

**A recliner****Field of disclosure**

The present disclosure relates to the field of adjustable recliners.

**Background**

- [0001] Adjustable recliners have been available on the market for several decades, including recliners with adjustable headrests, and synchronized components. However, existing adjustable recliners often suffer from being difficult to operate, having complex designs, and/or having low durability, thereby motivating for further development within the field.
- [0002] It is an aim of the present invention to provide a recliner that addresses some of the issues with the prior art.

**Summary of the invention**

- [0003] A first aspect of the present invention provides a recliner comprising a seat, a back comprising a first back portion, where the back is connected to the seat, and where the first back portion is configured to pivot between an upright first position and a reclined second position, a headrest, where the headrest is connected to an upper end of the first back portion, and where the headrest is configured to pivot between a headrest first position and a headrest second position, and an elongated connector assembly connected to the headrest at a first connection point and extending towards the seat, where the elongated connector assembly is configured to pivot the headrest forward from the headrest first position to the headrest second position when the first back portion is pivoted between the upright first position and the reclined second position, and to pivot the headrest backward from the headrest second position to the headrest first position when the first back portion is pivoted between the reclined second position and the upright first position, where the elongated connector assembly comprises a connector assembly element having an adjustable length, and where the connector assembly element is configured to expand/ contract at least in part in the longitudinal direction of the elongated connector assembly when a force is applied to the headrest that exceeds a first threshold value.
- [0004] According to another embodiment of the present invention the back comprises a second back portion connected to the seat, the first back portion is connected to the second back portion, the elongated connector assembly is connected to the second back portion via a second connection point, the elongated connector assembly extends between the first connection point and the second connection

point, and where the connector assembly element is configured to expand/contract at least in part in the direction between the first connection point and the second connection point when a force is applied to the headrest that exceeds the first threshold value.

- [0005] According to yet another embodiment of the present invention the recliner further comprises a connection element, where the connection element is connected to the second back portion and protrudes a non-zero distance from the second back portion in a forward facing direction from the back, and where the second connection point is arranged on the connection element such that the second connection point is positioned a non-zero distance from the back in the forward facing direction of the back.
- [0006] According to yet another embodiment of the present invention the recliner further comprises a lumbar support connected to the connection element, where the connection element is rotatably connected to the second back portion such that the lumbar support is rotated a non-zero distance from the back in the backwards facing direction of the back when the first back portion is pivoted between the upright first position and the reclined second position.
- [0007] According to yet another embodiment of the present invention the first back portion is connected to the seat, the elongated connector assembly is connected to the seat via a third connection point, the elongated connector assembly is arranged between the first connection point and the third connection point, and the connector assembly element is configured to expand/ contract at least in part in the direction between the first connection point and the third connection point when a force is applied to the headrest that exceeds the first threshold value.
- [0008] According to yet another embodiment of the present invention the recliner further comprises comprising a connection element, where the connection element is connected to the first back portion and protrudes a non-zero distance from the first back portion in a forward facing direction from the back, the elongated connector assembly is further connected to the first back portion via a fourth connection point, and where the fourth connection point is arranged on the connection element such that the fourth connection point is positioned a non-zero distance from the back in the forward facing direction of the back.
- [0009] According to yet another embodiment of the present invention the recliner further comprises a lumbar support connected to the connection element, where the connection element is rotatably connected to the first back portion such that the lumbar support is rotated a non-zero distance from the back in the

backwards facing direction of the back when the first back portion is pivoted between the upright first position and the reclined second position.

- [0010] According to yet another embodiment of the present invention the connector assembly element comprises an elastic element.
- [0011] According to yet another embodiment of the present invention the connector assembly element comprises an elongated piston assembly.
- [0012] According to yet another embodiment of the present invention the recliner further comprises a reset mechanism configured to set the length of the connector assembly element within a predetermined interval when the first back portion is pivoted between the reclined second position and the upright first position.
- [0013] According to yet another embodiment of the present invention the elongated piston assembly comprises a piston and a piston housing, where the piston is configured to move inside the piston housing when the elongated piston assembly is exposed to a force exceeding a second threshold value.
- [0014] According to yet another embodiment of the present invention the reset mechanism comprises a connection bar connected to the first back portion and to the piston, and the connection bar is arranged to exert a force exceeding the second threshold value when the first back portion is pivoted between the reclined second position and the upright first position.
- [0015] According to yet another embodiment of the present invention the piston comprises an elongated slot, and where the connection bar is received and movable in the slot.
- [0016] According to yet another embodiment of the present invention the elongated piston assembly comprises an elastic member connected between the piston and the piston housing.

#### **Brief description of the drawings**

- [0017] Figure 1 is a schematic illustration of a recliner according to the present invention,
- [0018] Figure 2 is a schematic illustration of a recliner according to the present invention comprising a headrest and a first back portion, where the headrest is configured to pivot between a headrest first position and a headrest second position when the first back portion is pivoted between the upright first position and the reclined second position,
- [0019] Figure 3 is a schematic illustration of a recliner (excluding a base) comprising an elongated connector assembly,

- [0020] Figure 4 is a schematic illustration of a recliner (excluding a base) comprising an elongated connector assembly, where the elongated connector assembly is connected to the headrest and to the seat of the recliner,
- [0021] Figure 5 is a schematic illustration of a recliner (excluding a base) comprising an elongated connector assembly and a first back portion, where the elongated connector assembly is connected to the headrest, the first back portion and to the seat of the recliner,
- [0022] Figure 6 is a schematic illustration of a recliner (excluding a base) comprising an elongated connector assembly, a first back portion and a second back portion, where the elongated connector assembly is connected to the headrest and to the second back portion of the recliner,
- [0023] Figure 7 is a schematic illustration of an elongated connector assembly connected to a connection element and a lumbar support,
- [0024] Figure 8 is a schematic illustration of an elongated connector assembly when mounted as a part of a recliner, where the elongated connector assembly connected to a connection element and a lumbar support,
- [0025] Figure 9 is a schematic illustration of an elongated piston assembly,
- [0026] Figure 10 is a schematic illustration of an elastic element,
- [0027] Figure 11 is a schematic illustration of a recliner (excluding a base) comprising an elongated connector assembly, a first back portion and a second back portion, where the elongated connector assembly is connected to the headrest and to the second back portion of the recliner, and
- [0028] Figure 12 is a schematic illustration of an elongated piston assembly comprising a piston and a piston housing, where an elastic member is connected between the piston and the piston housing.

#### **Detailed description of the disclosure**

- [0029] In the following, general embodiments as well as particular exemplary embodiments of the invention will be described. References will be made to the accompanying drawings. It shall be noted, however, that the drawings are exemplary embodiments only, and that other features and embodiments may well be within the scope of the invention as claimed. Further, the mentioning of references such as "a" or "an" etc. should not be construed as excluding a plurality. The term "invention" may herein be used interchangeably with the term "disclosure". The term "producing" may herein be used interchangeably with the term "obtaining".
- [0030] Unless otherwise defined, all terms of art, notations and other scientific terms or terminology used herein are intended to have the meanings commonly

understood by those of skill in the art to which this invention pertains. Certain terms of art, notations, and other scientific terms or terminology may, however, be defined specifically as indicated below.

- [0031] The present invention concerns a recliner 100 comprising a seat 100, a headrest 130, an elongated connector assembly 140, and a back 120. The back 120 is, as schematically illustrated in figure 1, connected to the seat 110 and comprises a first back portion 121. The first back portion 121 is configured to pivot between an upright first position and a reclined second position, and the headrest 130 is configured to pivot between a headrest first position and a headrest second position. The elongated connector assembly 140 may generally be configured to synchronize the position of the headrest 130 with the position of the first back portion 121.
- [0032] In operation the recliner 100 may, as schematically illustrated in figure 2a, have an initial upright configuration where the first back portion 121 is in an upright first position and where the headrest 130 is in a headrest first position. As schematically illustrated in figure 2b, when a user sits down in the recliner 100, the user may move the first back portion 121 from the upright first position to a reclined second position, for example by leaning back in the recliner 100. As a reaction to the first back portion 121 being moved from the upright first position to the reclined second position the headrest 130 may pivot forward from the headrest first position to a headrest second position. The user may, as schematically illustrated in figure 2c, decide to push the headrest 130 back, for example if the user desires to adopt a resting position. As schematically illustrated in figure 2d, when the user decides to get up from the recliner 100, the user may consequently move the first back portion 121 from the reclined second position to the upright first position. As a reaction to the first back portion 121 being moved from the reclined second position to the upright first position, the headrest 130 may pivot backwards from the headrest second position to the headrest first position. The headrest first position may here be a headrest upright position where the headrest is aligned with the first back portion. The headrest second position may here be a headrest forward position where the headrest is tilted forward relative to the first back portion, thereby forming an obtuse angle with the first back portion.
- [0033] The seat of the recliner may generally be any suitable seat that is configured to support a user. As will be appreciated by a person skilled in the art, the exact construction of the seat may vary, particularly with regards to shape, support structure, spring assemblies, leg connections etc.

- [0034] The back of the recliner may be rigid, or comprise of several interconnected portions. The back may generally comprise or consist of a first back portion. The first back portion may be pivotable about a pivot axis, and may for example be connected to a second back portion or be connected directly to the seat. The first back portion is preferably rigid, or may at least comprise a rigid frame or semi-rigid frame, and may optionally comprise various additional components such as cushions, springs etc.
- [0035] The reactive motion of the headrest 130 upon moving the first back portion 121 between an upright first position and a reclined second position may be enabled by providing the recliner 100 with an elongated connector assembly 140. Said elongated connector assembly 140 may, as schematically illustrated in figures 1 – 6, be connected to the headrest 130 and be extending towards the seat 110. The elongated connector assembly 140 may for example be connected at one end to the headrest 130, e.g., at a first connection point 150, and at the other end to the back 120 or the seat 110. As will be appreciated by a person skilled in the art with knowledge of the present invention, the elongated connector assembly 140 may be connected between the headrest 130 and any suitable position on the recliner 100 that enables the elongated connector assembly 140 to pivot the headrest 130 as a reaction to a movement of the first back portion 121. The elongated connector assembly 140 may for example comprise one or more interconnected rods, and have a connector in each end. The elongated connector assembly 140 may be made at least in part of metal, or plastic. The first connection point 150 may alternatively be termed a headrest connection point.
- [0036] The elongated connector assembly 140 may, as schematically illustrated in figures 1 – 6, generally be configured to pivot the headrest 130 forward from the headrest first position to the headrest second position when the first back portion 120 is pivoted between the upright first position and the reclined second position. The elongated connector assembly may further be configured to pivot the headrest 130 backward from headrest second position to the headrest first position when the first back portion 121 is pivoted between the reclined second position and the upright first position. More specifically, the elongated connector assembly 140 may be connected between the headrest 130 and the seat 110 or back 120 in such a way that a torque/force is applied to the headrest 130 when the first back portion 121 is moved between the upright first position and the reclined second position. As schematically illustrated in figures 3 - 6, a suitable configuration of the elongated connector assembly 140 may for example be obtained by connecting the elongated connector assembly 140 to the seat 110 or

back 120 in a position not lying on the pivot axis of the first back portion 121. The elongated connector assembly 140 may in other words be connected to the seat 110 or back 120 in a position different from a position lying on the pivot axis of the first back portion 121. The elongated connector assembly 140 may preferably be connected to the seat 110 or back 120 in a position located in the forward-facing direction of the recliner 100. As will be appreciated by a person skilled in the art with knowledge of the present invention, the elongated connector assembly 140 may be connected to the seat 110 or back 120 directly or indirectly. Indirect connection may for example be obtained by connecting the elongated connector assembly 140 to a connection element, and connecting the connection element to the seat 110 or back 120.

[0037] The elongated connector assembly 140 may as schematically illustrated in figures 7 - 8 comprise a connector assembly element 141 having an adjustable length. The connector assembly element 141 is here configured to expand or contract at least in part when exposed to a force exceeding a threshold. As will be appreciated by a person skilled in the art, the connector assembly element 141 is configured to expand or contract based on the direction of the force. The connector assembly element 141 may be mounted as a part of the elongated connector assembly 140 such that the connector assembly element 141 may expand or contract at least in part in the longitudinal direction 142 of the elongated connector assembly 140. The elongated connector assembly 140 may thus have an adjustable length and be configured to expand or contract at least in part when exposed to a force exceeding the threshold.

[0038] The connector assembly element 141 of the elongated connector assembly 140 may, as schematically illustrated in figures 2 - 6, be configured to allow the headrest 130 to be moved from a headrest second position to a headrest first position when the first back portion 121 is in the reclined second position. A user operating the recliner 100 may after having pivoted the first back portion 121 from the upright first position to the reclined second position push the headrest 130 from the headrest second position to the headrest first position, for example by leaning back on the headrest 130. The connector assembly element 141 may thus be configured to expand in length when the user applies a force to the headrest 130 that exceeds a first threshold value. More generally, the connector assembly element 141 may be configured to expand or contract at least in part in the longitudinal direction of the elongated connector assembly 140 when a force is applied to the headrest 130 that exceeds a first threshold value. As will be appreciated by a person skilled in the art with knowledge of the present invention, the first threshold value may here be different than the force

threshold required to directly apply to the connector assembly element 141 in order to make the connector assembly element 141 expand or contract. The force threshold required to directly apply to the connector assembly element 141 in order to make the connector assembly element 141 expand or contract may herein be defined as a second threshold value. It will further be appreciated that the first and second threshold values may herein be different from one another as the force transfer between the headrest 130 and the connector assembly element 141 may be unequal. As will also be appreciated by a person skilled in the art, the force threshold value for making the connector assembly element 141 expand may be different from the force threshold value for making the connector assembly element 141 contract. The force threshold value for making the connector assembly element 141 contract may here be termed a contraction threshold value and the force threshold value for making the connector assembly element 141 expand may here be termed an expansion threshold value. At least one of the contraction threshold value and the expansion threshold value will thus be equal the second threshold value, whereas the other may be equal to or smaller than the second threshold value.

[0039] Figure 6 schematically illustrates an embodiment where the back 120 further comprises a second back portion 122 connected to the seat 110, e.g., fixedly. Here, the first back portion 121 may be connected pivotably to the second back portion 122 either directly or indirectly, for example via a second connection point 160. The first back portion 121 may for example be pivotably connected to the second back portion 122 either directly or via an intermediate connection such as a connection element 190. The first back portion 121 and second back portion 122 may alternatively be fixed to each other, for example such that each of the first back portion 121 and second back portion 122 comprise part of the same frame, where the back 120 comprises the frame. The second back portion 122 may optionally be pivotably connected to the seat 110. The elongated connector assembly 140 may more particularly be connected to the second back portion 122 via the second connection point 160 such that the elongated connector assembly 140 extends between the first connection point 150 and the second connection point 160. The connector assembly element 141 may thus be configured to expand or contract at least in part in the direction between the first connection point 150 and the second connection point 160, for example when a force is applied to the headrest 130 that exceeds a first threshold value. The employment of a back 120 comprising a plurality of back portions may be preferable for example in reclining couches, or reclining armchairs. The second

connection point 160 may alternatively be termed a second back portion connection point.

[0040] Figure 6 schematically illustrates an embodiment where the recliner 100 comprises a second back portion 122 and a connection element 190. The connection element 190 may here be connected to the second back portion 122 and may thus act as an intermediate coupling between the elongated connector assembly 140 and the second back portion 122. The connection element 190 may protrude a non-zero distance from the second back portion 122 in a forward-facing direction from the back 120. Said protrusion is preferable for enabling the elongated connector assembly 140 to apply a force/torque on the headrest 130 as the first back portion 121 is pivoted between the upright first position and the reclined second position. The second connection point 160 may thus be positioned a non-zero distance from the back in the forward-facing direction of the back. The second connection point 160 may be arranged such that it is not lying on the pivot axis of the first back portion 121. As an alternative to employing a connection element 190, the second connection point 160 may be located on the second back portion 122, and the second back portion 122 may be shaped such that the second connection point 160 is located in a position not lying on the pivot axis of the first back portion 121. The second connection point 160 may in other words be arranged in a position different from a position lying on the pivot axis of the first back portion 121.

[0041] The recliner 100 may, as schematically illustrated in figures 6 and 11 comprise second back portion 122, a connection element 190, and a lumbar support 200 connected to the connection element 190. The connection element 190 may here be rotatably connected to the second back portion 122, e.g., via bolt coupling. The lumbar support 200 may be connected to the connection element 190 such that the lumbar support 200 is rotated a non-zero distance from the back when the first back portion 121 is pivoted between the upright first position and the reclined second position. The distance from the back 120 is here a distance pointing away from the back 120 in the backwards facing direction from the back 120. As will be appreciated by a person skilled in the art, a lumbar support 200 may herein generally be any support element that is shaped or generally configured to provide support for the lumbar of a user occupying the recliner 100 when the first back portion is in an upright first position. The backwards facing direction of the back may generally be defined as the direction pointing away from a user operating the recliner.

[0042] A connection element may in general be a connector that allows the interconnection of two physical components. A connection element may thus for

example be a mechanical coupling. In a particular example the connection element may comprise a flat coupling mounted to the back at one end with a bolt, and to the elongated connector assembly with one or more fork couplings at the other end.

[0043] Figures 3 - 5 schematically illustrate a recliner 100 where the first back portion 121 is connected to the seat 110. The first back portion 121 may thus be pivotably connected to the seat 110, either directly, or indirectly for example via an intermediate coupling. The elongated connector assembly 140 may here be connected to the seat 110, directly or indirectly. The elongated connector assembly 140 may in a particular example be connected to the seat 110 via a third connection point 170, and the elongated connector assembly 140 may thus be arranged between the first connection point 150 and the third connection point 170. As schematically illustrated in figures 3 - 7, the connector assembly element 141 may be configured to expand or contract at least in part in the direction between the first connection point 150 and the third connection point 170 when a force is applied to the headrest 130 that exceeds the first threshold value. The third connection point 170 may here be arranged such that the elongated connector assembly 140 will apply a force/torque on the headrest 130 as the first back portion 141 is pivoted between the upright first position and the reclined second position. The third connection point 170 may thus be positioned a non-zero distance from the back 120 in the forward-facing direction of the back 120. The third connection point 170 may be arranged such that it is not lying on the pivot axis of the first back portion 121. The third connection point 170 may in other words be arranged in a position different from a position lying on the pivot axis of the first back portion 121. The third connection point 170 may alternatively be termed a seat connection point.

[0044] The elongated connector assembly 140 may generally, as schematically illustrated in figures 3 and 6, be connected to the seat 110 or to the second back portion 122. The second back portion 122 may be connected to the seat 110, e.g., fixedly, and the first back portion 121 may be connected pivotably to the second back portion 122. When the elongated connector assembly 140 is connected to the seat, the first back portion is preferably pivotably connected to the seat.

[0045] The recliner 100 may, when the first back portion 121 is connected to the seat 110, further comprise a connection element 190. The connection element 190 may as schematically illustrated in figure 3 be connected to the first back portion 121 and may thus act as an intermediate coupling between the elongated connector assembly 190 and the back 120. The connection element 190 may

protrude a non-zero distance from the first back portion 121 in a forward-facing direction from the back 120, and may act to provide rigidity to the elongated connector assembly 140. A lumbar support 200, *i.e.*, a lumbar support element, may further be connected to the connection element 190, for example to provide support to the lumbar of a user occupying the recliner 100 when the first back portion 120 is arranged in the upright first position. The connection element 190 may further be rotatably connected to the first back portion 121, *e.g.* via bolt coupling, such that the lumbar support 200 may rotated a non-zero distance from the back 120 when the first back portion 121 is pivoted between the upright first position and the reclined second position. The distance from the back 120 is here a distance pointing away from the back 120 in the backwards direction from the back 120. The rotation of the lumbar support 200 in a non-zero distance from the back 120 will thus result in the lumbar support 200 being shifted to a position where it will not affect a user occupying the recliner.

[0046] The connector assembly element may generally be a mechanical unit having an adjustable length. More particularly, the connector assembly element may be configured to have an adjustable length, where the length of the connector assembly element may be varied upon applying a force to the connector assembly element that exceeds a second threshold value. The connector assembly element may thus as a way of example be expanded when being exposed to an expansion force exceeding the second threshold, and be reversibly compressed when exposed to a compressive force exceeding the second threshold. Alternatively, the other way around. More specifically, the connector assembly element may be expanded when being exposed to an expansion force exceeding the expansion threshold value and be reversibly contracted when exposed to a compressive force exceeding the contraction threshold value. The connector assembly element may preferably have an elongated shape and optionally comprise a coupling in each end.

[0047] Figures 7 and 8 schematically illustrate a connector assembly element 141, where the connector assembly element 141 comprises an elongated piston assembly 220. The elongated piston assembly 220 may here comprise a piston 230 and a piston housing 240, and the elongated piston assembly 220 may here be configured such that there is a non-zero friction between the piston 230 and the piston housing 240. Said friction may be chosen, or optionally adjustable in order to determine or tune the second force threshold. As a way of example, the friction may be determined by adjusting the clamping force of the piston housing 240 and/or the area of the friction surface of the elongated piston assembly 220, *i.e.*, the surface between the piston 230 and the piston housing 240. The piston

230 may thus be configured to move when the longitudinal force between the piston 230 and the piston housing 240 exceeds the second threshold.

- [0048] The second force threshold may in a particular example be predominantly determined by the friction between the piston and the piston housing. In other words, the friction between the piston and the piston housing may be the main contributor to the second force threshold. The latter is preferable for providing smooth and continuous expansion and contraction of the connector assembly element.
- [0049] The connector assembly element may comprise one or more additional elements that contribute to determining the second force threshold. The connector assembly element may for example comprise an elastic member 280, such as a spring element, that is connected between the piston 230 and the piston housing 240. The elastic member 280 will thus reduce the force threshold for contracting the connector assembly element, *i.e.*, the contraction threshold value, and increase the force threshold for expanding the connector assembly element, *i.e.*, the expansion threshold value. The contraction threshold value may thus be lower than the expansion threshold value, and the second threshold value may thus be equal to the expansion threshold value. Figure 12 schematically illustrates a connector assembly element where the connector assembly element 141 comprises an elongated piston assembly 220 and an elastic member 280 connected between the piston 230 and the piston housing 240. The elastic member 280 may for example be a spring or an elastic band.
- [0050] The connector assembly element 141 may, as schematically illustrated in figure 10, comprises an elastic element 210 that enables the connector assembly element to be reversibly expandable and compressive upon being exposed to a force exceeding a second threshold. It will be appreciated by a person skilled in the art that the exact value of the second threshold may vary based on for example the size, exact shape, and/or weight of the recliner. The second threshold may generally be tuned or predetermined such that the connector assembly element 141 does not expand when the first back portion is pivoted between the upright first position and the reclined second position.
- [0051] Figure 3 schematically illustrates a recliner 100 that further comprises a reset mechanism 250. The reset mechanism 250 may generally be configured to set the length of the connector assembly element 141 within a predetermined interval when the first back portion 121 is pivoted between the reclined second position and the upright first position. The reset mechanism 250 may thus be configured to place the headrest 130 in the headrest first position when the first back portion is pivoted from the reclined second position to the upright first

position. The latter is preferable when a user of the recliner 100 has not moved the headrest 130 from the headrest second position to the headrest first position after the first back portion is pivoted from the upright first position to the reclined second position. The reset mechanism 250 thus may be configured to set the headrest 130 in a default position when the first back portion is pivoted between the reclined second position and the upright first position.

[0052] As schematically illustrated in figures 3 and 8 the reset mechanism 250 may be configured to set the position/length of an elongated piston assembly 220 comprising a piston 230 and a piston housing 240 to a predetermined position. The reset mechanism 250 may here comprise a connection bar 260 connected to the first back portion 121 and to the piston 230 such that the piston 230 is moved to a default position in the piston housing 240 when the first back portion 120 is pivoted between the reclined second position and the upright first position. The exact configuration of the connection bar 260 may thus be such that the connection bar 260 exerts a force on the elongated piston assembly 220 that exceeds the second threshold value when the first back portion 120 is pivoted between the reclined second position and the upright first position. As a way of example, the piston 230 may comprise an elongated slot 270, where the elongated slot 270 is configured to receive the connection bar 260 such that the connection bar 260 is movable in the elongated slot 270. The latter configuration has been found to be beneficial for hindering the piston 230 from being pulled out of the piston housing 240, and for allowing some flexibility in the elongated connector assembly 140. The elongated slot 270 may be positioned at the end of the piston 230 facing the headrest 130.

## Claims

### 1. A recliner (100) comprising

a seat (110),

a back (120) comprising a first back portion (121), where the back (120) is connected to the seat (110), and where the first back portion (121) is configured to pivot between an upright first position and a reclined second position,

a headrest (130), where the headrest (130) is connected to an upper end of the first back portion (121), and where the headrest (130) is configured to pivot between a headrest first position and a headrest second position, and

an elongated connector assembly (140) connected to the headrest (130) at a first connection point (150) and extending towards the seat (110), where the elongated connector assembly (140) is configured to

pivot the headrest (130) forward from the headrest first position to the headrest second position when the first back portion (121) is pivoted between the upright first position and the reclined second position, and to

pivot the headrest (130) backward from the headrest second position to the headrest first position when the first back portion (121) is pivoted between the reclined second position and the upright first position,

where the elongated connector assembly (140) comprises a connector assembly element (141) having an adjustable length, and where the connector assembly element (141) is configured to expand/contract at least in part in the longitudinal direction (142) of the elongated connector assembly (140) when a force is applied to the headrest (130) that exceeds a first threshold value.

### 2. The recliner (100) according to claim 1, where

the back (120) comprises a second back portion (122) connected to the seat (110),

the first back portion (121) is connected to the second back portion (122),

the elongated connector assembly (140) is connected to the second back portion (122) via a second connection point (160),

the elongated connector assembly (140) extends between the first connection point (150) and the second connection point (160), and where the connector assembly element (141) is configured to expand/ contract at least in part in the direction between the first connection point (150) and the second connection point (160) when a force is applied to the headrest (130) that exceeds the first threshold value.

3. The recliner (100) according to claim 2, further comprising a connection element (190), where

the connection element (190) is connected to the second back portion (122) and protrudes a non-zero distance from the second back portion (122) in a forward-facing direction from the back (120), and where the second connection point (160) is arranged on the connection element (190) such that the second connection point (160) is positioned a non-zero distance from the back (120) in the forward-facing direction of the back (120).

4. The recliner (100) according to claim 3, further comprising a lumbar support (200) connected to the connection element (190), where the connection element (190) is rotatably connected to the second back portion (122) such that the lumbar support (200) is rotated a non-zero distance from the back (120) in the backwards facing direction of the back (120) when the first back portion (121) is pivoted between the upright first position and the reclined second position.

5. The recliner (100) according to claim 1, where

the first back portion (121) is connected to the seat (110),  
the elongated connector assembly (140) is connected to the seat (110) via a third connection point (170),  
the elongated connector assembly (140) is arranged between the first connection point (150) and the third connection point (170), and  
the connector assembly element (141) is configured to expand/contract at least in part in the direction between the first connection point (150) and the third connection point (170) when a force is applied to the headrest (130) that exceeds the first threshold value.

6. The recliner (100) according to claim 5 further comprising a connection element (190), where

the connection element (190) is connected to the first back portion (121) and protrudes a non-zero distance from the first back portion (121) in a forward-facing direction from the back (120),

the elongated connector assembly (140) is further connected to the first back portion (121) via a fourth connection point (180), and where the fourth connection point (180) is arranged on the connection element (190) such that the fourth connection point (180) is positioned a non-zero distance from the back (120) in the forward-facing direction of the back (120).

7. The recliner (100) according to claim 6, further comprising a lumbar support (200) connected to the connection element (190), where the connection element (190) is rotatably connected to the first back portion (121) such that the lumbar support (200) is rotated a non-zero distance from the back (120) in the backwards facing direction of the back (120) when the first back portion (121) is pivoted between the upright first position and the reclined second position.
8. The recliner (100) according to any one of the preceding claims, where the connector assembly element (141) comprises an elastic element (210).
9. The recliner (100) according to any one of the preceding claims, where the connector assembly element (141) comprises an elongated piston assembly (220).
10. The recliner (100) according to any one of the preceding claims further comprising a reset mechanism (250) configured to set the length of the connector assembly element (141) within a predetermined interval when the first back portion (121) is pivoted between the reclined second position and the upright first position.
11. The recliner (100) according to claim 9 or 10, where  
  
the elongated piston assembly (220) comprises a piston (230) and a piston housing (240), where the piston is configured to move inside the piston housing (240) when the elongated piston assembly (220) is exposed to a force exceeding a second threshold value.
12. The recliner (100) according to claim 10 and 11, where

the reset mechanism (250) comprises a connection bar (260) connected to the first back portion (121) and to the piston (230), and the connection bar (260) is arranged to exert a force exceeding the second threshold value when the first back portion (121) is pivoted between the reclined second position and the upright first position.

13. The recliner (100) according to claim 12, where the piston (230) comprises an elongated slot (270) and where the connection bar (260) is received and movable in the slot.

14. The recliner (100) according to any one of the claims 9 – 13 where the elongated piston assembly (220) comprises an elastic member (280) connected between the piston (230) and the piston housing (240).