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(54) INCLINING CHAIR

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(57) **ABSTRACT**

In case the seat portion of the inclining chair is inclined periodically, if a supporting shaft to incline the seat portion is arranged away from a position supporting an ischial tuberosity portion of a seated person in an ordinary posture of sitting, an upper body of the seated person makes an up and down movement widely in compliance with a periodical inclining movement of the seat portion, which might cause dizziness due to a vertical shock to the upper body of the seated person.

The supporting shaft **61***d* to incline the seat portion **3** periodically is arranged near an ischial tuberosity portion HB of a seated person in an ordinary sitting posture, namely, at the rear of a center CL**1** along a back and forth direction of the seat portion **3**. More specifically, the supporting shaft **61***d* is arranged within a range of 50 mm to 180 mm in front of a front face of a backrest so that fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person are mitigated and occurrence of dizziness is reduced as well.

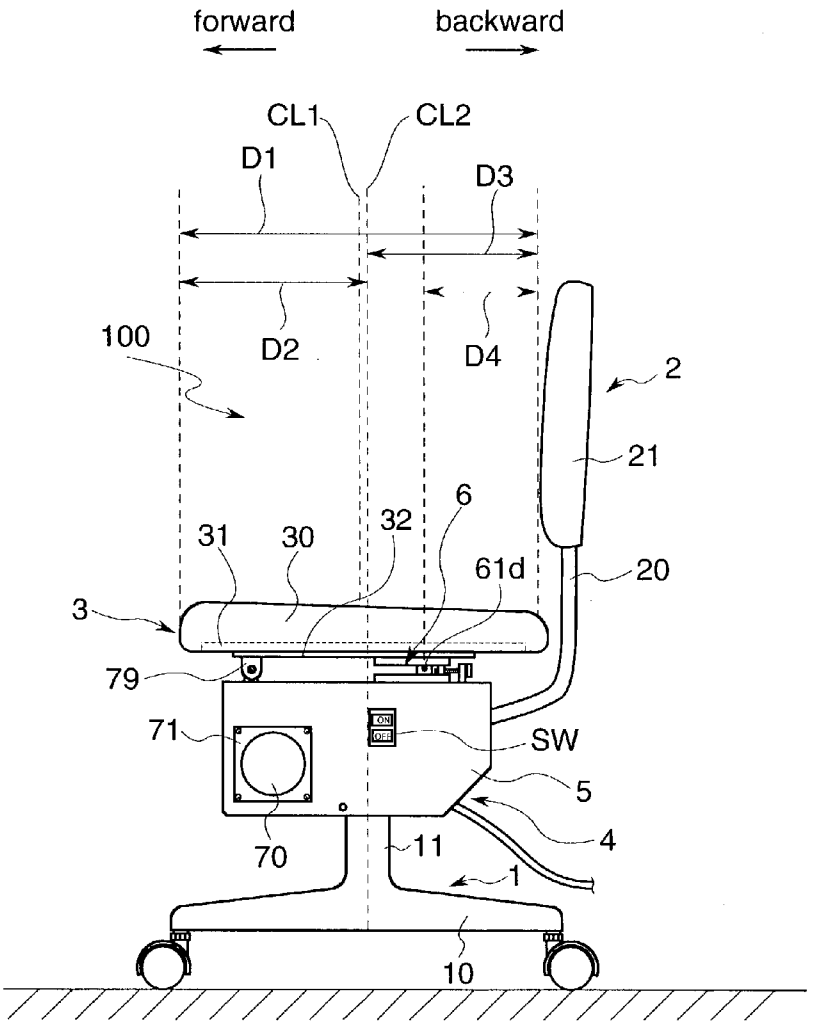


Fig.1

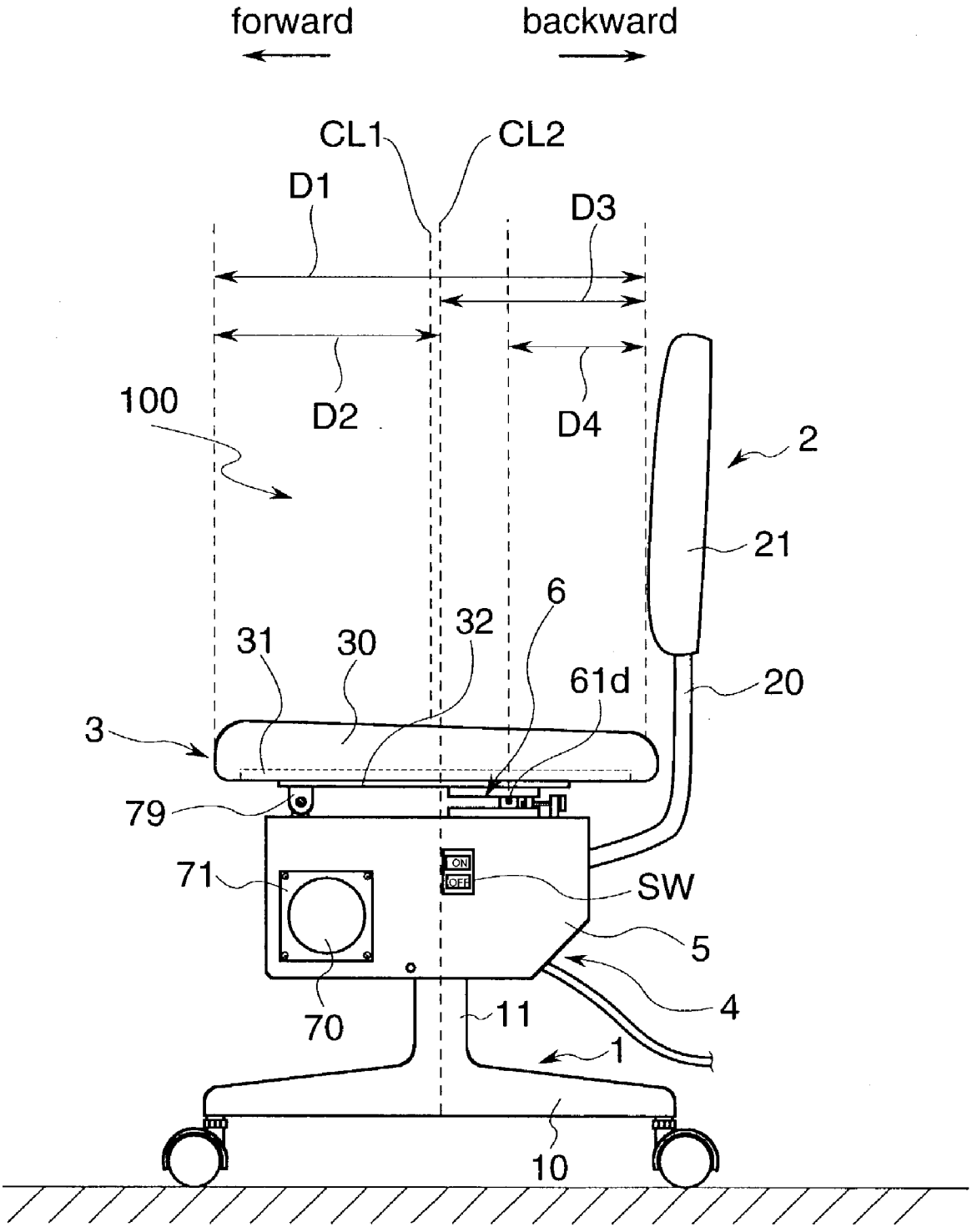

forward
backward
CL1
CL2
D1
D3
D2
D4
100
2
21
6
32
31
30
61d
20
3
79
71
ON
OFF
SW
5
4
70
11
1
10

Fig.2

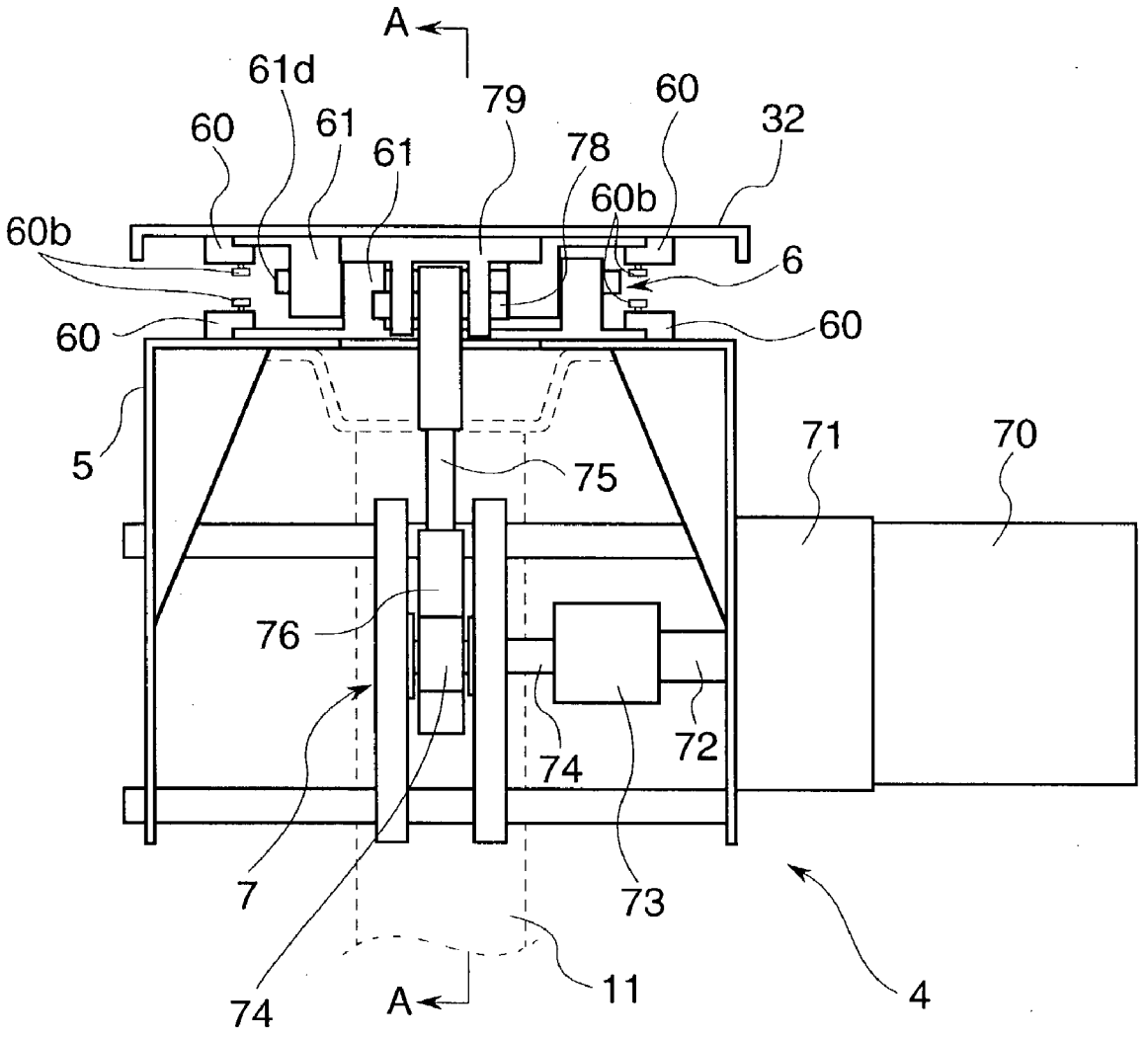

A
61d
79
60
32
60
61
61
78
60b
60b
6
60
60
5
71
70
75
76
72
74
7
73
74
A
11
4

Fig.3

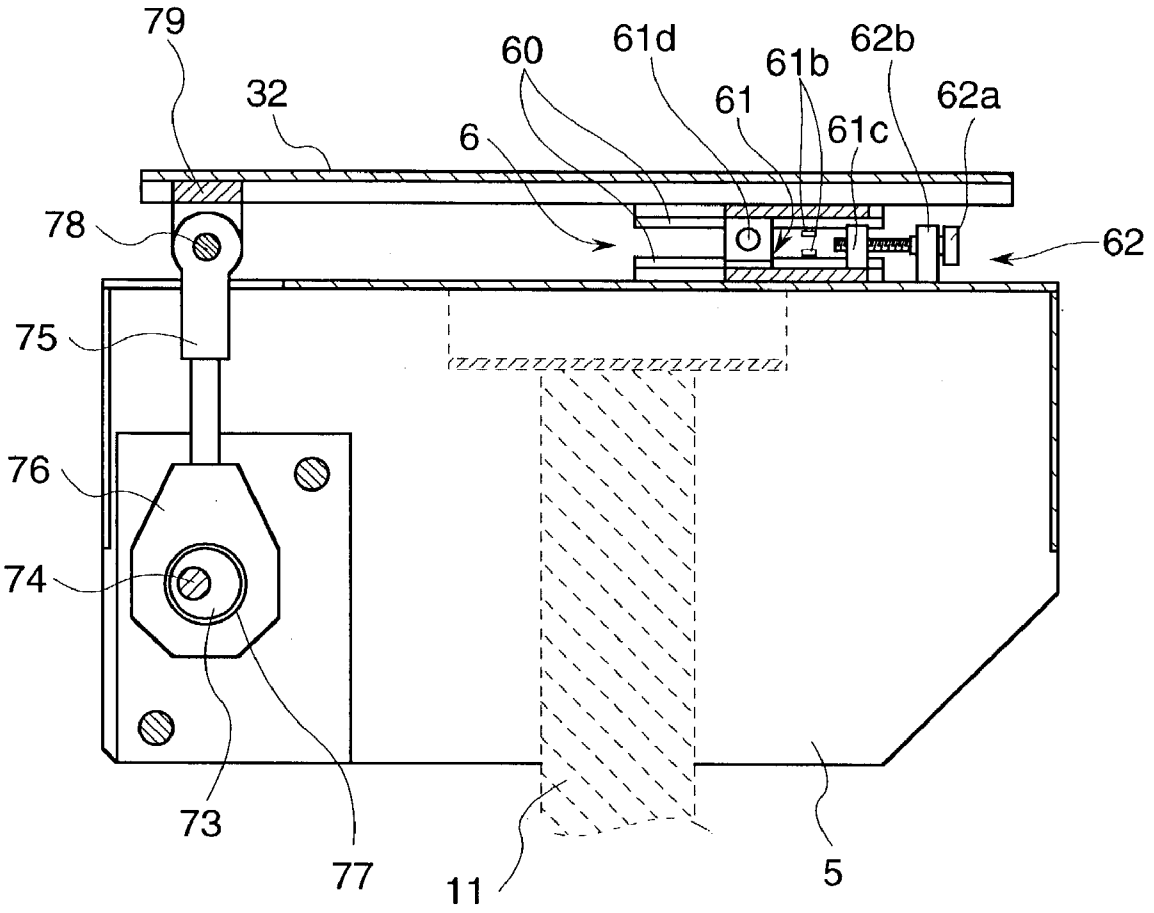
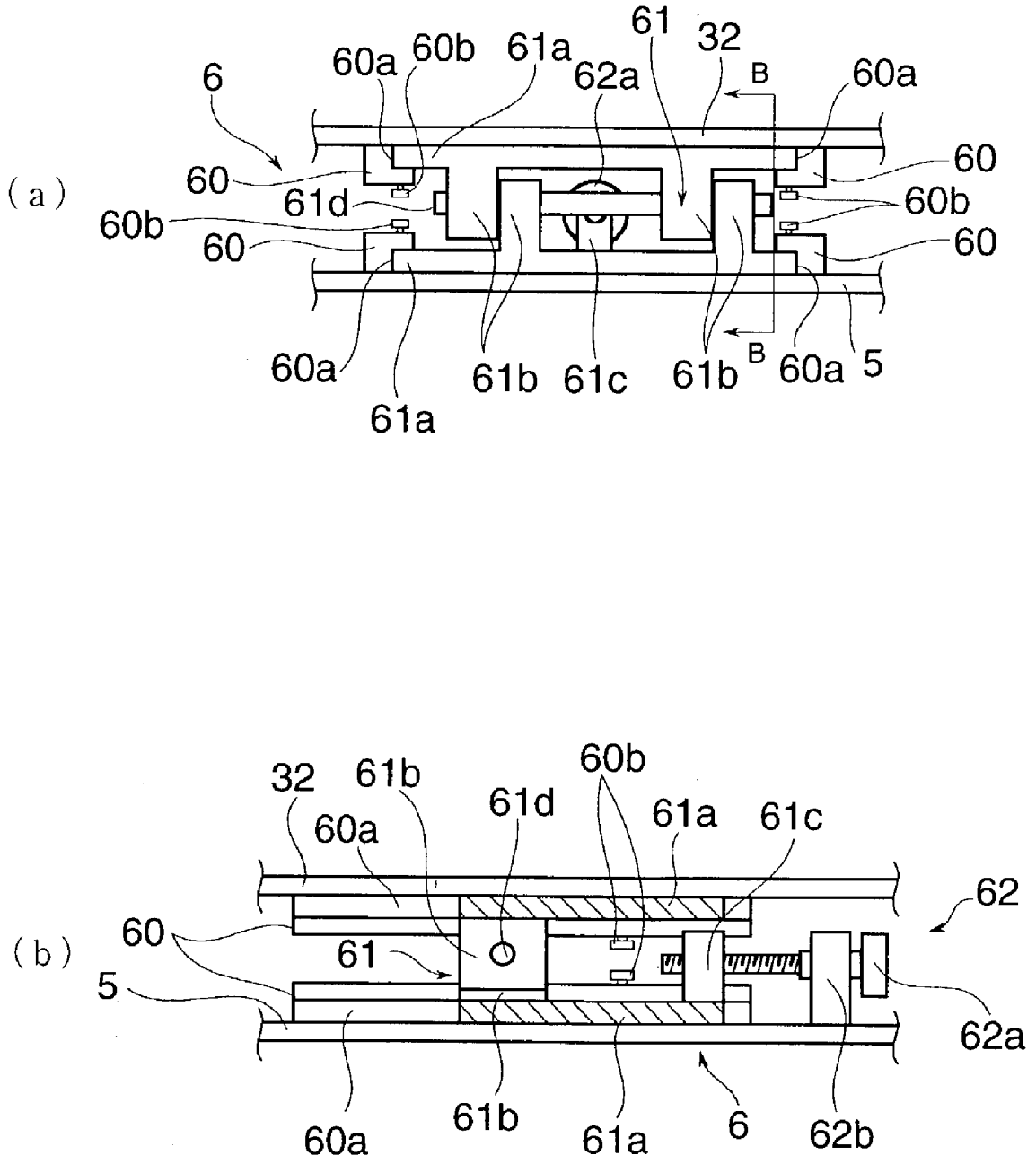


Fig.4


(a)
6
60a
60b
61a
61
32
62a
B
60a
60
61d
60b
60
60b
60
60a
61a
61b
61c
61b
B
60a
5
(b)
32
61b
60a
61d
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61a
61c
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61
5
62a
60a
61b
61a
6
62b

Fig.5

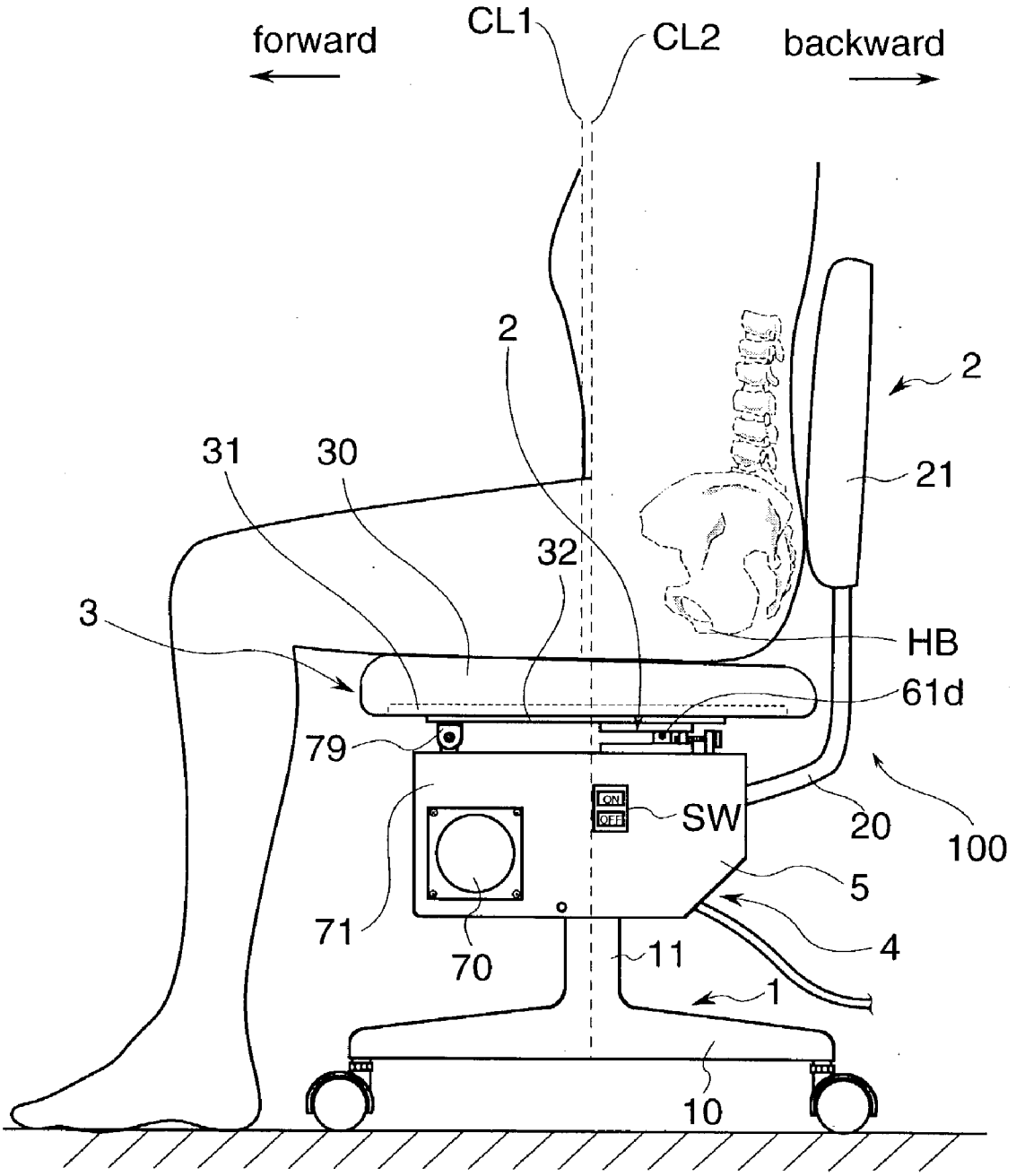

forward
CL1
CL2
backward
2
2
31
30
21
32
3
HB
61d
79
ON
OFF
SW
20
100
5
71
70
11
4
1
10

Fig.6

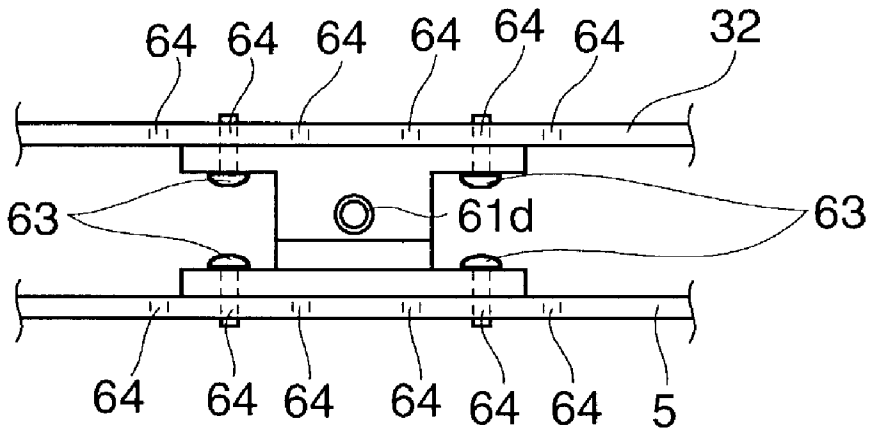
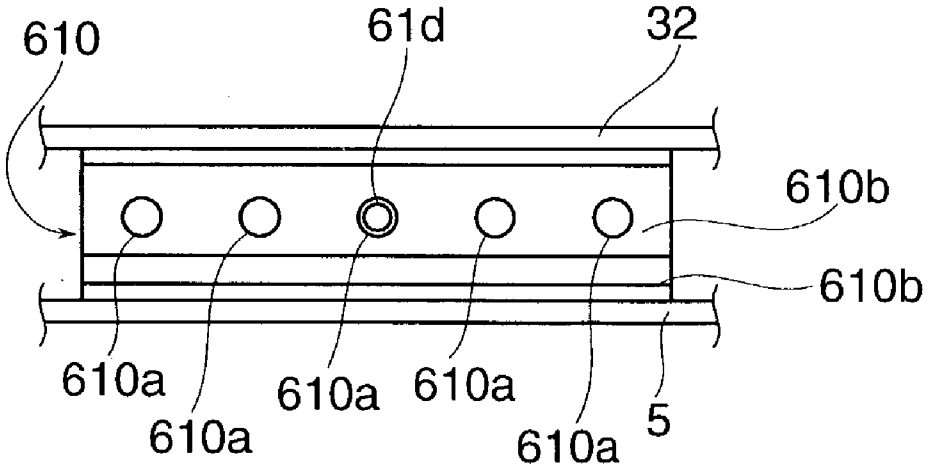

64
64
64
64
64
64
32
63
61d
63
64
64
64
64
64
64
5

Fig.7


610
61d
32
610b
610b
610a
610a
610a
610a
610a
5

INCLINING CHAIR

BACKGROUND OF THE INVENTION AND RELATED ART STATEMENT

[0001] This invention relates to an inclining chair that mitigates fatigue of a seated person by inclining a seat portion of the chair back and forth periodically.

[0002] Generally, office workers are required to take a posture of sitting for a long time to do a lot of desk works, resulting in physical fatigue due to taking a same posture for a long time. Then a chair in which a seat portion is slowly moved at a predetermined interval has been proposed with the aim of mitigating fatigue of a seated person who does such office works for a long time. The chair is so arranged that a seat portion is supported by a supporting shaft or something like this and that the seat portion is slowly inclined by moving front of the seat portion up and down at a predetermined interval so as to mitigate fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person. More specifically, an inclining mechanism of a seat portion is transferred to a mechanical movement, a face to be seated is repetitively moved to incline back and forth and/or right and left mechanically and a lumbosacral angle and/or a trunk lateral folding angle is changed in a stepless manner. As a result, muscle movability of the seated person is enhanced, persistent stress of muscle around pelvis primary a lumber and a back is mitigated and pain of a hip and a femoral region or tumefaction of a lower limb is mitigated by transferring a portion that makes a contact with the face to be seated.

[0003] In case the seat portion of the inclining chair is inclined periodically, if a supporting shaft to incline the seat portion is arranged away from a position supporting an ischial tuberosity portion of a seated person in a sitting posture, an upper body of the seated person makes an up and down movement widely in compliance with a periodical inclining movement of the seat portion, which might cause dizziness due to a vertical shock to the upper body of the seated person. In addition, it is known that a position of the ischial tuberosity portion differs individually due to a difference of a body build.

[0004] The present claimed invention intends to provide an inclining chair that can mitigate uncomfortable feelings such as dizziness so as to preferably reduce fatigue.

SUMMARY OF THE INVENTION

[0005] In order to solve the above problems, the inclining chair in accordance with this invention comprises a supporting portion that supports a seat portion in an inclinable manner and an inclining mechanism that periodically inclines the seat portion supported by the supporting portion so that fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person are mitigated, and is characterized by that a position of a fulcrum to incline the seat portion supported by the supporting portion is arranged near an ischial tuberosity portion of a seated person at the rear of a center along a back and forth direction of the seat portion, namely at a position where a vertical shock to an upper body of the seated person in a sitting posture can be minimized.

[0006] In accordance with the arrangement, a vertical shock to an upper body of the seated person can be prevented so as to reduce occurrence of dizziness by inclining the seat portion periodically with a center focus near an ischial tuberosity portion of the seated person.

[0007] As another embodiment to solve the above problem represented is an inclining chair that comprises a supporting portion that supports a seat portion in an inclinable manner and an inclining mechanism that periodically inclines the seat portion supported by the supporting portion so that fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person are mitigated, wherein provided is a changing means that can change a position of a fulcrum to incline the seat portion supported by the supporting portion along a back and forth direction of the seat portion.

[0008] In accordance with the arrangement, it is possible to change a position of the fulcrum to incline the seat portion so as to arrange the position near an ischial tuberosity portion of the seated person with the aim of preventing a vertical shock to an upper body of the seated person in compliance with a body build of the seated person and a posture of sitting, thereby to mitigate fatigue for the seated person by reducing an occurrence of dizziness.

[0009] If an inclining mechanism that periodically inclines the seat portion by descending or ascending a position of the seat portion apart from the supporting portion is provided as a method for periodically inclining the seat portion, it is possible to incline the seat portion with a small driving force by descending or ascending the position to which a relatively small load is applied while a position to which most weight of a seated person is applied is rotatably supported.

[0010] Further, if a changing means is so arranged that a position of a supporting shaft constituting the supporting portion can be changed in a stepless manner along a back and forth direction of the seat portion, it is possible to change the position of the fulcrum to incline the seat portion in a stepless state, thereby to adjust the position finely in compliance with a body build of a seated person.

[0011] If a changing means is so arranged that a position of a supporting shaft constituting the supporting portion can be changed in a stepwise manner along a back and forth direction of the seat portion, it is possible to simplify an arrangement of the changing means. Further if a changing means is so arranged that a position on which the supporting portion having a supporting shaft is mounted can be changed along a back and forth direction of the seat portion, the position can be changed easily without any complicated mechanism.

[0012] In addition, if the position of the fulcrum to incline the seat portion is arranged within a range of 50 mm to 180 mm in front of a front face of a backrest, it is possible to support near an ischial tuberosity portion of a seated person in a rotatable manner in compliance with a size of a seat portion of an office chair distributed in a market, a body build of the seated person or a posture of sitting.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] **FIG. 1** is a general side view of an inclining chair showing one embodiment of the present claimed invention.

[0014] **FIG. 2** is a front view of a principal part of an inclining mechanism of the embodiment.

[0015] **FIG. 3** is a cross-sectional view taken along the line A-A in **FIG. 2**.

[0016] **FIG. 4** is a view showing a supporting portion in accordance with the embodiment.

[0017] **FIG. 5** is a view showing a seated condition in accordance with the embodiment.

[0018] **FIG. 6** is a side view showing a supporting portion in accordance with a second embodiment.

[0019] **FIG. 7** is a side view showing a supporting portion in accordance with a third embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] An embodiment of the present claimed invention will be described in detail with reference to the accompanying drawings. **FIG. 1** is a general side view of an inclining chair **100** showing one embodiment of the present claimed invention. **FIG. 2** is a front view of an inclining mechanism **4** to incline a seat portion **3** and **FIG. 3** is a cross-sectional view taken along a line A-A in **FIG. 2**. **FIG. 4** shows a supporting portion **6** arranged behind the seat portion **3**. **FIG. 5** shows a relationship between a hip, an ischial tuberosity portion HB of a seated person in a seated state and a supporting shaft **61***d*.

[0021] The inclining chair **100** is used for office works, operational works or monitoring works and comprises the inclining mechanism **4** that is mechanically arranged between a leg portion **1** and the seat portion **3**. The inclining chair **100** is to mitigate fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person by changing an inclining angle of the seat portion **3** periodically with an inclining movement by making use of the inclining mechanism **4**. Further, the inclining chair **100** is to prevent a vertical shock to an upper body of a seated person due to a periodical inclining movement, resulting in reducing occurrence of dizziness by adjusting a position of a fulcrum to incline the seat portion **3** back and forth so as to locate the position near an ischial tuberosity portion HB of the seated person in compliance with a body build of the seated person. Concrete arrangement of the inclining chair **100** will be explained.

[0022] The leg portion **1** of the inclining chair **100** is so arranged that a leg post **11** is provided at a center of a plurality of leg wings **10**, the inclining mechanism **4** and a back support rod **20** are mounted on the leg post **11**, a casing **5** of the inclining mechanism **4** is mounted on a top end of the leg post **11** and the back support rod **20** is fixed to a rear side of the leg post **11**. Further, a gas spring to elevate whole of the seat portion **3** and a gas spring to incline a backrest body **21** relative to the seat portion **3** are mounted on the leg post **11**.

[0023] The backrest body **21** having a cushion member is mounted on a distal end side of the back support rod **20** that is mounted on a rear side of the leg portion **1** and a backrest portion **2** comprising the back support rod **20** and the backrest body **21** is arranged separately and independently from the seat portion **3**. Since the backrest portion **2** is arranged separately and independently from the seat portion **3**, a seated person's lumber that is held between the backrest portion **2** and the seat portion **3** makes a bending and stretching movement repeatedly when the seat portion **3** is inclined periodically, which promotes a movability of muscle around the lumber. More specifically, a seated person's lumber portion held between the backrest portion **2** and the seat portion **3** bends when an angle between the seat portion **3** and the backrest **2** becomes small, while the lumber portion stretches when the angle between the seat portion **3** and the backrest **2** becomes big. In this embodiment, the backrest portion **2** is explained to be fixed, however, it may adopt a mechanism that is inclinable backward to the leg portion **1**.

[0024] The seat portion **3** corresponding to the backrest portion **2** is arranged to fit a middle built person. A distance D1 between a front face side of the backrest body **21** and a distal end of the seat portion **3** is set to be in a range of 390 mm to 480 mm, a distance D2 between a center position CL2 of the leg post **11** to the distal end of the seat portion **3** is set to be in a range of 240 mm to 390 mm and a distance D3 from the center position CL2 of the leg post **11** to the front face of the backrest body **21** is set to be in a range of 80 mm to 180 mm. The seat portion **3** comprises a cushion member **30** and a seat frame **31** arranged back of the cushion member **30**. The seat frame **31** is made of a thin sheet material to support the cushion member **30** along a whole area of the cushion member **30** and on the under face of the seat frame **31** mounted is a reinforcing member **32** that is made of metal and smaller than the seat frame **31**.

[0025] A supporting member **61** and a front bearing **79** are mounted on an under surface side of the reinforcing member **32** that is mounted below the seat portion **3**. Force that is applied when the seat portion **3** is inclined is dispersed into the supporting member **61** and the front bearing **79** through the reinforcing member **32**. Further the force is dispersed into a whole area of the cushion member **30** through a seat frame **31** that is bigger than the reinforcing member **32**.

[0026] The inclining mechanism **4** that inclines seat portion **3** comprises, as shown in **FIG. 1** and **FIG. 2**, the supporting portion **6** to support a rear side of the seat portion **3** and an elevator mechanism **7** to elevate a front side of the seat portion **3** by power supplied from outside wherein the supporting portion **6** and the elevator mechanism **7** are mounted on the casing **5** so as to incline the seat portion **3** at an angle of approximate 3 degrees from a reference level.

[0027] The elevator mechanism **7** decelerates a rotary movement of a motor **70** driven by a home power supply by the use of a reducer **71** and the rotary movement of a decelerated rotary shaft **72** is transmitted to an eccentric shaft portion **74** through a coupling **73** so as to elevate an elevator arm **75**. More concretely, as shown in **FIG. 3** which is a cross-sectional view taken along a line A-A, the eccentric shaft portion **74** comprising a round-shaped rotary member is fixed to a shaft extending from the coupling **73** and a retaining member **76** to retain the eccentric shaft portion **74** in a rotatable manner is provided with a round-shaped opening portion **77** whose shape is the same as that of the eccentric shaft portion **74** so that the eccentric shaft portion **74** can rotate inside the opening portion **77**, which descends or ascends the retaining member **76** and the elevator arm **75** periodically. The front bearing **79** to retain a pin **78** in a rotatable manner is arranged at an upper end side of the elevator arm **75** and the pin **78** passes through the

front bearing **79** so that a seat is inclined back and forth by ascending or descending the front of the seat portion **3** periodically with regularity.

[**0028**] The supporting portion **6** arranged at the rear side of the seat portion **3** is arranged along an upper face of the casing **5** and the under surface of the reinforcing member **32** and comprises, as shown in **FIG. 4**, slide rails **60** mounted so as to face each other on the casing **5** and the reinforcing member **32** and the supporting member **61** that can be slid inside the slide rails **60** and further comprises an adjusting mechanism **62** that slides the supporting member **61** in a stepless manner back and forth of the inclining chair **100**. **FIG. 4**(*a*) shows a front view of the supporting portion **6** and **FIG. 4**(*b*) shows a cross-sectional view taken along a line B-B in **FIG. 4**(*a*).

[**0029**] The supporting members **61** are arranged near both right and left ends of the casing **5** and the reinforcing member **32** and comprise a slide portion **61***a* that is fitted into a groove portion **60***a* of the slide rail **60** and a rear bearing portion **61***b* that stands from both right and left ends of the slide portion **61***a* so that the supporting shaft **61***d* is supported by the rear bearing portion **61***b* in a rotatable manner. A nut portion **61***c* that has a screw hole penetrating back and forth is mounted on the rear of a center of the slide portion **61***a* locating below so that the supporting member **61** can be slid along the slide rail **60** through the nut portion **61***c*.

[**0030**] The slide rails **60** are fixedly mounted to the upper face of the casing **5** and the under surface of the reinforcing member **32**. The slide rails **60** whose front view is generally a character "L" are arranged to face each other so as to form the groove portions **60***a* facing each other. The slide portion **61***a* is fitted into the groove portion **60***a* and the supporting member **61** is slid back and forth through the adjusting mechanism **62** so as to change a position of the supporting shaft **61***d* as a position of the fulcrum to incline the seat portion **3**, thereby to fix the supporting member **61** with a lock screw **60***b*.

[**0031**] The adjusting mechanism **62** comprises a fixing member **62***b* that is fixed to the casing **5** that retains a proximal end of the screw member **62***a* in a rotatable manner and a nut member **61***c* arranged at the rear of the center of the supporting member **61** locating downside. In case the supporting member **61** is slid, a distal end side of the screw member **62***a* is helically inserted into a screw hole of the nut portion **61***c* and the screw member **62***a* is rotated from the rear of the seat portion **3** so that the supporting member **61** is slid in a stepless manner relative to the fixing member **62***b* that is fixed to the casing **5**.

[**0032**] The supporting shaft **61***b* is positioned at the rear of the center CL**1** along back and forth of the seat portion **3** and the rear of the center CL**2** of the leg post **11** as well. The adjusting mechanism **62** is, as shown in **FIG. 5**, set to minimize a vertical shock to an upper body of the seated person by making the supporting shaft **61***d* as a fulcrum to incline the seat portion **3** locate at a position near the seated person's ischial tuberosity portion HB by making use of rotation of the screw member **62***a*. More specifically, if a person sits on the chair with his or her hip locating at the rear of the center CL**1** of the seat portion **3**, occurrence of dizziness can effectively be reduced due to the adjusting mechanism **62**. Further, a mechanism to operate a valve of a gas spring, not shown in drawings, is incorporated into just above the leg post **11** and the motor **70** and an elevator arm **75** to elevate the front of the seat portion **3** are arranged in front of the leg post **11**. As a result, the supporting shaft **61***d* is arranged at the rear of the center CL**1** of the seat portion **3** and at the rear of the center CL**2** of the leg post **11** as well in consideration of reducing occurrence of dizziness in a seated condition and making it easy to mount the supporting shaft **61***d*. More preferably, the supporting shaft **61***d* is arranged within a range of 50 mm to 180 mm in front of a front face of the backrest body **21** in consideration of a length between the front face of the backrest body **21** and the ischial tuberosity portion HB of the seated person. In other word, in consideration of about 60 mm through 150 mm that is an actual measurement in horizontal distance between a rear end of a hip (a back) and an ischial tuberosity portion HB of an office worker in a seated posture or a body build of a child it is preferable that a rear position of the supporting shaft **61***d* is set at 50 mm in front of the front face of the backrest body **21** where a rear end of a hip of the seated person contacts. It is preferable that a front position of the supporting shaft **61***d* is set at 180 mm, namely 30 mm is added to 150 mm, in front of the front face of the backrest body **21** in consideration of a case in which a seated person sits on the chair shallowly.

[**0033**] In this embodiment the elevator mechanism **7** is arranged in front of the leg pole **11**, however, it may be arranged at a different position. A position to which force is applied in order to ascend or descent the seat portion **3** may be varied irrespective of a front or a back of the fulcrum position as far as it is apart from the position of the fulcrum.

[**0034**] Most weight of the seated person is applied in a concentrated manner to a position near the ischial tuberosity portion HB on the seat portion **3** so that the fulcrum to incline the seat portion **3** is arranged near the position. As a result, most of the weight of the seated person is supported at the position. Force to elevate the seat portion **3** is applied to a position that is separated from the fulcrum where relatively small weight of the seated person is applied. The more separated from the fulcrum the position to which the force to elevate the seat portion **3** is applied is, the bigger a moment of the force around the fulcrum is made, which makes it possible to incline the seat portion **3** with a small driving force.

[**0035**] Next a movement of periodically inclining the seat portion **3** driven by the inclining mechanism **4** of the inclining chair **100** will be explained.

[**0036**] The seated person turns on a power switch SW that is arranged at a side of the casing **5** so as to supply power with the motor **70**. The motor **70** is driven so as to rotate a motor rotation shaft, not shown in drawings, the rotation is decelerated by the reducer **71** and the decelerated rotation is transmitted to the eccentric shaft portion **74** through the coupling **73**. The eccentric shaft portion **74** is rotated around the rotary shaft **72** so as to ascend or descend at a constant interval the retaining member **76** that retains the eccentric shaft portion **74** and the elevator arm **75** that is mounted on the retaining member **76**. A front portion of the seat portion **3** is elevated integrally with the pin **78** and the front bearing **79** due to a descending or ascending movement of the elevator arm **75** and due to this descending or ascending movement the seat portion **3** is inclined at an interval of

about 15 to 20 seconds with a center on the supporting shaft **61***c* arranged at the rear of the seat portion **3**.

[**0037**] In case a seated person feels uncomfortable with the inclining movement because of a body build or a posture of sitting, for example, in a case that a visual axis fluctuates due to a vertical shock to his or her upper body when the person sits on a position in front of the supporting shaft **61***d*, the screw member **62** is rotated from the rear of the seat portion **3** so that the supporting member **61** is slid to optimize a position of the fulcrum to incline a seat portion **3** within a range of 50 mm to 180 mm in front of a front face of the backrest body **21**. This makes it possible to incline the seat portion **3** with a position of the fulcrum suitable to a posture of sitting.

[**0038**] In accordance with the embodiment, the inclining chair **100** is so arranged that the seat portion **3** is inclined periodically by the use of the inclining mechanism **4** so as to mitigate fatigue of fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person and that the position of the supporting shaft **61***d* as the fulcrum to incline the seat portion **3** locates at the rear of the seat portion **3** and leg pole **11** and within a range of 50 mm to 180 mm in front of the backrest body **21**. As a result of this, it is possible to move the femur or the, lower limb of the seated person vertically, thereby to mitigate fatigue of a hip, a femur, a lumber and a back and also reduce tumefaction of a lower limb of a seated person. Further, since the inclining chair **100** has an arrangement that the seat portion **3** is inclined with the center near the ischial tuberosity portion HB, it is possible to prevent a vertical shock to the upper body, thereby to reduce occurrence of dizziness.

[**0039**] Since the fulcrum to incline the seat portion **3** is made to be slidable back and forth through the screw member **62***a* constituting the adjusting mechanism **62** from the rear of the seat portion **3**, a suitable position of the fulcrum that fits for a body build of a seated person and a posture of sitting can be selected.

[**0040**] Further, since the supporting portion **6** is arranged at the rear of the seat portion **3** to which most load of the seated person applies and the elevator mechanism **7** is arranged at a position to which relatively small load is applied that is apart from and in front of the fulcrum to incline the seat portion **3**, driving force to elevate the seat portion **3** can be made small, the driving mechanism **4** can be downsized and power consumption for driving can be reduced.

[**0041**] In this embodiment, since the position of the fulcrum to incline the seat portion **3** can be changed by rotating the screw member **62***a* from the backward of the seat portion **3**, it is possible to change the position of the fulcrum easily without disassembling the inclining chair **100**.

[**0042**] In the above embodiment, the changing means has been explained with the supporting portion **6** having the slide mechanism, however, it may be embodied by other embodiment as shown in **FIG. 6** and **FIG. 7**.

[**0043**] More specifically, a plurality of screw holes **64** may be arranged on the reinforcing member **32** and the casing **5** back and forth in a stepwise manner as shown in **FIG. 6** so that the supporting member **61** can be positioned and fixed to the screw hole **64** with the screw member **63**.

[**0044**] Further, as shown in **FIG. 7**, one of the rear bearings **610***b* having a plurality of holes **610***a* is arranged on the reinforcing member **32** and the other rear bearing **610***b* is mounted on the casing **5** to face the former rear bearing **610***b*. Each hole **610***a* of the other rear bearing **610***b* is aligned and the supporting shaft **61***d* is inserted into any one hole **610***a* so as to mount the supporting shaft **61***d*. Due to this arrangement there is no need of either a slide rail **60** or a complicated adjusting mechanism **62**, which makes it possible to change a position of the fulcrum back and forth with a simple arrangement.

[**0045**] This invention is not limited to the arrangement of the above embodiment and may be variously varied. For example, in the above embodiment an arrangement of the inclining mechanism **4** is explained to elevate the front of the seat portion **3** with the supporting shaft **61***d* as a fulcrum. However, the arrangement is not limited to this. A rotating driving force is given to an inclined supporting shaft of the seat portion **3** so that the seat portion **3** is periodically inclined by driving the inclined supporting shaft to rotate. In order to change the position of the fulcrum to incline the seat portion **3** in compliance with a body build, the inclined supporting shaft may be slid back and forth. In addition, the position of the fulcrum to incline the seat portion **3** is not necessarily changeable, and may be fixed near an ischial tuberosity portion of a seated person at the rear of the center along back and forth of the seat portion. With the arrangement, it is difficult to be fit for an extremely big or small built person, but this makes it possible to simplify an arrangement of the inclining chair and also to reduce a cost. Contrary, a range wherein a position of the fulcrum can be changed may be set as a broader range including a range of 50 mm to 180 mm in front of a front face of the backrest.

[**0046**] Since the inclining chair in accordance with this invention comprises a supporting portion that supports a seat portion in an inclinable manner and an inclining mechanism that periodically inclines the seat portion supported by the supporting portion so that fatigue of a hip, a femur, a lumber and a back and tumefaction of a lower limb of a seated person are mitigated, and is characterized by that a position of a fulcrum to incline the seat portion supported by the supporting portion is arranged near an ischial tuberosity portion of a seated person at the rear of a center along a back and forth direction of the seat portion, namely at a position where a vertical shock to an upper body of the seated person in a posture of sitting can be minimized, a vertical shock to an upper body of the seated person can be prevented so as to reduce occurrence of dizziness by inclining the seat portion periodically with a center focus near an ischial tuberosity portion of the seated person.

[**0047**] Since a changing means that can change a position of a fulcrum to incline the seat portion supported by the supporting portion along a back and forth direction of the seat portion is provided, it is possible to change a position of the fulcrum to incline the seat portion so as to arrange the position near an ischial tuberosity portion of the seated person with the aim of preventing a vertical shock to an upper body of the seated person in compliance with a body build of the seated person and a posture of sitting, thereby to mitigate fatigue for the seated person by reducing an occurrence of dizziness.

[**0048**] Further since an inclining mechanism that periodically inclines the seat portion by descending or ascending a

position of the seat portion apart from the supporting portion is provided as a method for periodically inclining the seat portion, it is possible to incline the seat portion with a small driving force by descending or ascending the position to which a relatively small load is applied while a position to which most weight of a seated person is applied is rotatably supported.

[0049] In addition, if a changing means is so arranged that a position of a supporting shaft constituting the supporting portion can be changed in a stepless manner along a back and forth direction of the seat portion, it is possible to change the position of the fulcrum to incline the seat portion in a stepless state, thereby to adjust the position finely in compliance with a body build of a seated person.

[0050] Further if a changing means is so arranged that a position of a supporting shaft constituting the supporting portion can be changed in a stepwise manner along a back and forth direction of the seat portion, it is possible to simplify an arrangement of the changing means. Especially if a changing means is so arranged that a position on which the supporting portion having a supporting shaft is mounted can be changed along a back and forth direction of the seat portion, the position can be changed easily without any complicated mechanism.

[0051] In addition, since the position of the fulcrum to incline the seat portion is arranged within a range of 50 mm to 180 mm in front of a front face of a backrest, it is possible to support near an ischial tuberosity portion of a seated person in a rotatable manner in compliance with a size of a seat portion of an office chair distributed in a market, a body build of the seated person or a posture of sitting.

1. An inclining chair comprising a supporting portion that supports a seat portion in an inclinable manner and an inclining mechanism that periodically inclines the seat portion supported by the supporting portion, and characterized by that a position of a fulcrum to incline the seat portion supported by the supporting portion is arranged near an ischial tuberosity portion of a seated person at the rear of a center along a back and forth direction of the seat portion.

2. An inclining chair comprising a supporting portion that supports a seat portion in an inclinable manner and an inclining mechanism that periodically inclines the seat portion supported by the supporting portion, and characterized by that a changing means is provided that can change a position of a fulcrum to incline the seat portion supported by the supporting portion along a back and forth direction of the seat portion.

3. An inclining chair comprising a supporting portion that supports a seat portion in an inclinable manner and an elevator mechanism that elevates the seat portion at a position apart from the supporting portion, in which the seat portion is inclined periodically by the use of the supporting portion and the elevator mechanism, characterized by that a changing means is provided that can change a position of a fulcrum to incline the seat portion supported by the supporting portion along a back and forth direction of the seat portion.

4. The inclining chair described in claim 2 or **3** and characterized by that the changing means is a mean that can change a position of a supporting shaft constituting the supporting portion in a stepless manner along a back and forth direction of the seat portion.

5. The inclining chair described in claim 2 or **3** and characterized by that the changing means is a mean that can change a position of a supporting shaft constituting the supporting portion in a stepwise manner along a back and forth direction of the seat portion.

6. The inclining chair described in claim 2 or **3** and characterized by that the changing meaning is a mean that can change a position on which the supporting portion having a supporting shaft is mounted along a back and forth direction of the seat portion.

7. The inclining chair described in claim 1, **2**, **3**, **4**, **5** or **6** and characterized by that the position of the fulcrum to incline the seat portion is arranged within a range of 50 mm to 180 mm in front of a front face of a backrest body.

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