



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**10.02.2016 Bulletin 2016/06**

(51) Int Cl.:  
**A47C 23/06 (2006.01) A47C 20/04 (2006.01)**

(21) Application number: **14180182.9**

(22) Date of filing: **07.08.2014**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
 Designated Extension States:  
**BA ME**

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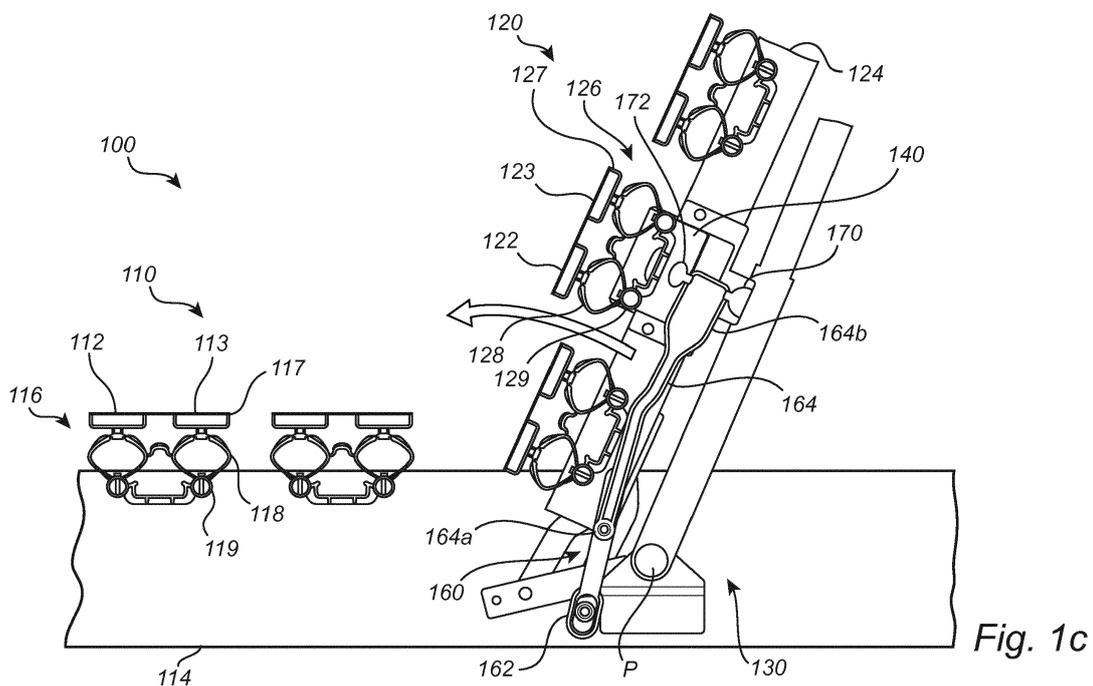
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(54) **A frame for a bed**

(57) According to one aspect of the inventive concept there is provided a frame (100) for a bed comprising a plurality of slats (112, 113, 122, 123) for supporting a bed mattress, the frame (100) including a first frame part (110) and a second frame part (120), wherein an inclination of the second frame part (120) with respect to the first frame part (110) is adjustable. The frame (100) further comprises a slat holder (116) mounted on the second frame part (120) and supporting at least one of said plurality of slats (112, 113), wherein the slat holder (116) is arranged to be movable in relation to and in a direction transverse to

a plane of extension of the second frame part (120) whereby said at least one slat (112, 113) is movable, in relation to adjacent slats, between a lowered position and a raised position for providing a lumbar section support, wherein the movement of the slat holder (116) is mechanically coupled to the adjustment of the second frame part (120) such that said at least one slat (112, 113) is brought from said lowered position to said raised position while the inclination of the second frame part (120) is increased.



## Description

### Technical field

**[0001]** The present inventive concept relates to a frame for a bed.

### Background

**[0002]** In the prior art, beds have been provided with an adjustment function allowing the inclination of a back and head portion of the bed to be varied, typically between a horizontal orientation and an upright orientation. The adjustable upper portion of the bed may thereby act as a back-rest for a user, for example, half-lying or sitting in the bed. Being able to adjust the bed in this manner may provide both comfort related advantages and health related advantages. Being able to vary the angle of inclination may be of particular importance for persons which, due to illness or otherwise, spend long time in the bed.

**[0003]** To provide adequate support for the back when in a raised position, the bed may be provided with a lumbar support. WO 2005/030009 discloses a support base for a bed including a planar upper portion rotatable into an upright position to provide a back-rest for a user. The support base further includes an adjustable support means in the form of an electric motor driving a piston with a piston cap pushing into the rear of the mattress to provide a localized protrusion in the mattress. The electric motor may push the piston up or down to increase or decrease support using electronic controls. However, WO 2005/030009 also discloses a mechanical means for providing the adjustable support means using a differential displacement member in the form of a curved C- or a D-shaped cam. The cam is provided at the underside of the mattress about the lumbar position and rotates to protrude into the mattress to provide a localized protrusion in the mattress.

### Summary of the inventive concept

**[0004]** The inventors have however realized that there is room for improvement of the lumbar supports of the prior art. For example, the prior art implementations of adding a separate electric motor for the purpose of controlling the lumbar support may add to the bulk, complexity and costs of the support base and in some cases also be impractical or undesirable. Moreover, an increased amount of electronics may adversely affect the longevity and reliability of the lumbar support function. Meanwhile, the prior art implementations employing a rotating C- or D-shaped cam may cause friction against the mattress which in turn may result in wear on the underside of the mattress. In view of these insights, it is an objective of the present inventive concept to provide a frame for a bed with a lumbar support function which is reliable, simple to implement, relatively inexpensive and avoids or at least reduces excessive wear on the mattress. Further

objects may be understood from the below.

**[0005]** According to a first aspect of the inventive concept there is provided a frame for a bed comprising a plurality of slats for supporting a bed mattress, the frame including a first frame part and a second frame part, wherein an inclination of the second frame part with respect to the first frame part is adjustable. The frame further comprises a slat holder mounted on the second frame part and supporting at least one of said plurality of slats, wherein the slat holder is arranged to be movable in relation to and in a direction transverse to a plane of extension of the second frame part whereby said at least one slat is movable, in relation to adjacent slats, between a lowered position and a raised position for providing a lumbar section support, wherein the movement of the slat holder is mechanically coupled to the adjustment of the second frame part such that said at least one slat is brought from said lowered position to said raised position while the inclination of the second frame part is increased.

**[0006]** An advantage of the inventive frame is that a lumbar support function may be provided by controlled movement of one or more slats. Direct contact between the mattress and an actuation mechanism may thus be avoided wherein wear of the mattress may be limited. By the movement of the slat being transverse to the frame, friction-inducing relative movements between the underside of the mattress and the slat may be avoided or at least reduced wherein mattress wear may be even further limited. An additional advantage related to the transverse movement of the slat(s) is that the position of the lumbar support, along the length of the frame, may be constant throughout the adjustment range of the second frame part. The lumbar support may also be provided along the entire length of the slat(s) and thus the width of the bed. Ensuring a proper ergonomic function for the lumbar support for a plurality of angles of inclinations of the second frame part and positions of the user of the bed may thereby be facilitated. Since the coupling is mechanical, separate electrical means for controlling the position of the slat(s) may be avoided. Additionally, by associating the lumbar support function with the one or more slats, the lumbar support function may conveniently and inexpensively be integrated in adjustable bed frames of various types and sizes by implementing a movable slat holder in accordance with the first aspect.

**[0007]** According to one embodiment the frame further comprises a link configuration arranged to mechanically couple an adjustment of the second frame part to a movement of the slat holder in said transverse direction. The mechanical coupling may thus be provided by inexpensive, comparably simple and reliable mechanical elements. The link configuration may be arranged to transfer an adjustment of the second frame part to a movement of the slat holder in said transverse direction. The link configuration may be connected to the first frame part and the second frame part. The link configuration may be arranged to cause the slat holder to move at least during a sub-range of a total adjustment range of the

second frame part.

**[0008]** According to one embodiment the link configuration comprises a displacement member arranged to move in relation to the slat holder in a direction along said plane of extension defined by the second frame part, while the inclination of the second frame part is increased, and arranged to push the slat holder in said transverse direction while the displacement member is moved. A position of the slat holder, and thus a position of the slats, in relation to the second frame part may thus be controlled by a relative movement of the displacement member. The direction of movement of the displacement member may be substantially parallel to said plane defined by the second frame part. The displacement member may be formed as a link, in particular an elongated link. The displacement member may thus have a simple construction. The displacement member may be connected to a link of the link configuration.

**[0009]** According to one embodiment at least a length segment of the displacement member has a width dimension which increases along a longitudinal direction of the displacement member and wherein an edge portion along the length segment of the displacement member is arranged to push the slat holder in said transverse direction while the displacement member is moved. The position of the slat holder, and thus the height of the lumbar support, may be controlled by the shape of the edge portion of the displacement member.

**[0010]** According to one embodiment the link configuration is connected to a displacement member pivotably arranged in relation to the slat holder and having a dimension in said transverse direction which varies with an orientation of the displacement member, wherein the link configuration is arranged to control the orientation of the displacement member while the inclination of the second frame part is increased. Thereby the displacement member may push the slat holder in said transverse direction. A position of the slat holder, and thus a position of the slats, in relation to the second frame part may thus be controlled by a varying orientation of the displacement member. The displacement member may be connected to the link configuration. The displacement member may be included in the link configuration. The displacement member may for example be formed as a cam. The displacement member may thus have a simple construction.

**[0011]** With reference to the above embodiments, a displacement member arranged to "push the slat holder", may be arranged to do so via an intermediate element. That is, the link configuration or the displacement member need not necessarily act, or engage with, the slat holder directly. In fact, according to some embodiments the slat holder may be mounted on a support member which is movably arranged on the second frame part, wherein the slat holder is arranged to be movable in relation to the second frame part. The displacement member may thus be arranged to push the slat holder in the transverse direction by pushing on the support member. An advantage of mounting the slat holder on a support

member is that slat holders of the same design may be used both for supporting movable slats and non-movable slats.

**[0012]** According to one embodiment the frame further comprises a guiding means provided on the second frame part and arranged to guide the slat holder, in said transverse direction, during movement of the slat holder. The guiding means may thereby limit the movement of the slat holder to said transverse direction.

**[0013]** The guiding means may be arranged to guide the slat holder, along a side surface of a side rail of the second frame part. The side surface may be an inwardly or outwardly facing side surface with respect to the second frame part.

**[0014]** The guiding means may comprise a first guide portion and a second guide portion arranged at opposite sides of the slat holder, wherein the slat holder is arranged to be movable between the first and the second guide portions.

**[0015]** In case the frame comprises a support member as discussed in the preceding paragraph, the guiding means (e.g. the first and second guide portions) may guide the slat holder by guiding the movement of the support member.

**[0016]** According to one embodiment the slat holder forms a first slat holder and the frame further comprises a second slat holder, the first and the second slat holder being mounted on opposite sides of the second frame part, each slat holder being arranged to support a respective end portion of said at least one slat and each slat holder being movable in relation to the second frame part.

**[0017]** According to one embodiment the frame further comprises electrical means for controlling the inclination of the second frame part, such as an electrical motor. The angle of inclination may thereby be conveniently controlled by a user or an operator, for example via a remote.

**[0018]** The inclination of the second frame part may be adjustable between a substantially horizontal orientation and a raised orientation. The second frame part may thus be adjusted to provide support in both a lying position and a sitting position.

**[0019]** Advantageously, the inclination of the second frame part is adjustable between a plurality of orientations with different angles of inclination in a stepwise or continuous manner.

**[0020]** According to one embodiment the at least one movable slat is arranged flush with adjacent slats when the at least one movable slat is in its lower position. Thus, the lumbar support function may be concealed or inactivated, at least partly, when the second frame part assumes a more horizontal orientation.

**[0021]** According to one embodiment the at least one movable slat is arranged to protrude from a plane of extension of adjacent ones of said plurality of slats when said at least one slat is in its raised position. Thus, the lumbar support function may be activated to an increasing extent when the second frame part assumes a more

upright orientation.

**[0022]** According to one embodiment the at least one movable slat is gradually brought from said lowered position to said raised position while the inclination of the second frame part is increased. Thus, the lumbar support function may be gradually activated to when the second frame part is raised.

#### Brief description of the drawings

**[0023]** 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 side views of a section of a frame in accordance with an embodiment.

Fig. 2 is a side view of a section of a frame in accordance with a further embodiment.

Fig. 3 is a side view of a section of a frame in accordance with another further embodiment.

Figs 4a-b are side views of a section of a frame in accordance with an even further embodiment.

#### Detailed description of preferred embodiments

**[0024]** Detailed embodiments of aspects of the present inventive concept will now be described with reference to the drawings.

**[0025]** Figs 1a-c are side views of a frame 100 for a bed. The drawings represent a portion, i.e. a length segment, of the frame 100. The frame 100 includes a first frame part 110 and a second frame part 120. The second frame part 120 is arranged to support a back and head portion of a mattress, or analogously a back and head portion of a user of the bed. The frame 100 may be dimensioned to support a single mattress or even two mattresses placed side by side. As will be described in more detail below the second frame part 120 is pivotable in relation to the first frame part 110.

**[0026]** For clarity purposes, the illustrated view shows only one side of the frame 100. The frame 100 however further comprises a second not shown side, arranged directly opposite to the first side portion. In particular, the second side portion may be mirrored with respect to the first side portion along a length direction of the frame 100. Hence, although in the following description reference will mainly be made to the illustrated side portion of the frame 100, the description applies *mutatis mutandis* to the opposite side of the frame 100.

**[0027]** The first frame part 110 may comprise a first rail 114 defining the horizontal plane of extension of the first frame part 110. The first rail 114 may comprise two side rails arranged at opposite sides of the frame 100 and, optionally, a head rail and a foot rail connecting the two

side rails. The second frame part 120 may comprise a second rail 124 defining the plane of extension of the second frame part 120. The second rail may comprise two side rails arranged at opposite sides of the frame 100 and, optionally, one or two transverse rails connecting the two side rails of the second rail 124. In Figs 1a-c a portion of one of the side rails of the first rail 114 is visible and a portion of one of the side rails of the second rail 124 is visible. The rails of the first and second frame parts 110 may for example be made of metal, such as steel, but wooden, plastics or composite materials are also possible.

**[0028]** As mentioned above, an inclination of the second frame part 120, with respect to the first frame part 110 is adjustable. The first frame part 110 may typically be arranged to support a mattress in the horizontal plane and thus the inclination of the second frame part 120 may be adjustable with respect to the horizontal plane. Accordingly, Figs 1a-c illustrate the second frame part 120 at different orientations having increasing angles of inclination with respect to the horizontal plane. In Fig. 1a, the second frame part 120 is arranged in a substantially horizontal orientation and level with the first frame part 110. This orientation of the second frame part 120 may be referred to as a resting orientation. Fig. 1b illustrates the second frame part 120 at an intermediate, or half-sitting orientation. Fig. 1c illustrates the second frame part 120 at a substantially upright, or sitting orientation. The frame 100 is preferably arranged to allow the angle of inclination of the second frame part 120 to be varied in a plurality of steps, or continuously, between the illustrated orientations.

**[0029]** For the purpose of controlling the inclination of the second frame part 120 the frame 100 may comprise a configuration of arms 130 which are pivotably connected to the first frame part 110 at point P. The configuration of arms 130 may support the second frame part 120 for pivoting thereof in relation to the first frame part 110.

**[0030]** As may be seen in Figs 1a-c the arms 130 may be arranged to translate the second frame part 120 along a curved path while simultaneously causing the second frame part 120 to pivot. The particular configuration of arms 130 illustrated in the drawings however only constitute one example and other variants are equally possible without departing from the scope of the present inventive concept. For example, in a more simple mechanism, the second rail 124 of the second frame part 120 may be pivotably connected to the first rail 114 of the first frame part 110, the point of connection defining a pivot point, wherein the second frame part 120 may be raised by rotation about the pivot point. Regardless of the particular mechanism for adjusting the inclination of the second frame part 120, the inclination is preferably controlled by electrical means, such as an electric motor, or an hydraulically or pneumatically controlled piston. A driving shaft of an electric motor may for example be arranged to rotate an arm of the configuration 130 about the axis P via a gear arrangement. Alternatively, a piston may be

arranged to push on an underside of the second frame part 120 and thus control the angle of inclination of the second frame part 120. Further details and variations of mechanisms for adjusting the inclination of a head and back portion of a bed are known in the art, as such, and will not be discussed in more detail herein.

**[0031]** The frame 100 further comprises a plurality of slats including the slats 112, 113, 122, 123. The plurality of slats are arranged to support a bed mattress (not shown). The slats 112, 113, 122, 123 may be formed as oblong ribs or laths. The slats 112, 113, 122, 123 are arranged to extend transverse to the longitudinal direction of the frame 100. With reference to the drawings, the slats 112, 113, 122, 123 thus extend outwardly from the illustrated plane. The slats 112, 113, 122, 123 may be formed in wooden material, however plastic or composite materials may also be used. A first subset of the plurality of slats is supported by the first frame part 110, of which slats 112, 113 constitute representative examples. A second subset of the plurality of slats is supported by the second frame part 120, of which slats 122, 123 constitute representative examples. Thus, when the angle of inclination of the second frame part 120 is increased so will the angle of inclination of the second subset of slats 122, 123 with respect to the first subset of slats 112, 113. For reasons which may be better understood from the below description, the slats 122, 123 are preferably arranged at a position along the frame 100 corresponding to a lumbar section of a user of the bed.

**[0032]** The slats 112, 113 are supported at opposite ends by a pair of slat holders arranged at opposite sides of the first frame part 110, of which the slat holder 116 is visible in Figs 1a-c. The slat holder 116 comprises a slat receiving portion 117. The slat receiving portion 117 may as illustrated comprise two pockets or compartments arranged to receive a respective end portion of the slats 112, 113. As illustrated, the two compartments of the slat receiving portion 117 may optionally be interconnected in the horizontal direction by a horizontal mattress supporting layer. However it is contemplated that a slat holder 117 also may comprise fewer, or more compartments (optionally interconnected by a horizontal mattress supporting layer) and thus be arranged to support only one slat or more than two slats, for example three or four slats. In a further variation, end portions of a slat 112, 113 may, instead of being received in compartments, be attached to a slat receiving portion by gluing, screwing, bolting or the like.

**[0033]** The slat holder 116 further comprises an attachment portion 119. The attachment portion 119 is fixedly mounted on the first rail 114 of the first frame part 110. The attachment portion 119 may, as illustrated, be fastened to the first rail 114 by means of a pair of screws or bolts extending through the attachment portion 119. Alternatively, the attachment portion 119 may be arranged to snap on to supporting pins provided on the first frame part 114.

**[0034]** As illustrated, the slat holder 116 may further

comprise an optional spring portion 118 intermediate the slat receiving portion 117 and the attachment portion 119. The spring portion 118 may improve the comfort and ergonomic function of the frame 100. The spring portion may include one or more springs. Although illustrated as leaf springs it is equally possible to use other types of springs suitable for this purpose, for example helical springs.

**[0035]** The slats 122, 123 are supported at opposite ends by a pair of slat holders arranged at opposite sides of the second frame part 120, of which the slat holder 126 is visible in Figs 1a-c. Similar to the slat holder 116, the slat holder 126 includes a slat receiving portion 127 corresponding to the slat receiving portion 117, an optional spring portion 128 corresponding to the spring portion 118, and an attachment portion 129 corresponding to the attachment portion 119. In accordance with the present inventive concept, the slat holder 126 is however arranged to be movable in relation to the supporting frame part, i.e. the second frame part 120, in a direction transverse to the plane of extension of the second frame part 120 (which direction hereinafter will be referred to as the "transverse direction") whereby the slats 122, 123 are movable, in relation to the adjacent slats supported by the second frame part 120, between a lowered position and a raised position. As may be seen in Fig. 1a, the slats 122, 123 are arranged to be flush with adjacent slats in the lower position. As may be seen in Figs 1b and 1c the slats 122, 123 are arranged to protrude from the plane of extension of adjacent slats in the raised position.

**[0036]** The slat holder 126 is arranged on a support member 140 which is movable along guiding means 142, 144 provided on the second frame part 120 and arranged to guide the support member 140, and thus the slat holder 126, in the transverse direction. The attachment portion 129 is fixedly mounted on the support member 140. The attachment portion 129 may be arranged to snap on to supporting pins provided on the support member 140. Alternatively, the attachment portion 129 may be fastened to the support member 140 by means of a pair of screws or bolts extending through the attachment portion 129.

**[0037]** The guiding means may comprise a first guide portion 142 and a second guide portion 144 arranged at opposite sides of the slat holder 126 and the support member 140 to form a guide way. The guide portions 142, 144 may for example be screwed or bolted to the second rail 124. An edge portion of each guide portion 142, 144 is arranged at a distance from the side surface of the second rail 124, thus defining a space for receiving an edge portion of the support member 140 wherein the support member 140 may be slidably movable between the guide portions 142, 144 with opposite edge portions of the support member 140 running in said spaces.

**[0038]** The support member 140 and the guide portions 142, 144 may be made from a metallic, plastic or composite material. In Figs 1a-c the support member 140 is shaped as a generally rectangular plate having a height

dimension substantially equal to the height of the illustrated longitudinally extending side surface of the second rail 124. However, other relative dimensions of the support member 140 and the second rail 124 are also possible. For example the support member may have a smaller height than the second rail 124. The support member may also be provided with other shapes, such as an H-shape or a U-shape. In a further variation, the guiding means may instead be provided as a pair of parallel grooves formed in the side surface of the second rail 124 and the support member 140 may comprise a pair of protrusions provided on the surface facing the side surface of the second rail 124 and extending into the pair of grooves.

**[0039]** In accordance with the present inventive concept, the movement of the slat holder 126 is mechanically coupled to the adjustment of the second frame part 120 such that the slats 122, 123 are brought from the lowered position (see Fig. 1 a) to the raised position (see Figs 1b and 1c) while the inclination of the second frame part 120 is increased. The frame 100 comprises a link configuration 160 arranged to impart a force to the slat holder 126 via the support member 140, which force acts to move the slat holder 126 in the transverse direction while the inclination of the second frame part 120 is increased. The link configuration 160 comprises a first link 162 and a second link forming a displacement member 164. The first link 162 is pivotably connected to the first frame part 110 and the second frame part 120. The displacement member 164 comprises a connected end 164a, pivotably connected to the first link 162, and an opposite free end 164b.

**[0040]** A length segment or length section of the displacement member 164 at the free end 164b thereof presents a width dimension which increases towards the free end 164b. In this context the width dimension refers to the dimension in a direction transverse to the longitudinal direction of the displacement member 164. The free end 164b is arranged to slidably move between an abutment portion 170 arranged on the second frame part 120 and an abutment portion 172 arranged on the support member 140. The abutment portion 170 supports the displacement member 164 at a lower edge thereof. In Figs 1a-c the abutment portion 170 is arranged directly opposite the abutment portion 172. However, this is not a requirement. In fact, a similar abutment portion for supporting the displacement member 164 at a lower edge may be arranged at virtually any position between the connected end 164a and the free end 164b.

**[0041]** When the angle of inclination of the second frame part 120 is increased the displacement member 164 is pulled by the first link 162 in a direction towards the connected end 164a and substantially parallel with the plane defined by the second frame part 120. Due to the increasing width an upper edge portion of the displacement member 164 will push the support member 140 in the transverse direction wherein the slats 122, 123 are raised. As the angle of inclination is decreased (e.g.

starting from the orientation in Fig. 1 c) the movement of the displacement member 164 and thus slat holder 126 is reversed wherein the slats 122, 123 are lowered.

**[0042]** Thereby, the varying width dimension of the displacement member 164 may control the position of the slats 122, 123 along the transverse direction during raising/lowering of the second frame part 120. The variation of the width dimension is advantageously such that the slats 122, 123 assume their lowered position when the second frame part 120 is in its lowered position (i.e. Fig. 1 a) and their raised position when the second frame part 120 is in its raised position (i.e. Fig. 1 c). As may be understood, while segments of the displacement member 164 having a constant width are sliding along the abutment portion 144, a current position of the slats 122, 123 may be maintained. Thus, the movement (i.e. a changing position) of the slats 122, 123 may be limited to a sub-range of a total adjustment range of the second frame part 120. As may be understood, a corresponding movable slat holder, link configuration and displacement member may be arranged at the opposite side of the second frame part 120 for raising also the opposite end of the slats 122, 123.

**[0043]** 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.

**[0044]** For example, although the particular link configuration 160 illustrated in Figs 1-c including the link 162 and the elongated displacement member 164 provides a reliable and simple manner of providing the mechanical coupling between the slat holder movement and the second frame part adjustment, it is however contemplated that other link configurations also may provide a corresponding function. For example, a link configuration is contemplated including a first link similar to the link 162 and at least a second link connected between the first link and a displacement member similar to the displacement member 164, the at least second link causing the displacement member to move towards a free end thereof while the inclination of the second frame part is increased, i.e. opposite to the configuration in Figs 1a-c. In that case the displacement member could be provided with a width dimension increasing in a direction towards the connected end of the displacement member, the varying dimension of the displacement member thereby controlling the position of the slats.

**[0045]** In another variation of the illustrated embodiment, the slat holder 126 may provide an abutment portion corresponding to the abutment portion 172. In that case, the support member 140 would not need to include the abutment portion 172.

**[0046]** Referring to Fig. 2 there is shown a frame 200, similar to the frame 100, however including a displacement member 264 having a generally L-shaped outline. Meanwhile, the abutment members 270 and 272 are

formed to provide a first and a second mutually facing abutment surface wherein a shortest distance between the abutment surfaces decreases along a direction towards the connected end 264a of the displacement member 264. Thereby, the upper end portion of the L-shaped displacement member 264 may push the abutment members 270 and 272 apart to an increasing extent while the second frame part 220 is raised, thus raising the movable slat holder and the slats supported thereby.

**[0047]** Referring to Fig. 3 there is shown a frame 300, similar to the frame 100 and 200, however including a displacement member 364, similar in function to the displacement member 164, however differing by comprising a longitudinal groove or, alternatively, a ridge 364c arranged to extend at a distance from an upper edge of the displacement member 364 which distance decreases towards the free end 364b the displacement member 364. Additionally, an abutment member 372, similar to the abutment members 172, 272, however differing by comprising a lower tip portion 372a running in the groove 364c or, alternatively, abutting an edge of the ridge 364c, as the case may be. Thereby the edges of the groove or ridge 364c may push the abutment members 372 and 370 apart to an increasing extent while the second frame part 320 is raised, thus raising the movable slat holder and the slats supported thereby.

**[0048]** Referring to Figs 4a-b there is shown a frame 400, similar to the frames 100, 200 and 300 however including a displacement member 464 which is pivotably arranged in relation to the slat holder 426 and the support member 440. More specifically, the displacement member 464 is pivotably connected to the second frame part 420. The displacement member 464 presents a radial dimension in its plane of rotation which varies with an orientation of the displacement member 464. Thereby the edges of the displacement member 464 may push the abutment member 472, and thus the slat holder 426, in the transverse direction to an increasing extent while the second frame part 420 is raised, thus raising the movable slat holder 426 and the slats supported thereby.

## Claims

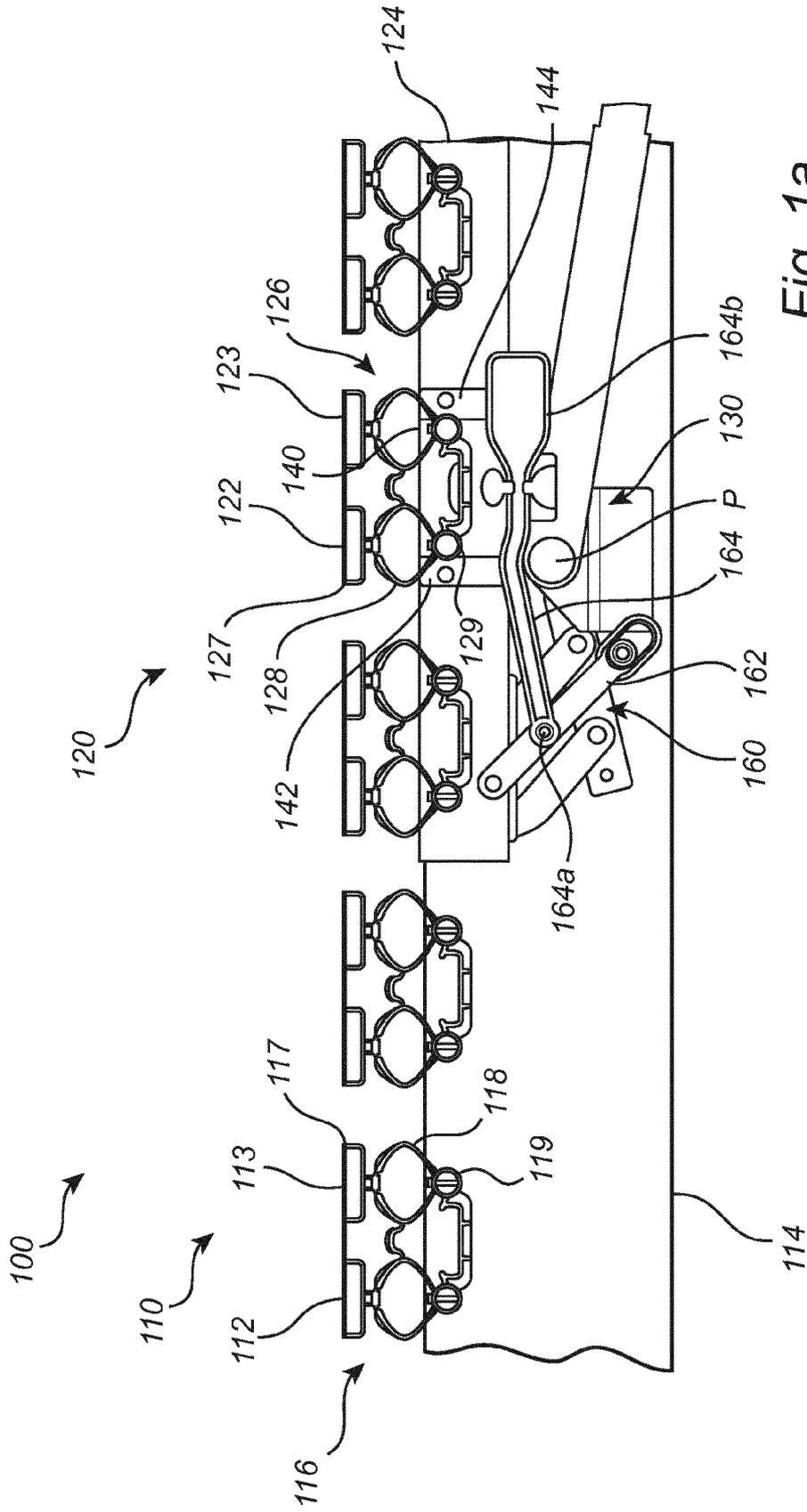
1. A frame for a bed comprising a plurality of slats for supporting a bed mattress, the frame including a first frame part and a second frame part, wherein an inclination of the second frame part with respect to the first frame part is adjustable, the frame further comprising:

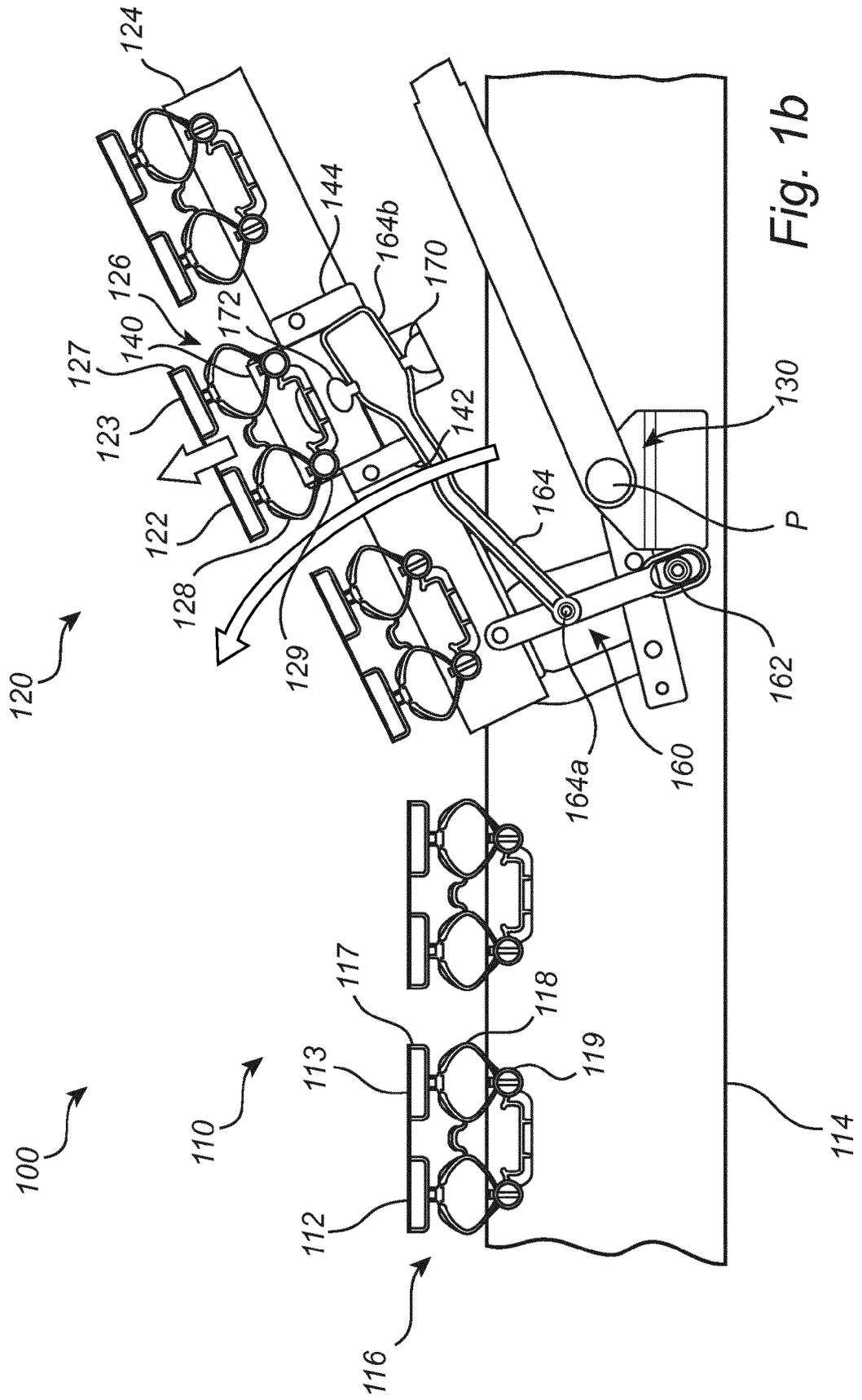
a slat holder mounted on the second frame part and supporting at least one of said plurality of slats, wherein the slat holder is arranged to be movable in relation to and in a direction transverse to a plane of extension of the second frame part whereby said at least one slat is movable, in relation to adjacent slats, between a lowered

position and a raised position for providing a lumbar section support, wherein the movement of the slat holder is mechanically coupled to the adjustment of the second frame part such that said at least one slat is brought from said lowered position to said raised position while the inclination of the second frame part is increased.

2. A frame according to claim 1, further comprising a link configuration arranged to mechanically couple an adjustment of the second frame part to a movement of the slat holder in said transverse direction.
3. A frame according to claim 2, wherein the link configuration comprises a displacement member arranged to move in relation to the slat holder in a direction along said plane defined by the second frame part while the inclination of the second frame part is increased, and to push the slat holder in said transverse direction while the displacement member is moved.
4. A frame according to claim 3, wherein at least a length segment of said displacement member has a width dimension which increases along a longitudinal direction of the displacement member and wherein an edge portion along the length segment of the displacement member is arranged to push the slat holder in said transverse direction while the displacement member is moved.
5. A frame according to claim 2, wherein the link configuration is connected to a displacement member pivotably arranged in relation to the slat holder and having a dimension in said transverse direction which varies with an orientation of the displacement member, wherein the link configuration is arranged to control the orientation of the displacement member while the inclination of the second frame part is increased.
6. A frame according to any of the preceding claims, further comprising a guiding means provided on the second frame part and arranged to guide the slat holder, in said transverse direction, during movement of the slat holder.
7. A frame according to claim 6, wherein the guiding means is arranged to guide the slat holder, along a side surface of a side rail of the second frame part.
8. A frame according to any of claims 6-7, wherein said guiding means comprises a first guide portion and a second guide portion arranged at opposite sides of the slat holder, wherein the slat holder is arranged to be movable between the first and the second guide portions.

9. A frame according to claim any of the preceding claims, wherein said slat holder forms a first slat holder and the frame further comprises a second slat holder, the first and the second slat holder being mounted on opposite sides of the second frame part, each slat holder being arranged to support a respective end portion of said at least one slat and each slat holder being movable in relation to the second frame part. 5  
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10. A frame according to claim any of the preceding claims, further comprising electrical means for controlling the inclination of the second frame part, such as an electrical motor. 15  
11. A frame according to claim any of the preceding claims, wherein the inclination of the second frame part is adjustable between a substantially horizontal orientation and a raised orientation. 20  
12. A frame according to claim any of the preceding claims, wherein the inclination of the second frame part is adjustable between a plurality of orientations. 25  
13. A frame according to any of the preceding claims, wherein said at least one slat is arranged flush with adjacent ones of said plurality of slats when said at least one slat is in said lower position. 30  
14. A frame according to any of the preceding claims, wherein said at least one slat is arranged to protrude from a plane of extension of adjacent ones of said plurality of slats when said at least one slat is in said raised position. 35  
15. A frame according to claim any of the preceding claims, wherein said at least one slat is gradually brought from said lowered position to said raised position while the inclination of the second frame part is increased. 40  
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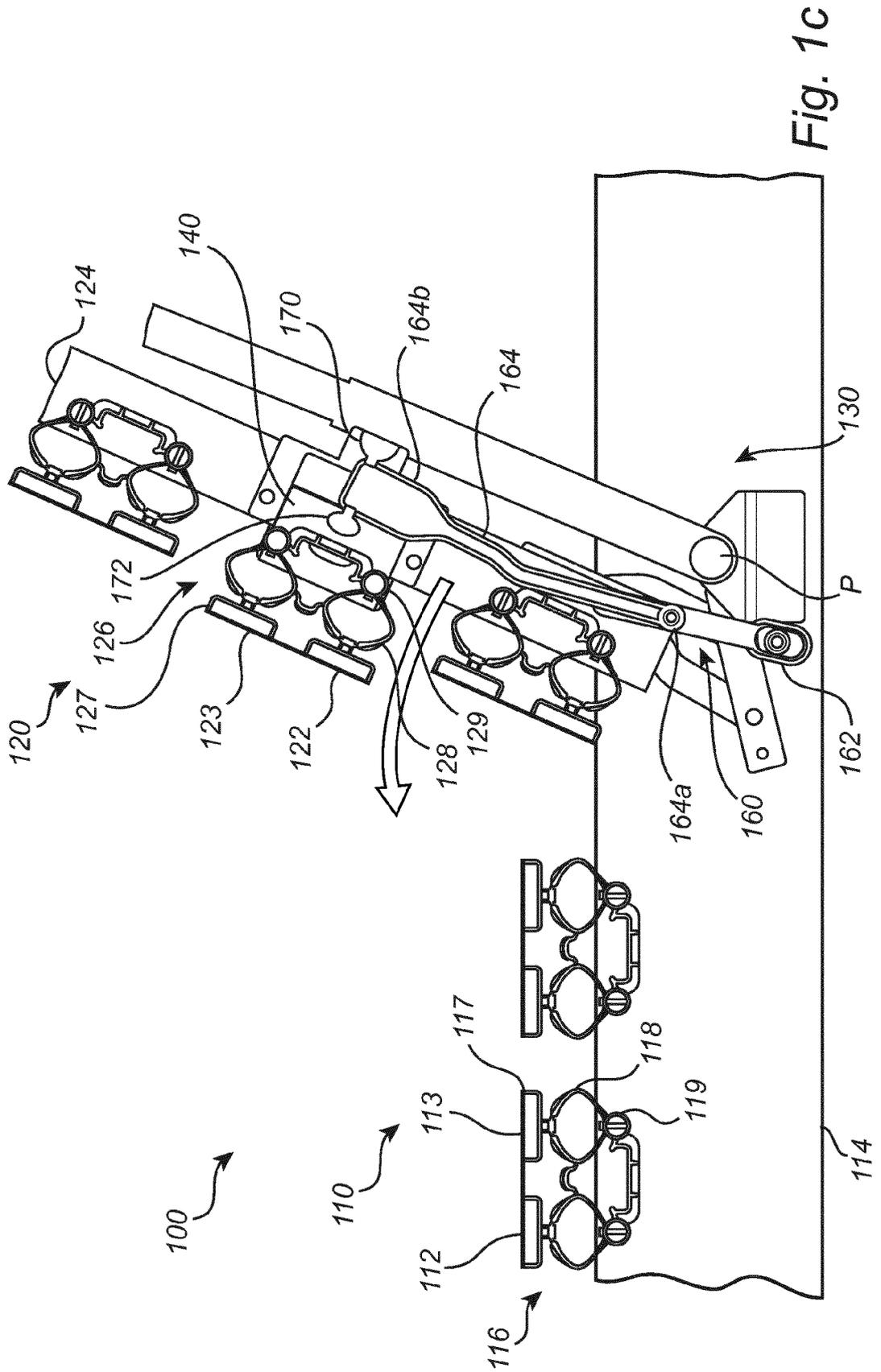
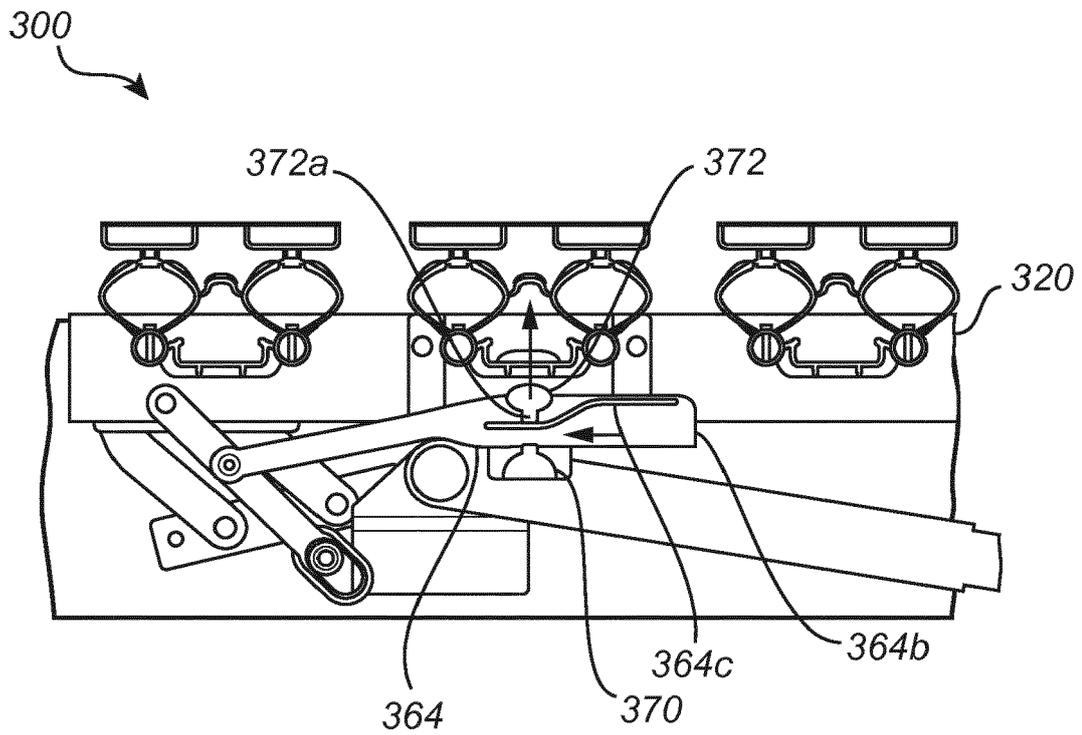
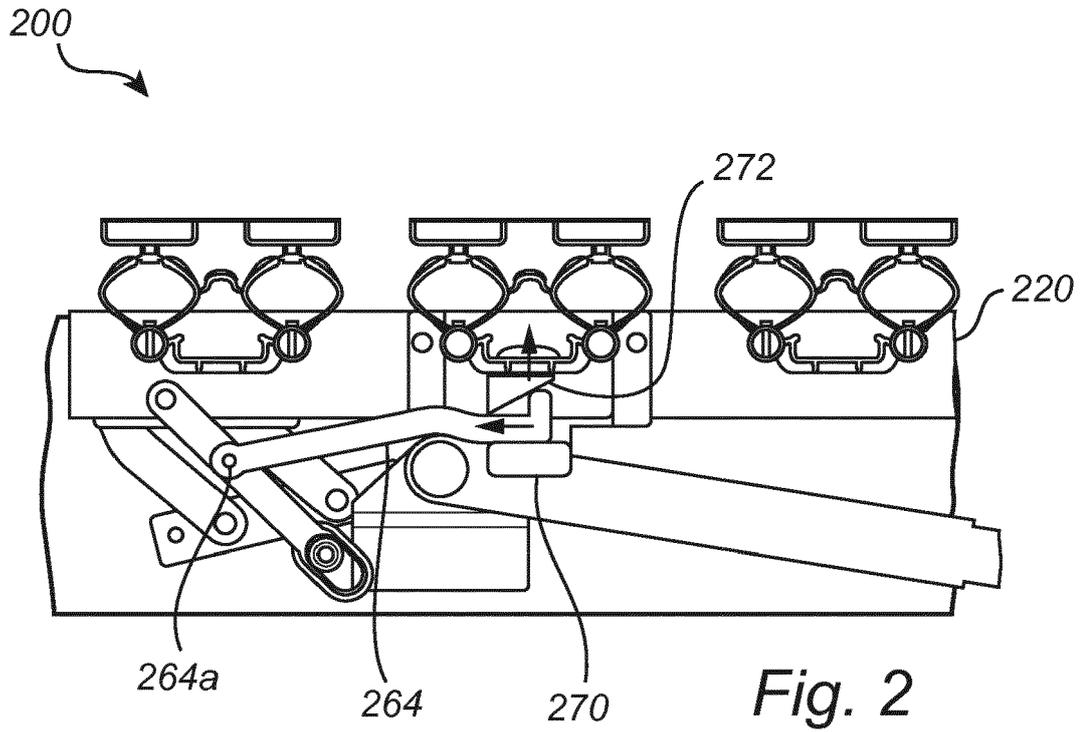
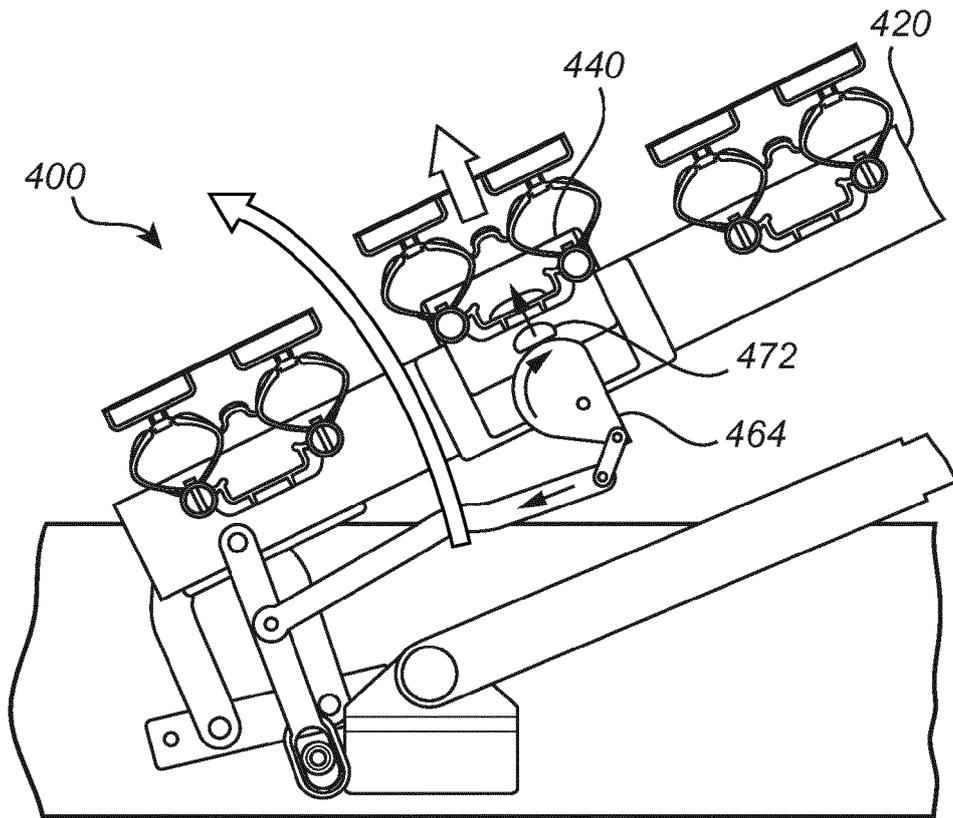
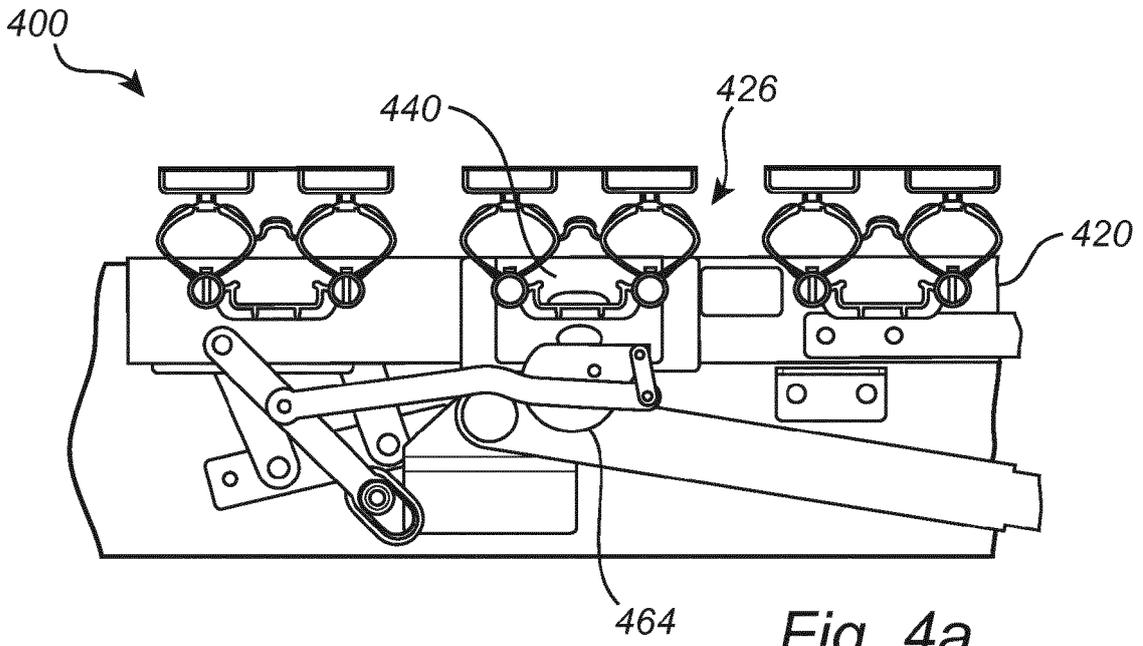


Fig. 1c



*Fig. 3*





EUROPEAN SEARCH REPORT

Application Number  
EP 14 18 0182

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Place of search		Date of completion of the search	Examiner
The Hague		23 January 2015	Amghar, Norddin
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