move along the longitudinal direction while the inclination of the first set of mattress supporting elements is increased. This provides a reliable and simple mechanism for coupling an adjustment of the inclination

of the first set of mattress supporting elements to the movement of the first set of mattress supporting elements along the longitudinal direction. The pivotable support structure may include a set of arms, for example a pair of arms arranged on opposite side support structures of the frame. The links of the pair may be pivotally connected to the side support structure at two different positions. The links of the pair may be pivotally connected to the pivotable support structure at two different positions.

[0031] A position of at least the mattress supporting element of the second set of mattress supporting elements which is closest to the third set of mattress supporting elements may be fixed in relation to the frame, i. e. while the inclination of the first set of slats is increased. By limiting the number of mattress supporting elements which move along the longitudinal direction wear caused by relative movement between the mattress supporting elements and the mattress may be limited. Moreover, the amount of friction which needs to be overcome during adjustment of the inclination of the first set of mattress supporting elements may be limited.

[0032] Especially, the second set of mattress supporting elements may be arranged to be stationary in relation to the frame while the inclination of the first set of mattress supporting elements is increased.

[0033] Alternatively, an inclination of at least a subset of the second set of mattress supporting elements is adjustable in relation to the third set of slats and/or the frame. The subset of mattress supporting elements may correspond to a lower or leg section of the mattress support. Thereby a leg section of the mattress support may be adjustable. Preferably, the lower section is adjustable independently from the mid and upper section of the mattress support (i.e. the first and third set of mattress supporting elements). Advantageously, during adjustment of the inclination of said at least a subset of the second mattress supporting elements, the longitudinal position of a pivot axis for said subset is fixed in relation to the frame.

Brief description of the drawings

[0034] The above, as well as additional objects, features and advantages of the present inventive concept, will be better understood through the following illustrative and non-limiting detailed description of preferred embodiments of the present inventive concept, with reference to the appended drawings, where like reference numerals will be used for like elements, wherein:

Figs 1a-c are perspective views of a base for a bed at different inclinations of a back and head section of the base; and

Figs 2a-c are perspective views of a section of a base for a bed at different inclinations of a back and a head section of the base.

Fig. 3 is a view of a cross section of the base in Figs 2a-c.

Figs 4a-c are side views of a portion of a base for a bed at different inclinations of a back and head section of the base.

Detailed description of preferred embodiments

[0035] Figs 1a-c illustrate a base 100 for a bed. The base 100 includes a frame 102 and a mattress support 104 for supporting a mattress, which has been omitted from the drawings to improve the intelligibility thereof. The frame 102 and the mattress support 104 may generally be dimensioned to support a single bed mattress, or even two bed mattresses placed side by side.

[0036] The frame 102, which also may be referred to as a framework, acts as a support structure for the mattress support 104 and includes two side support structures extending along the long sides of the base 100, and optionally a head end support structure and a foot end support structure extending along the short sides of the base 100. The main load bearing parts of the frame 102 may typically be made of wood and/or metal, however composite materials is also possible. As is generally known in the art, the base 100 may further be provided with legs, a head board and/or a foot board. These optional elements may be connected to the frame 102 e.g. by screwing, bolting or the like.

[0037] The mattress support 104 extends along the frame 102, along a direction defined from the foot end to the head end of the base 100 or, correspondingly, from the foot end to the head end of the frame 102. The foot-head direction may in the following also be referred to as a longitudinal direction of the base 100 or the frame 102. The mattress support 104 includes a first set of mattress supporting elements 110, a second set of mattress supporting elements 120 and a third set of mattress supporting elements 130. Each set of mattress supporting elements 110, 120, 130 comprises a number of mattress supporting elements. The particular number of mattress supporting elements of each set 110, 120, 130 shown in Figs 1a-c only constitutes one example and both greater or lower numbers of mattress supporting elements are possible. The mattress supporting elements of the sets of mattress supporting elements 110, 120, 130 may typically be made of wood and/or metal, however composite materials is also possible.

[0038] The sets of mattress supporting elements 110, 120, 130 are distributed along the longitudinal direction of the frame 102. The first set of mattress supporting elements 110 is arranged to support a back and head section of the mattress (or analogously, a back and head portion of a user of the bed). The second set of mattress supporting elements 120 is arranged to support a leg section of the mattress (or analogously, a leg portion of a user of the bed).The third set of mattress supporting elements 130 is arranged to support a mid or hip section of the mattress (or analogously, a mid or hip portion of a user of the bed).

[0039] The mattress supporting elements of the sets

110, 120, 130 extend in parallel to each other and in a direction transverse to the longitudinal direction of the frame 102. Each mattress supporting element is carried at its respective ends by the mutually opposite long sides (i.e. the side support structures) of the frame 102. Each mattress supporting element presents a surface for bearing against an underside of a mattress. As illustrated, each mattress supporting element may be formed as a slat and present a continuous mattress supporting surface extending between its opposite ends. However, a mattress supporting element may alternatively present two or more discrete mattress supporting surfaces, distributed transverse to the longitudinal direction of the frame 102. The discrete surfaces may for example be provided by a row of separate units (e.g. panels or pads) arranged along a beam extending transverse to the longitudinal direction of the frame 102. The beam may in turn be carried at its respective ends by the mutually opposite long sides of the frame 102. Additionally, each one of the sets of mattress supporting elements 110, 120, 130 may include a combination of mattress supporting elements of the above-described types (e.g. a combination of one or more slats and one or more rows of panels or pads).

[0040] As may be seen in Figs 1b and 1c the first set of mattress supporting elements 110 is pivotable in relation to the frame 102. Thereby, an inclination of the first set of mattress supporting elements 110 with respect to the second set of mattress supporting elements 120 and the third set of mattress supporting elements 130 is adjustable. In connection with Figs 1a-c, "an inclination" of the first set of mattress supporting elements 110 may be understood as an inclination with respect to a horizontal plane. The inclination of the first set of mattress supporting elements 110 is adjustable throughout an adjustment range extending from, what may be referred to as, a lowered orientation to, what may be referred to as, a raised orientation. As illustrated in Figs 1a-c, the lowered orientation may, in use of the base 100, correspond to a horizontal, or substantially horizontal, orientation. In particular, the orientation in Fig. 1a may correspond to a lying position for a user, whereas the orientation in Fig. 1c may correspond to a sitting or upright orientation for the user. Fig. 1b may correspond to an orientation intermediate the orientations in Figs 1a and 1c.

[0041] The base 100 comprises a support structure 140 carrying or supporting the first set of mattress supporting elements 110. The support structure 140 is pivotally connected to the side support structure of the frame 102 and will therefore in the following be referred to as the pivotable support structure 140. As illustrated, the pivotable support structure 140 may include a pair of arms however it may also be designed as a lattice of arms or beams, or as a stiff panel pivotally connected to the side support structures of the frame 102 and coextensive with the longitudinal and width dimension of the first set of mattress supporting elements 110 and carrying the first set of mattress supporting elements 110.

[0042] The inclination of the first set of mattress supporting elements 110 may be controlled by electrical means, such as an electric motor or an hydraulically or pneumatically controlled piston acting (e.g. by pushing) on the pivotable support structure 140. A user may for example increase or reduce the inclination by pressing an appropriate button on a remote control or the like.

[0043] As may be seen in Fig 1c the first set of mattress supporting elements 110 is arranged to move, i.e. be displaced, along the longitudinal direction such that a separation between the mattress supporting element of the first set of mattress supporting elements 110, which is closest to the third set of mattress supporting elements 130, and the second set of mattress supporting elements 120 is increased while the inclination of the first set of mattress supporting elements 110 is increased. Thereby, the greater an inclination of the first set of mattress supporting elements 110, the greater a separation (along the longitudinal direction of the frame 102), between said mattress supporting element of the first set of mattress supporting elements 110 and the second set of mattress supporting elements 120 will be. As a result, a width (i.e. along the longitudinal direction of the frame 102) of a gap between said mattress supporting element of the first set of mattress supporting elements 110 and the second set of mattress supporting elements 120 will increase. As will be described in more detail with reference to Figs 2a-c, the movement of the first set of mattress supporting elements 110 may be mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements 110. However, it would also be possible to control the longitudinal position of the first set of mattress supporting elements 110 using separate means for varying a position of a pivot connection between the frame 102 and the first set of mattress supporting elements 110, for example using a separate electric motor pushing/pulling the pivotable support structure 140 along the frame 102 based on an pivot angle of the first set of mattress supporting elements 110, as measured by an electromechanical actuator, a sensor or the like.

[0044] As may be seen in Figs 1c, also the third set of mattress supporting elements 130 is arranged to be moved or displaced along the longitudinal direction of the frame 102 while the inclination of the first set of mattress supporting elements 110 is increased. Accordingly, Figs 1a-c show the third set of mattress supporting elements 130 at different longitudinal positions along the frame 102. As illustrated in Fig 1c, the movement of the third set of mattress supporting elements 130 along the longitudinal direction of the frame 102 is such that, the greater an inclination of the first set of mattress supporting elements 110, the greater a separation D1 (along the longitudinal direction of the frame 102) between the mattress supporting element of the first set of mattress supporting elements 110, which is closest to the third set of mattress supporting elements 130, and the third set of mattress supporting elements130, and also a separation

D2 (along the longitudinal direction of the frame 102) between the third set of mattress supporting elements 130 and the second set of mattress supporting elements 120, will be. D1 may be referred to as a longitudinally extending gap between the first set of mattress supporting elements 110 and the third set of mattress supporting elements 130. D2 may be referred to as a longitudinally extending gap between the third set of mattress supporting elements 130 and the second set of mattress supporting elements 120. The third set of mattress supporting elements 130 may continuously support the mattress within the gap of increasing width between the first set of mattress supporting elements 110 and the second set of mattress supporting elements 120, throughout the inclination adjustment range of the first set of mattress supporting elements 110. In other words, the movement of the third set of mattress supporting elements 130 partitions the gap between the first set of mattress supporting elements 110 and the second set of mattress supporting elements 120 into the two sub-gaps D1 and D2, on opposite sides of the third set of mattress supporting elements 130. As a preferred example, the separation D1 may be equal to the separation D2, at least through a sub range of the inclination adjustment range of the first set of mattress supporting elements 110, but optionally throughout the inclination adjustment range thereof.

[0045] As will be described in more detail with reference to Figs 2a-c, the movement or displacement of the third set of mattress supporting elements 130 may be mechanically coupled to the adjustment of the inclination of the first set of mattress supporting elements 110. However, it is also possible to control the position of the third set of mattress supporting elements 130 using separate means, for example using a separate electric motor pushing/pulling the third set of mattress supporting elements 130 along the frame 102 based on an pivot angle of the of the first set of mattress supporting elements 110, as measured by an electromechanical actuator, an electronic sensor or the like.

[0046] In a usage example, a user may gradually increase the inclination of the first set of mattress supporting elements 110 from a horizontal orientation. As the inclination is increased the separation D1 will increase. Simultaneously, albeit at a lower longitudinal movement rate than the first set of mattress supporting elements 110, the third set of mattress supporting elements 130 will move towards the head end of the frame 102, thereby resulting in an increased separation D2. Hence, the third set of mattress supporting elements 130 may, in a lagging manner, follow the longitudinal movement of the first set of mattress supporting elements 110. The third set of mattress supporting elements 130 may thus, at least partially, compensate for a local reduction of support for the mattress, caused by the increased separation between the mattress supporting element of the first set of mattress supporting elements 110, which is closest to the third set of mattress supporting elements 130, and the second set of mattress supporting elements 120.

[0047] In Figs 1a-c, the second set of mattress supporting elements 120 remains stationary, i.e. in a same position, in relation to the frame 102. However, optionally an inclination and/or a level of at least a subset of the second set of mattress supporting elements 120 may be adjustable in relation to the frame 102. For example, a subset of mattress supporting elements corresponding to a leg section of the mattress support may be adjustable. In that case, the subset of the second set of mattress supporting elements 120 is preferably adjustable independently from the first and third set of mattress supporting elements 110, 130. Various mechanisms for providing such an adjustment are known in the art as such and will therefore not be discussed in further detail herein. However, in any case, the adjustment of the leg section may be controlled by the same electrical means as those discussed above for controlling the inclination of the first set of mattress supporting elements 110. Preferably, the longitudinal position of at least a pivot axis of the subset of the second set of mattress supporting elements 120, or the longitudinal position of at least the mattress supporting element of the second set of mattress supporting elements 120 which is closest to the third set of mattress supporting elements 130, is fixed in relation to the frame 102, while the inclination of the first set of mattress supporting elements 110 is varied.

[0048] Figs 2a-c illustrate a portion of a base 200 for a bed. The base 200 includes elements generally corresponding to the base 100. More specifically, the base 200 includes a frame 202 and a mattress support 204 generally corresponding to the frame 102 and the mattress support 104 illustrated in Figs 1a-c. Fig. 3 illustrate a cross section of the base 200, extending parallel to the longitudinal direction of the base 200 and the frame 202. The illustrated views show only one side of the frame 202. The frame 202 however further comprises a second not shown side, arranged directly opposite to the first side. In particular, the second side may be mirrored with respect to the first side portion along the longitudinal direction of the base 200. Hence, although in the following description reference will mainly be made to the illustrated side of the frame 202, the description applies correspondingly to the opposite side of the frame 202.

[0049] The mattress support 204 includes a first set of mattress supporting elements 210, corresponding to the first set of mattress supporting elements 110, a second set of mattress supporting elements 220, corresponding to the second set of mattress supporting elements 120 and a third set of mattress supporting elements 230, corresponding to the third set of mattress supporting elements 130. As illustrated, the mattress supporting elements of the sets 210, 220, 230 may be connected to the frame 102 by respective springs 206 in a pair-wise manner. This is however optional and other manners of connecting mattress supporting elements to a frame are well-known in the art.

[0050] The base 200 further includes a pivotable support structure 240 supporting the first set of mattress sup-

porting elements 210. The pivotable support structure 240 corresponds to the pivotable support structure 140. The support structure 240 includes a first arm 244 supporting a first subset of the first set of mattress supporting elements 210. The pivotable support structure 240 is connected to the frame 202 by a pivot connection 242. The pivot connection 242 is arranged to move along the frame 202 while the inclination of the pivotable support structure 240 is varied. More specifically, the frame 202 is provided with a guide means 270 including a guide track. The guide means 270 is arranged on an inwardly facing surface of the frame 202. The pivot connection 242 may be connected to the guide means 270 via a coupling piece including for example a slider or a roller running in the guide track. The guide track may be a single- or a double-sided guide track. In another example, guide means 270 may be formed as a groove in the side support structure of the frame 202 wherein the coupling piece (e.g. a slider or a roller) may extend into and run in the groove.

[0051] As illustrated, the pivotable support structure 240 may further include a second arm 246, supporting a second subset of the first set of mattress supporting elements 210. The second arm 246 is pivotally connected to an upper end of the first arm 244. Thus the first subset of the first set of mattress supporting elements 210 may be arranged to provide a backrest and the second subset of the first set of mattress supporting elements 210 a neck and head rest. However, according to a more basic design the support structure 240 need not include the second arm 246.

[0052] The base 200 includes a mechanism 250 for controlling an inclination of the support structure 240 and thereby controlling the inclination of the first set of mattress supporting elements 210. The mechanism 250 includes a first link 254 pivotally connected to the side support structure of the frame 202. The mechanism further includes a second link 256 pivotally connected to the first link 254 and to the second arm 246. Accordingly, by pivoting the first link 254 in relation to the frame 202, about the pivot axis P, the inclination of the support structure 240 may be adjusted. As illustrated, the mechanism 250 may include a shaft 252 connected to the first link 254 and extending along the pivot axis P of the first link 254. The shaft 252 may extend from the first link 254 to a corresponding first link arranged on the opposite, not shown side of the frame 202. A driving means 290 such as an electric motor may control the inclination of the support structure 240 by rotation of the shaft 252.

[0053] Other mechanisms 250 for controlling the inclination of the first set of mattress supporting elements 210 are however also possible. For example, if the support structure 240 does not include the optional second arm 246, a more simple mechanism may be employed. For example, the mechanism 250 may include a single link or arm, connected to frame 202 and the shaft 252, and being arranged to pivot and push on the support structure (for example the arm 244 of the support structure 240) to control the inclination thereof. According to a further example, an actuator of the driving means 290 may directly push on the support structure 240 to adjust the inclination thereof, thereby obviating the need for the shaft 252.

[0054] With reference to Figs 2a-c and 3, the base 200 includes a coupling member 260 for mechanically coupling the movement of the pivot connection 242 along the guide means 270 to the adjustment of the inclination of the support structure 240. The coupling member 260 is provided in the form of a link which is pivotably connected to the frame 202 and to the support structure 240. As the inclination of the support structure 240 is increased the coupling member 260 will cause the pivot connection 242 to move towards the head-end of the frame 202, along the guide means 270. More specifically, the coupling member 260 is arranged to transfer a torque acting on the pivotable support structure 240 to a force causing the pivot connection 242 to move along the guide means 270, the force being directed towards the head end of the frame 202 when the inclination of the pivotable support structure 240 is increased or towards the foot end of the frame 202 when the inclination of the pivotable support structure 240 is decreased.

[0055] The third set of mattress supporting elements 230 is coupled to the frame 202 in a manner allowing the third set of mattress supporting elements 230 to move along the longitudinal direction of the frame 202. More specifically, the third set of mattress supporting elements 230 is arranged on a support member 232 which engages with the guide means 270 and is movable along the guide means 270. In line with the above discussion concerning the pivot connection 242, the support member 232 may be connected to the guide means 270 via a coupling piece including for example a slider or a roller running in the guide track. As illustrated in for example Fig. 2b, the support member 232 may be connected to the guide means 270 via more than coupling piece. This may promote the mechanical stability of the support member 232.

[0056] Although in Figs 2a-c and 3, the pivot connection 242 and the support member 232 move along a same guide means 270, it would also be possible to provide similar but separate guide means for guiding the movement of the third set of mattress supporting elements 230 and for guiding the movement of the pivot connection 242. Such separate guide means could for example be provided on different levels on the frame 202 and in parallel to each other.

[0057] The base 202 further comprises a coupling element 280 in the form of a link arranged to translate an adjustment of the inclination of the first set of mattress supporting elements 210 to a movement of the third set of mattress supporting elements 230. The coupling element 280 is arranged to pull the third set of mattress supporting elements 230 along the side support structure of the frame 202 while the inclination of the first set of mattress supporting elements 210 is increased. The coupling element 280 is connected to a pivoting member 282 of the mechanism 250. The pivoting member 282 is ar-

ranged to pivot synchronously with the first link 254 about the same pivot axis P as the first link 254. The pivoting member 282 is pivotally connected to the coupling element 280 which in turn is pivotally connected to the support member 232. Accordingly, pivoting the first link 254 will cause the pivoting member 282 to pivot and pull or push the coupling element 280, and thus cause the support member 232 to move along the guide means 270, in the longitudinal direction or opposite the longitudinal direction of the frame 202, depending on whether the inclination of the first set of mattress supporting elements 210 is increased or decreased. The movement rate of the support member 232 along the guide means 270 is determined *inter alia* by the angle between the coupling element 280 and the pivoting member 282. In particular, a smaller angle may result in a greater movement rate and a greater angle may result in a lower movement rate.

[0058] According to a variation, the coupling element 280 may be replaced by a non-rigid coupling means such as a string, a cord, a chain or a strap. The non-rigid coupling means may analogously to the coupling element 280 pull the support member 232 along the guide means 270. The frame 202 may be provided with a spring acting to pull (e.g. if arranged on a same side of the third set of mattress supporting elements 230 as the second set of mattress supporting elements 220) or push (e.g. if arranged between the third set of mattress supporting elements 230 and the first set of mattress supporting elements 210) the third set of mattress supporting elements 230 to reduce the separation D2 (i.e. close the gap D2). According to another variation the coupling element 280 may instead be connected to a pivoting member, corresponding to the pivoting member 282 but provided at the pivot connection 242 and arranged to pivot synchronously with the first set of mattress supporting elements 242. Thereby an analogous pulling action of the coupling element 280 may be achieved.

[0059] Although, the guide means 270 is illustrated to extend generally parallel to the longitudinal direction of the frame 202, it is also possible provide the guide means 270 to extend at an angle with respect to the longitudinal direction. For example, the guide means may be angled to allow (e.g. for comfort reasons) the pivot connection 242 and the support member 232 to be slightly, and gradually raised in relation to the frame 202 as the inclination of the pivotable support structure 240 is increased. Thus, a movement "along the longitudinal direction of the frame" (e.g. of the first set of mattress supporting elements or the third set of mattress supporting elements) does not require that the movement is parallel to the longitudinal direction. Preferably, however the movement will preferably trace a straight path having a main component which is parallel to the longitudinal direction of the frame.

[0060] Figs 4a-c are close-up side views of a base 400 similar to the base 100 and 200 but comprising alternative mechanisms for controlling the inclination and the movement of a first set of mattress supporting elements 410 (corresponding to the first set of mattress supporting elements 110 and 210) and the movement of the third set of mattress supporting elements 430 (corresponding to the third set of mattress supporting elements 130 and 230).

[0061] The base 400 comprises an inclination adjustment mechanism 450 including a pair of links, namely a first link 452 and a second link 454. A lower end of the first link 452 and the second link 454 is pivotally connected to the frame 402, e.g. by means of a bracket 456. The first link 452 and the second link 454 have an angled shape and are pivotally connected to an arm 444 of a pivotable support structure 440 (corresponding to the pivotable support structure 140 or 240) at two different positions, e.g. by means of a bracket 458. The arm 444 carries the first set of mattress supporting elements 410. As illustrated, the mechanism 450 allows an inclination of the arm 444 to be adjusted wherein the arm 444 is moved or displaced along the longitudinal direction of the frame 402 while the inclination is varied. Hence, the particular arrangement of the first and the second links 452, 454 of the mechanism 450 has a double function of allowing the inclination of the first set of mattress supporting elements 410 to pivot in relation to the frame 402 and simultaneously move along the longitudinal direction, thereby acting as guide means for the longitudinal component of the movement of the arm 444. In line with the above discussion, the inclination of the first set of mattress supporting elements 110 may be controlled by electrical means, such as an electric motor or an hydraulically or pneumatically controlled piston for example pushing on the arm 444.

[0062] The base 400 further comprises a coupling element 480 in the form of a link which is pivotally connected to the first link 452 but may alternatively be pivotally connected to the second link 454 and still provide a corresponding function. The coupling element 480 includes a slit 480a. The third set of mattress supporting elements 430 are arranged on a support member 432 which is supported by the frame 402 and movable along the frame 402. The support member 432 may for example be a generally L-shaped or U-shaped member resting on an upwardly facing surface of the frame 402, or straddling the frame 402. The support member 432 includes an engagement portion 432a in the form of a tap, a pin or a bolt. As the arm 444 presents a non-raised orientation (e.g. a horizontal orientation), the engagement portion 432a assumes a first end position within the slit 480a (see Fig. 4a). As the inclination of the arm 444 is increased the engagement portion 432a is moved in relation to the slit 480a (i.e. due to the movement of the link 482) towards the opposite second end position within the slit 480a (see Figs 4b and 4c). As the inclination of the arm 444 is further increased the coupling element 480 will, via the engagement portion 432a, pull the support member 432 along the longitudinal direction of the frame 402. As the inclination is reduced, the opposite sequence will occur. Hence, the threshold of the inclination above

which the third set of mattress supporting elements 430 starts to move along the longitudinal direction, and below which the third set of mattress supporting elements 430 does not move, may be determined by the length of the slit 480a.

[0063] In the above the inventive concept has mainly been described with reference to a limited number of examples. However, as is readily appreciated by a person skilled in the art, other examples than the ones disclosed above are equally possible within the scope of the inventive concept, as defined by the appended claims. For example, the coupling element 480 with the slit 480a and the engagement portion 432a could be used instead of the coupling element 280 of the base 200. The coupling element 480 could for example be connected to the pivoting member 282 or directly to the support member 242. The engagement portion 432a could be provided on the support member 232 wherein the coupling element 480, once the engagement portion 432a reaches the end of the slit 480a, may pull the support member 232 along the guide means 270 towards the head end of the frame 202. Conversely, the coupling element 280 could be used instead of the coupling element 480 and the engagement portion 432a of the base 400. The coupling element 280 could for example be pivotally connected to a pivoting member corresponding to the member 282 and extending generally upwardly from the lower pivotally connected end of the first link 452 (or the second link 454) and being arranged to rotate synchronously with the first link 452 (or the second link 454) and pull the coupling element 280 towards the head end of the frame 402 while the inclination of the arm 444 is increased.

Claims

1. A base (100; 200; 400) for a bed, the base comprising a frame (102; 202; 402) and a mattress support (104; 204) extending along a longitudinal direction of the frame and including:

   a first set of mattress supporting elements (110; 210; 410), a second set of mattress supporting elements (120; 220; 420) and a third set of mattress supporting elements (130; 230; 430),
   wherein each of the first, second and third set of mattress supporting elements includes one or more supporting elements, each supporting element presenting a mattress supporting surface for bearing against an underside of a mattress,
   wherein the first set of mattress supporting elements is pivotable, in relation to the frame, and movable along the longitudinal direction, and wherein the first set of mattress supporting elements is arranged to be moved along the longitudinal direction such that a separation, along the longitudinal direction, between the second set of mattress supporting elements and a mattress supporting element of the first set of mattress supporting elements which is closest to the third set of mattress supporting elements is increased while an inclination of the first set of mattress supporting elements is increased,
   wherein the third set of mattress supporting elements is arranged to be moved along the longitudinal direction of the frame such that a separation, along the longitudinal direction, between said mattress supporting element of the first set of mattress supporting elements and the third set of mattress supporting elements, and a separation, along the longitudinal direction, between the third set of mattress supporting elements and the second set of mattress supporting elements, are increased, while the inclination of the first set of mattress supporting elements is increased, **characterised in that** the movement of the third set of mattress supporting elements is mechanically coupled to an adjustment of the inclination of the first set of mattress supporting elements by a coupling element (280; 480) arranged to pull the third set of mattress supporting elements along the frame while the inclination of the first set of mattress supporting elements is increased.

2. A base (100; 200; 400) according to claim 1, wherein the movement of the first set of mattress supporting elements (110; 210; 410) along the longitudinal direction is mechanically coupled to an adjustment of the inclination of the first set of mattress supporting elements.

3. A base (100; 200; 400) according to claim 1, further comprising a support member (232; 432) which is arranged on the frame (102; 202; 402) and movable along the longitudinal direction, wherein the third set of mattress supporting elements (130; 230; 430) is carried by the support member, and wherein the coupling element (280; 480) is connected to the support member and arranged to pull the support member along the frame while the inclination of the first set of mattress supporting elements (110; 210; 410) is increased.

4. A base (100; 200; 400) according to any one of the preceding claims, wherein a rate of movement of the third set of mattress supporting elements (130; 230; 430) in relation to the frame (102; 202; 402) is less than a rate of movement of the first set of mattress supporting elements (110; 210; 410) in relation to the frame.

5. A base (100; 200; 400) according to any of the preceding claims, wherein the third set of mattress supporting elements (130; 230; 430) is arranged to trace

a straight path while the inclination of the first set of mattress supporting elements (110; 210; 410) is increased, the straight path having a main component which is parallel to the longitudinal direction of the frame.

6. A base (100; 200;) according to any of the preceding claims, further comprising guide means (270) provided along a side support structure of the frame (102; 202) and arranged to guide a movement of the third set of mattress supporting elements (130; 230) along the side support structure.

7. A base (100; 200; 400) according to any of the preceding claims, further comprising a pivotable support structure (140; 240; 440) arranged to support the first set of mattress supporting elements (110; 210; 410) and being pivotally connected to a side support structure of the frame (102; 202; 402), wherein a pivot connection (242) between the pivotable support structure (240) and the side support structure of the frame (102; 202; 402) is arranged to move along the longitudinal direction of the frame while the inclination of the first set of mattress supporting elements is increased.

8. A base (100; 200) according to any of the preceding claims, further comprising guide means (270) provided along a side support structure of the frame (102; 202) and arranged to guide a movement of the pivot connection (242) along the guide means (270).

9. A base (100; 200) according to any of the claims 7-8, further comprising a coupling member (260) which is pivotally connected to the frame (102; 202) and to the pivotable support structure (140; 240) and arranged to cause the pivot connection (242) to move along the longitudinal direction when the inclination of the pivotable support structure is increased.

10. A base (400) according to any of claims 1-6, further comprising a pivotable support structure (440) arranged to support the first set of mattress supporting elements (410) and the base further comprising a pair of angled links (452, 454) which are pivotally connected to a side support structure of the frame (402) and to the pivotable support structure (440), wherein the pair of links are arranged to cooperate to allow the pivotable support structure to pivot in relation to the frame and simultaneously move along the longitudinal direction while the inclination of the first set of mattress supporting elements is increased.

11. A base (100; 200; 400) according to any one of the preceding claims, wherein the second set of mattress supporting elements (120; 220; 420) is arranged to be stationary in relation to the frame (102; 202; 402) while the inclination of the first set of mattress supporting elements (110; 210; 410) is increased.

12. A base (100; 200; 400) according to any of claims 1-11, wherein an inclination of at least a subset of the mattress supporting elements of the second set of mattress supporting elements (120; 220; 420) is adjustable in relation to the third set of slats (130; 230; 430).

Patentansprüche

1. Gestell (100; 200; 400) für ein Bett, wobei das Gestell einen Rahmen (102; 202; 402) und eine Matratzenabstützung (104; 204) umfasst, die sich entlang einer Längsrichtung des Rahmens erstreckt, und einschließend:

einen ersten Satz Matratzenstützelemente (110; 210; 410), einen zweiten Satz Matratzenstützelemente (120; 220; 420) und einen dritten Satz Matratzenstützelemente (130; 230; 430),
wobei jeder der ersten, zweiten und dritten Sätze Matratzenstützelemente ein oder mehrere Stützelemente einschließt, und wobei jedes Stützelement eine Matratzenabstützoberfläche zur Anlage an eine Unterseite einer Matratze bietet,
wobei der erste Satz Matratzenstützelemente im Verhältnis zum Rahmen schwenkbar und entlang der Längsrichtung bewegbar ist, und wobei der erste Satz Matratzenstützelemente so angeordnet ist, dass er entlang der Längsrichtung so bewegt werden kann, dass entlang der Längsrichtung eine Trennung zwischen dem zweiten Satz Matratzenstützelemente und einem Matratzenstützelement des ersten Satzes Matratzenstützelemente, das sich am nächsten am dritten Satz Matratzenstützelemente befindet, zunimmt, während eine Neigung des ersten Satzes Matratzenstützelemente größer wird,
wobei der dritte Satz Matratzenstützelemente so angeordnet ist, dass er entlang der Längsrichtung des Rahmens so bewegt werden kann, dass entlang der Längsrichtung eine Trennung zwischen dem Matratzenstützelement des ersten Satzes Matratzenstützelemente und dem dritten Satz Matratzenstützelemente und entlang der Längsrichtung eine Trennung zwischen dem dritten Satz Matratzenstützelemente und dem zweiten Satz Matratzenstützelemente zunehmen, während die Neigung des ersten Satzes Matratzenstützelemente größer wird,
dadurch gekennzeichnet, dass
die Bewegung des dritten Satzes Matratzenstützelemente mit einer Verstellung der Neigung

des ersten Satzes Matratzenstützelemente durch ein Kopplungselement (280; 480) mechanisch gekoppelt ist, das angeordnet ist, um den dritten Satz Matratzenstützelemente entlang des Rahmens zu ziehen, während die Neigung des ersten Satzes Matratzenstützelemente größer wird.

2. Gestell (100; 200; 400) nach Anspruch 1, wobei die Bewegung des ersten Satzes Matratzenstützelemente (110; 210; 410) entlang der Längsrichtung mit einer Verstellung der Neigung des ersten Satzes Matratzenstützelemente mechanisch gekoppelt ist.

3. Gestell (100; 200; 400) nach Anspruch 1, das weiterhin ein Stützelement (232; 432) umfasst, das am Rahmen (102; 202; 402) angeordnet und entlang der Längsrichtung bewegbar ist, wobei der dritte Satz Matratzenstützelemente (130; 230; 430) vom Stützelement getragen wird, und wobei das Kopplungselement (280; 480) mit dem Stützelement verbunden und angeordnet ist, um das Stützelement entlang des Rahmens zu ziehen, während die Neigung des ersten Satzes Matratzenstützelemente (110; 210; 410) größer wird.

4. Gestell (100; 200; 400) nach einem der vorstehend aufgeführten Ansprüche, wobei eine Bewegungsrate des dritten Satzes Matratzenstützelemente (130; 230; 430) im Verhältnis zum Rahmen (102; 202; 402) geringer als eine Bewegungsrate des ersten Satzes Matratzenstützelemente (110; 210; 410) im Verhältnis zum Rahmen ist.

5. Gestell (100; 200; 400) nach einem der vorstehend aufgeführten Ansprüche, wobei der dritte Satz Matratzenstützelemente (130; 230; 430) angeordnet ist, um einem geraden Weg zu folgen, während die Neigung des ersten Satzes Matratzenstützelemente (110; 210; 410) größer wird, wobei der gerade Weg eine Hauptkomponente aufweist, die parallel zur Längsrichtung des Rahmens verläuft.

6. Gestell (100; 200) nach einem der vorstehend aufgeführten Ansprüche, das weiterhin ein Führungsmittel (270) umfasst, das entlang einer seitlichen Stützkonstruktion des Rahmens (102; 202) vorgesehen und angeordnet ist, um eine Bewegung des dritten Satzes Matratzenstützelemente (130; 230) entlang der seitlichen Stützkonstruktion zu führen.

7. Gestell (100; 200; 400) nach einem der vorstehend aufgeführten Ansprüche, das weiterhin eine schwenkbare Stützkonstruktion (140; 240; 440) umfasst, die angeordnet ist, um den ersten Satz Matratzenstützelemente (110; 210; 410) abzustützen, und die mit einer seitlichen Stützkonstruktion des Rahmens (102; 202; 402) schwenkbar verbunden ist, wobei eine Schwenkverbindung (242) zwischen der schwenkbaren Stützkonstruktion (240) und der seitlichen Stützkonstruktion des Rahmens (102; 202; 402) angeordnet ist, um sich entlang der Längsrichtung des Rahmens zu bewegen, während die Neigung des ersten Satzes Matratzenstützelemente größer wird.

8. Gestell (100; 200) nach einem der vorstehend aufgeführten Ansprüche, das weiterhin ein Führungsmittel (270) umfasst, das entlang einer seitlichen Stützkonstruktion des Rahmens (102; 202) vorgesehen und angeordnet ist, um eine Bewegung der Schwenkverbindung (242) entlang des Führungsmittels (270) zu führen.

9. Gestell (100; 200) nach einem der Ansprüche 7 bis 8, das weiterhin ein Kopplungselement (260) umfasst, das mit dem Rahmen (102; 202) und der schwenkbaren Stützkonstruktion (140; 240) schwenkbar verbunden und angeordnet ist, um zu bewirken, dass sich die Schwenkverbindung (242) entlang der Längsrichtung bewegt, wenn die Neigung der schwenkbaren Stützkonstruktion größer wird.

10. Gestell (400) nach einem der Ansprüche 1 bis 6, das weiterhin eine schwenkbare Stützkonstruktion (440) umfasst, die angeordnet ist, um den ersten Satz Matratzenstützelemente (410) abzustützen, wobei das Gestell weiterhin ein Paar Winkelverbindungen (452, 454) umfasst, die mit einer seitlichen Stützkonstruktion des Rahmens (402) und der schwenkbaren Stützkonstruktion (440) schwenkbar verbunden sind, wobei das Paar Verbindungen angeordnet ist, um ein Zusammenwirken zuzulassen, so dass die schwenkbare Stützkonstruktion im Verhältnis zum Rahmen schwenken und sich gleichzeitig entlang der Längsrichtung bewegen kann, während die Neigung des ersten Satzes Matratzenstützelemente größer wird.

11. Gestell (100; 200; 400) nach einem der vorstehend aufgeführten Ansprüche, wobei der zweite Satz Matratzenstützelemente (120; 220; 420) angeordnet ist, um im Verhältnis zum Rahmen (102; 202; 402) stationär zu bleiben, während die Neigung des ersten Satzes Matratzenstützelemente (110; 210; 410) größer wird.

12. Gestell (100; 200; 400) nach einem der Ansprüche 1 bis 11, wobei eine Neigung von mindestens einer Untergruppe der Matratzenstützelemente des zweiten Satzes Matratzenstützelemente (120; 220; 420) im Verhältnis zum dritten Satz Leisten (130; 230; 430) verstellbar ist.

Revendications

1. Base (100; 200; 400) pour un lit, la base comprenant un cadre (102; 202; 402) et un support de matelas (104; 204) s'étendant dans une direction longitudinale du cadre et comprenant:

   un premier ensemble d'éléments de support de matelas (110; 210; 410), un deuxième ensemble d'éléments de support de matelas (120; 220; 420) et un troisième ensemble d'éléments de support de matelas (130; 230; 430),
   chacun des premier, deuxième et troisième ensembles d'éléments de support de matelas comprenant un ou plusieurs éléments de support, chaque élément de support présentant une surface de support de matelas pour s'appuyer contre une face inférieure du matelas,
   le premier ensemble d'éléments de support de matelas pouvant pivoter par rapport au cadre et être déplacé le long de la direction longitudinale, et le premier ensemble d'éléments de support de matelas étant agencé pour être déplacé le long de la direction longitudinale de sorte qu'une séparation, dans la direction longitudinale, entre le deuxième ensemble d'éléments de support de matelas et un élément de support de matelas du premier ensemble d'éléments de support de matelas qui est plus proche du troisième ensemble d'éléments de support de matelas est augmentée tandis qu'une inclinaison du premier ensemble d'éléments de support de matelas est augmentée,
   le troisième ensemble d'éléments de support de matelas étant agencé pour être déplacé le long de la direction longitudinale du cadre de telle sorte qu'une séparation, le long de la direction longitudinale, entre ledit élément de support de matelas du premier ensemble d'éléments de support de matelas et le troisième ensemble d'éléments de support de matelas, et une séparation, dans la direction longitudinale, entre le troisième ensemble d'éléments de support de matelas et le deuxième ensemble d'éléments de support de matelas, sont augmentées, tandis que l'inclinaison du premier ensemble d'éléments de support de matelas est augmentée, **caractérisée en ce que** le mouvement du troisième ensemble d'éléments de support de matelas est couplé mécaniquement à un ajustement de l'inclinaison du premier ensemble d'éléments de support de matelas par un élément de couplage (280; 480) disposé de manière à tirer le troisième ensemble d'éléments de support de matelas le long du cadre tandis que l'inclinaison du premier ensemble d'éléments de support de matelas est augmentée.

2. Base (100; 200; 400) selon la revendication 1, dans laquelle le mouvement du premier ensemble d'éléments de support de matelas (110; 210; 410) dans la direction longitudinale est couplé mécaniquement à un ajustement de l'inclinaison du premier ensemble d'éléments de support de matelas.

3. Base (100; 200; 400) selon la revendication 1, comprenant en outre un élément de support (232; 432) qui est disposé sur le cadre (102; 202; 402) et mobile dans la direction longitudinale, le troisième ensemble d'éléments de support de matelas (130; 230; 430) étant porté par l'élément de support, et l'élément de couplage (280; 480) étant relié à l'élément de support et agencé pour tirer l'élément de support le long du cadre tout en augmentant l'inclinaison du premier ensemble d'éléments de support de matelas (110; 210; 410).

4. Base (100; 200; 400) selon l'une quelconque des revendications précédentes, dans laquelle une vitesse de déplacement du troisième ensemble d'éléments de support de matelas (130; 230; 430) par rapport au cadre (102; 202; 402) est inférieure à une vitesse de déplacement du premier ensemble d'éléments de support de matelas (110; 210; 410) par rapport au cadre.

5. Base (100; 200; 400) selon l'une quelconque des revendications précédentes, dans laquelle le troisième ensemble d'éléments de support de matelas (130; 230; 430) est agencé pour tracer un chemin droit tandis que l'inclinaison du premier ensemble d'éléments de support de matelas (110; 210; 410) est augmentée, le chemin droit ayant un composant principal qui est parallèle à la direction longitudinale du cadre.

6. Base (100; 200) selon l'une quelconque des revendications précédentes, comprenant en outre un moyen de guidage (270) prévu le long d'une structure de support latéral du cadre (102; 202) et agencé pour guider un mouvement du troisième ensemble d'éléments de support de matelas (130; 230) le long de la structure de support latéral.

7. Base (100; 200; 400) selon l'une quelconque des revendications précédentes, comprenant en outre une structure de support pivotante (140; 240; 440) agencée pour supporter le premier ensemble d'éléments de support de matelas (110; 210; 410) et étant reliée de manière pivotante à une structure de support latéral du cadre (102; 202; 402),
   une liaison pivotante (242) entre la structure de support pivotante (240) et la structure de support latérale du cadre (102; 202; 402) étant agencée pour se déplacer le long de la direction longitudinale du cadre tandis que l'inclinaison du premier ensemble d'élé-

ments de support de matelas est augmentée.

8. Base (100; 200) selon l'une quelconque des revendications précédentes, comprenant en outre un moyen de guidage (270) prévu le long d'une structure de support latéral du cadre (102; 202) et agencé pour guider un mouvement de la liaison pivotante (242) le long du moyen de guidage (270) .

9. Base (100; 200) selon l'une quelconque des revendications 7 à 8, comprenant en outre un élément d'accouplement (260) qui est relié de manière pivotante au cadre (102; 202) et à la structure de support pivotante (140; 240) et agencé pour amener la liaison pivotante (242) à se déplacer dans la direction longitudinale lorsque l'inclinaison de la structure de support pivotante est augmentée.

10. Base (400) selon l'une quelconque des revendications 1 à 6, comprenant en outre une structure de support pivotante (440) agencée pour supporter le premier ensemble d'éléments de support de matelas (410) et la base comprenant en outre une paire de liaisons obliques (452, 454) qui sont reliées de manière pivotante à une structure de support latérale du cadre (402) et à la structure de support pivotante (440), la paire de liaisons étant agencées pour coopérer afin de permettre à la structure de support pivotante de pivoter par rapport au cadre et de se déplacer simultanément dans la direction longitudinale tandis que l'inclinaison du premier ensemble d'éléments de support de matelas est augmentée.

11. Base (100; 200; 400) selon l'une quelconque des revendications précédentes, dans laquelle le deuxième ensemble d'éléments de support de matelas (120; 220; 420) est agencé pour être stationnaire par rapport au cadre (102; 202; 402) tandis que l'inclinaison du premier ensemble d'éléments de support de matelas (110; 210; 410) est augmentée.

12. Base (100; 200; 400) selon l'une quelconque des revendications 1 à 11, dans laquelle une inclinaison d'au moins un sous-ensemble d'éléments de support de matelas du deuxième ensemble d'éléments de support de matelas (120; 220; 420) est réglable par rapport au troisième ensemble de lattes (130; 230; 430).

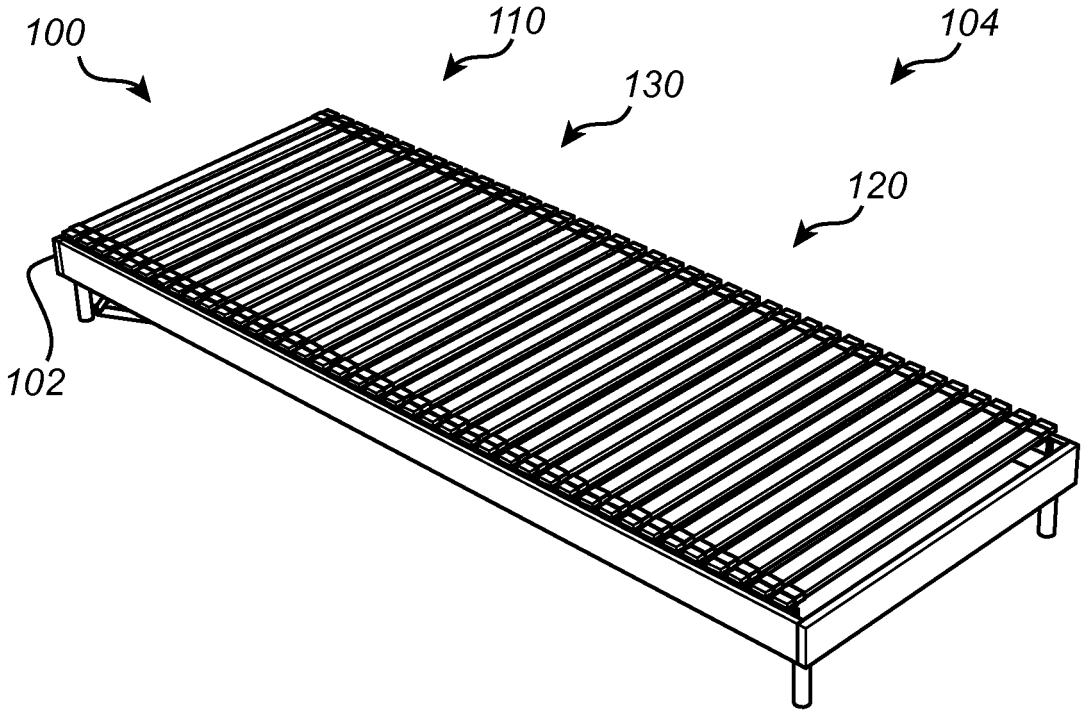


Fig. 1a

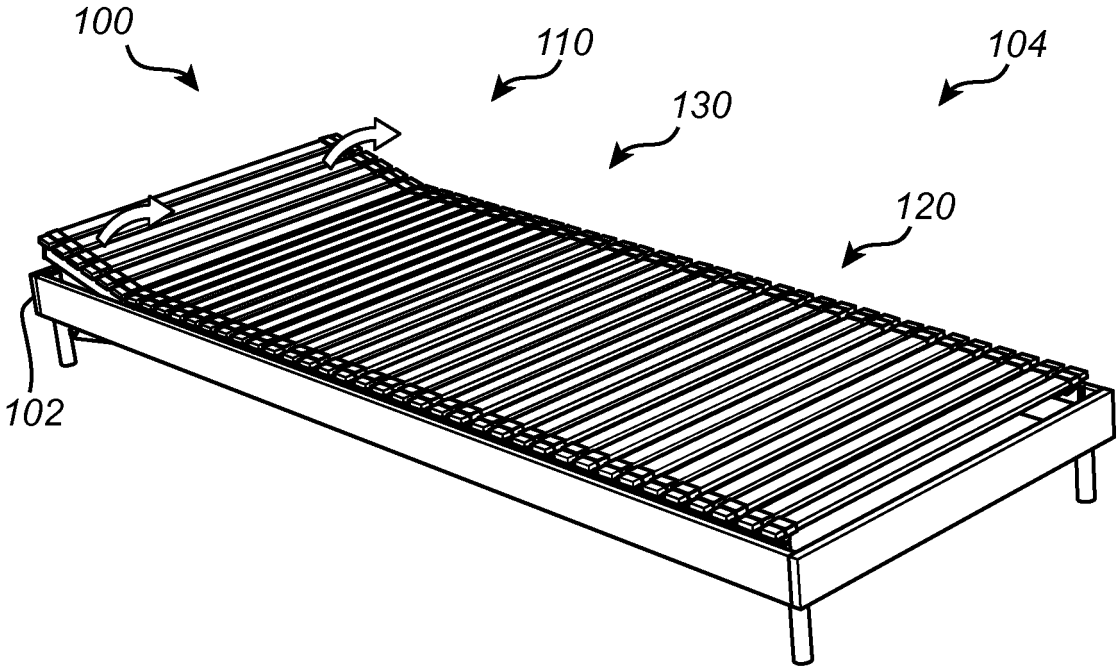


Fig. 1b

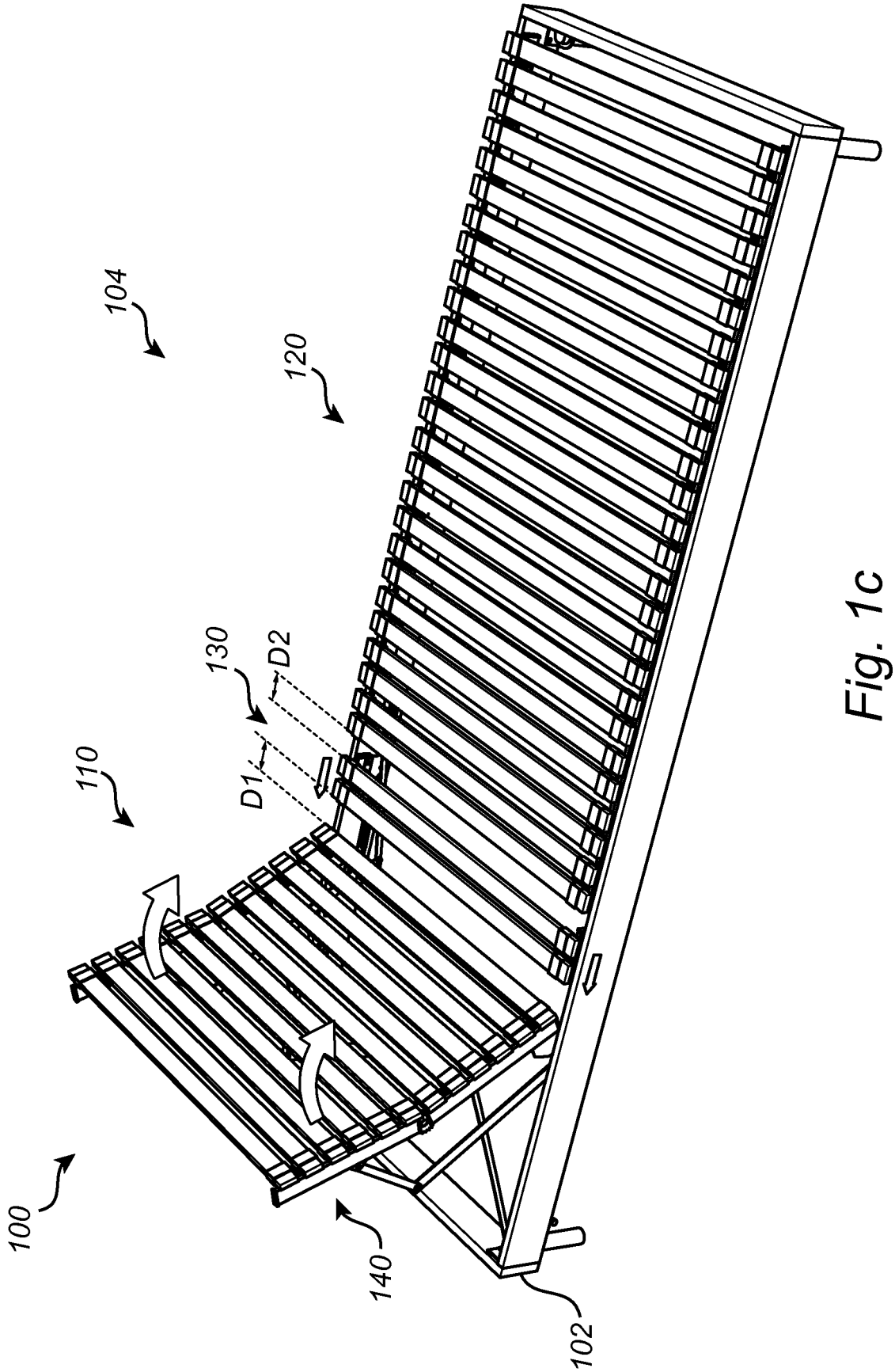
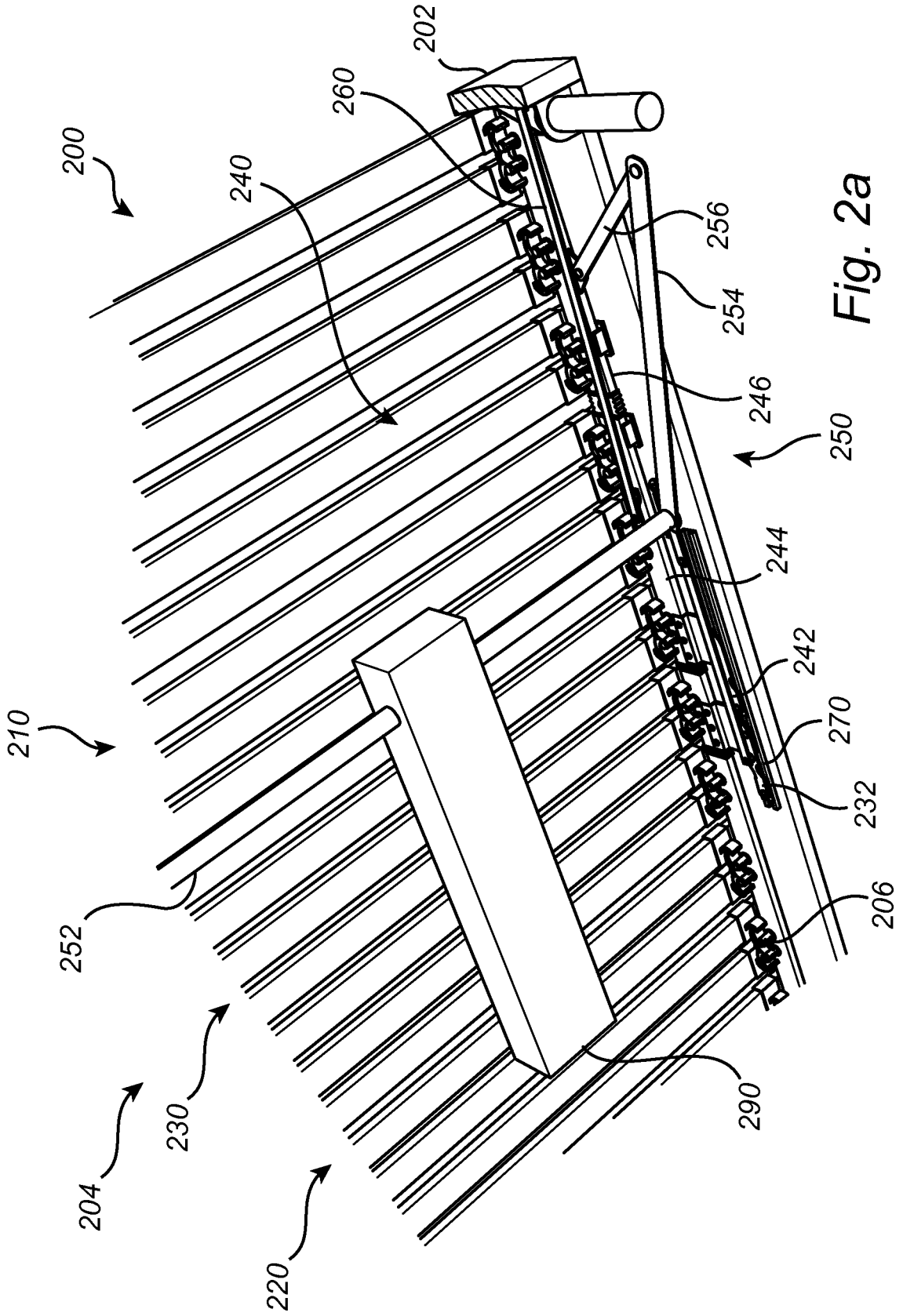


Fig. 1c


202
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256
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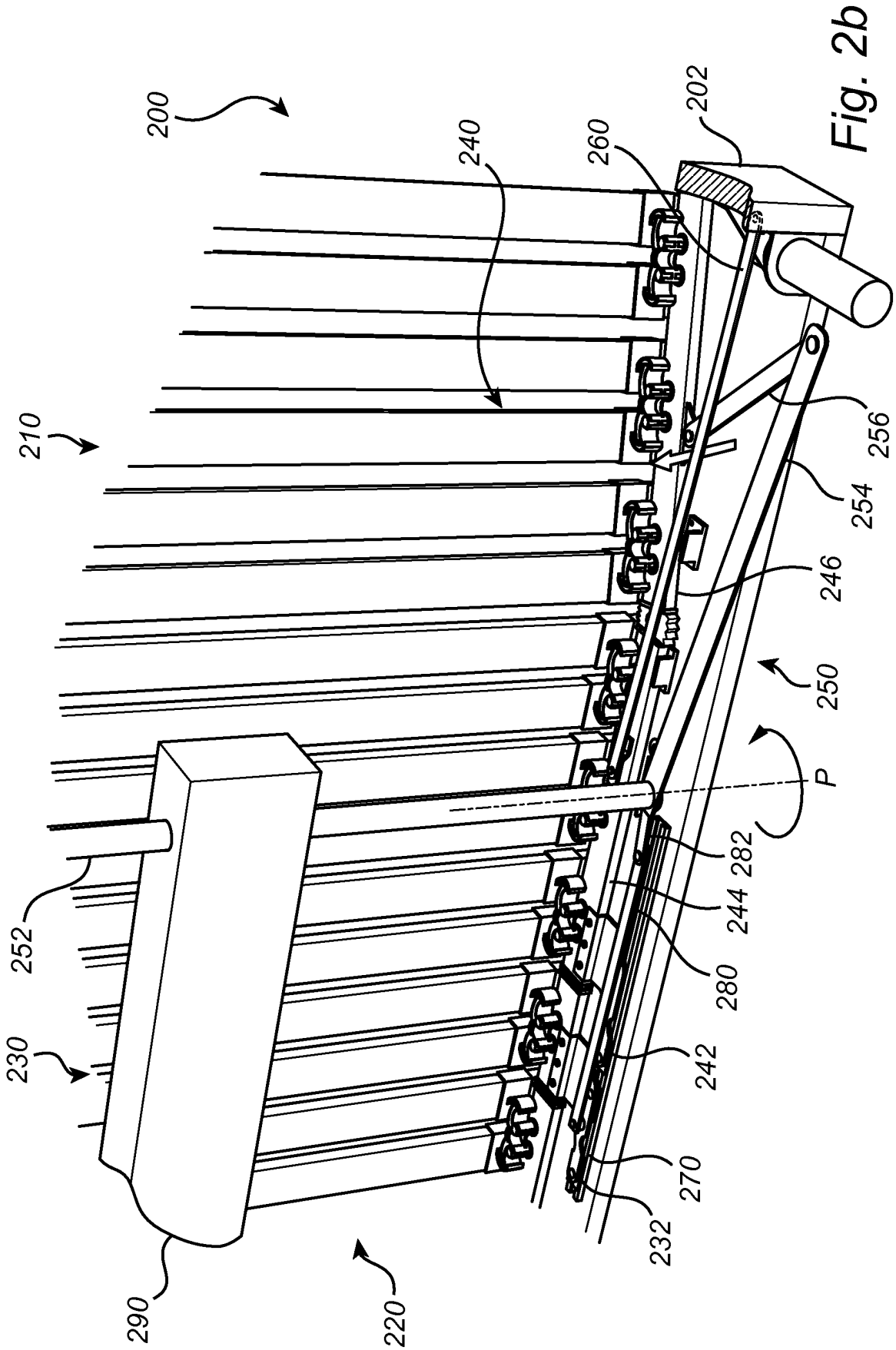
246
250
244
242
270
232
210
206
252
230
290
204
220

Fig. 2a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282
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280
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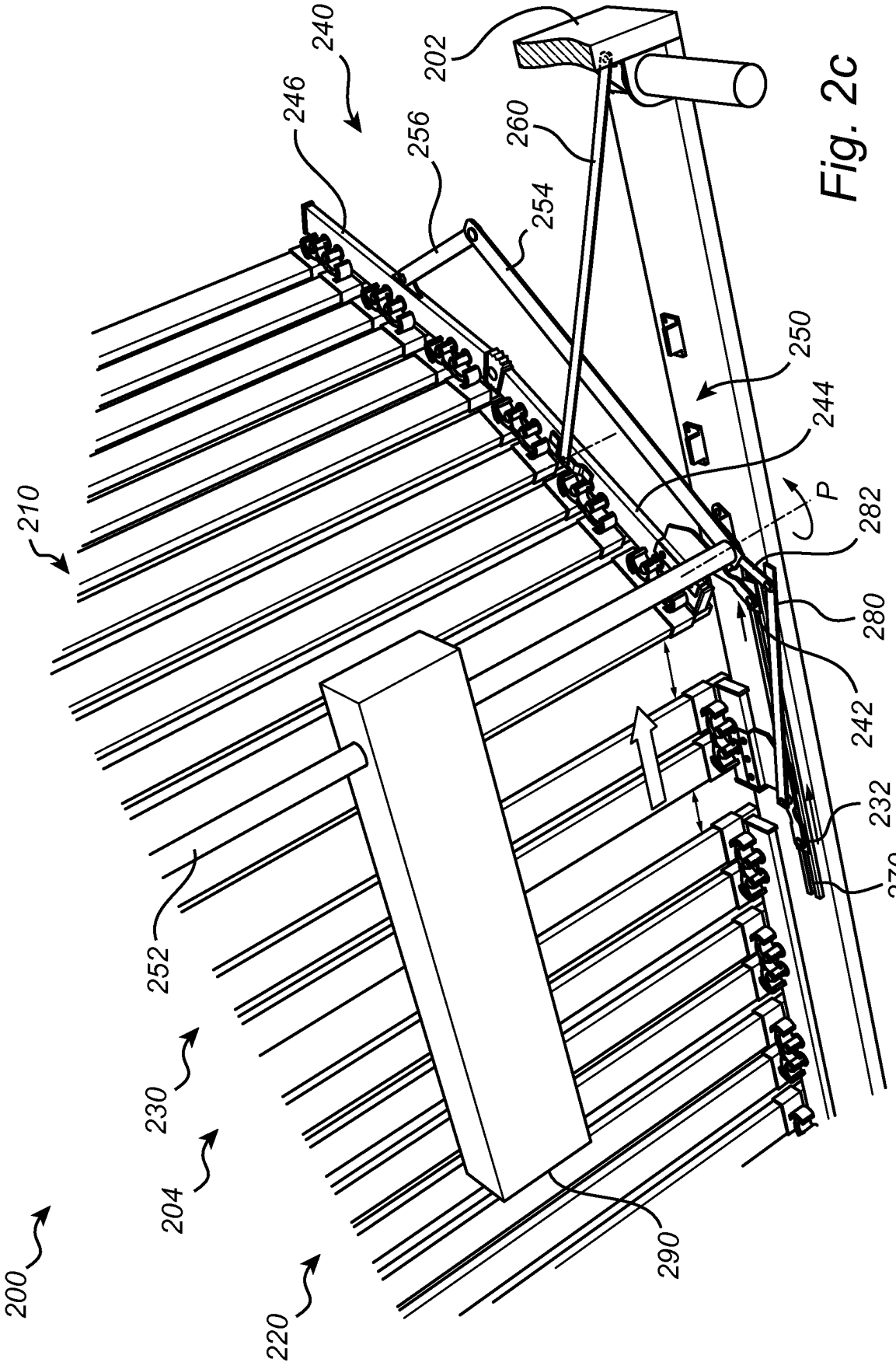
290
220

Fig. 2b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202
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242
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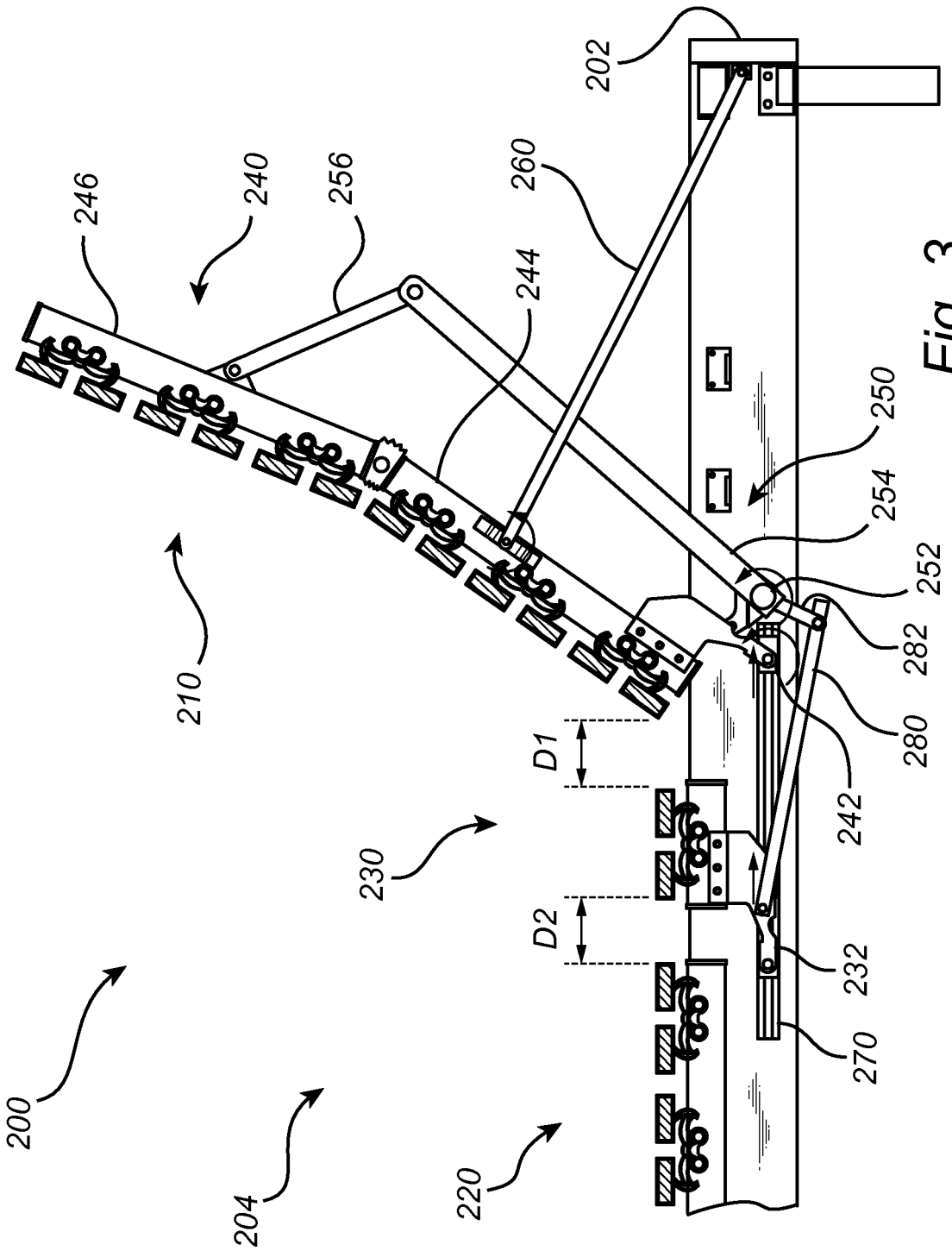
270
290

Fig. 2c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280
242
210
D1
230
D2
232
270
200
204
220

Fig. 3

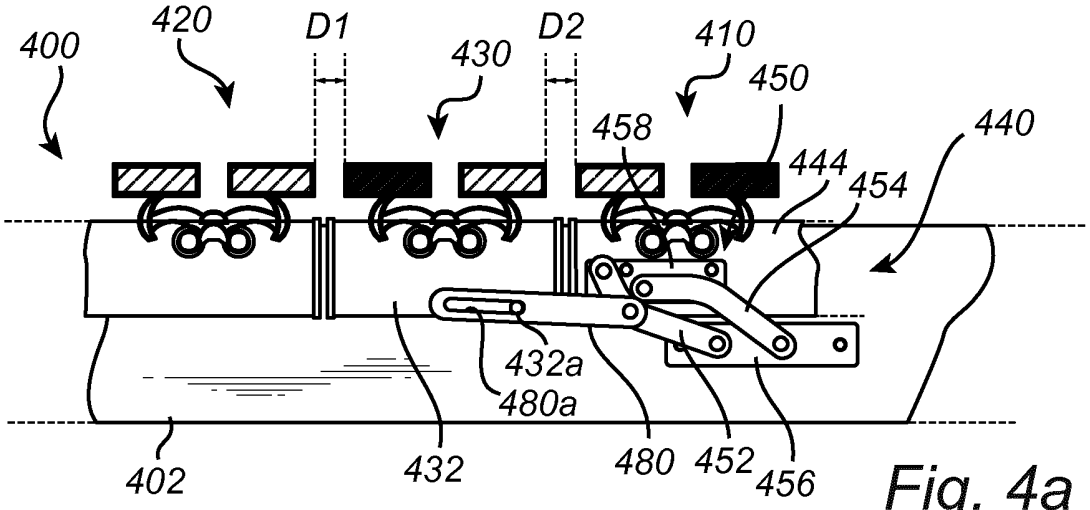

Fig. 4a

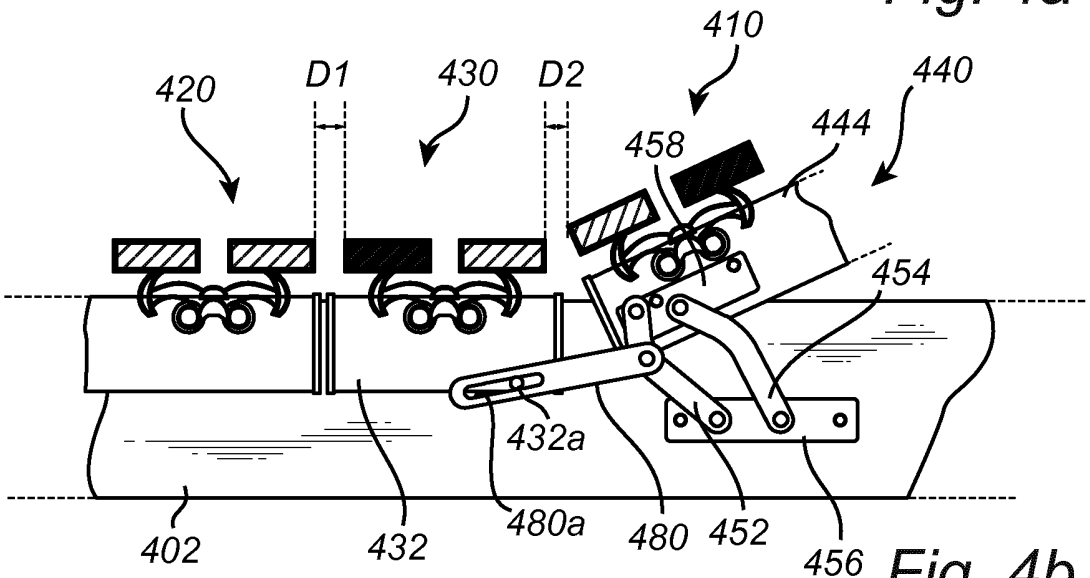

Fig. 4b

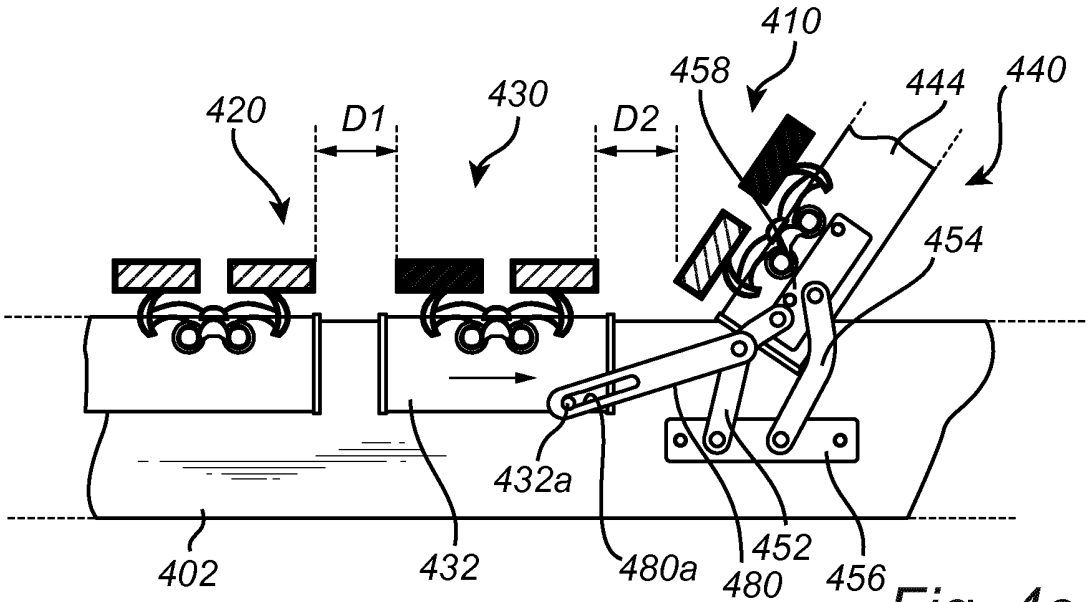

Fig. 4c

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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