

Dec. 19, 1944.

A. LORENZ

2,365,200

ADJUSTABLE CHAIR

Filed March 16, 1942

2 Sheets-Sheet 1

Fig. 1

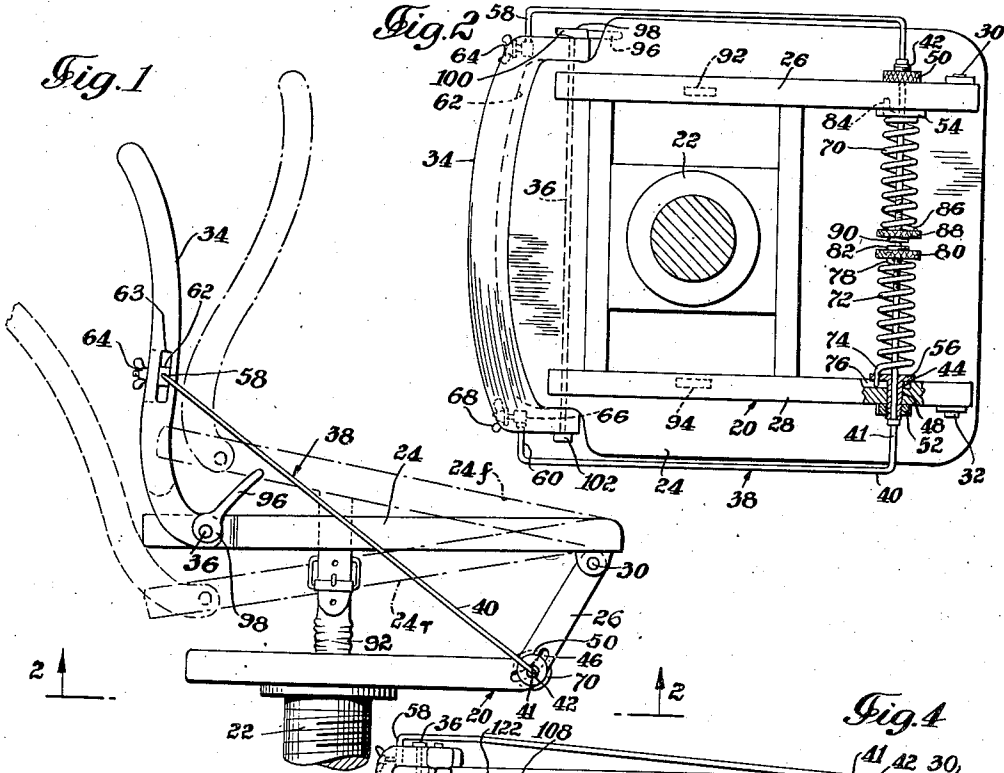


Fig. 2

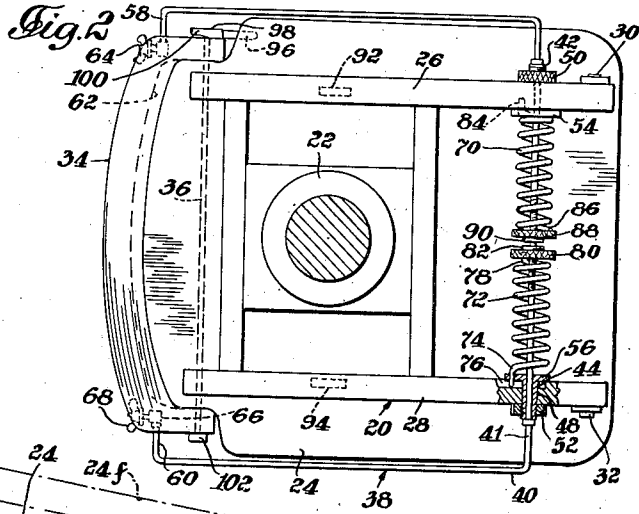


Fig. 3

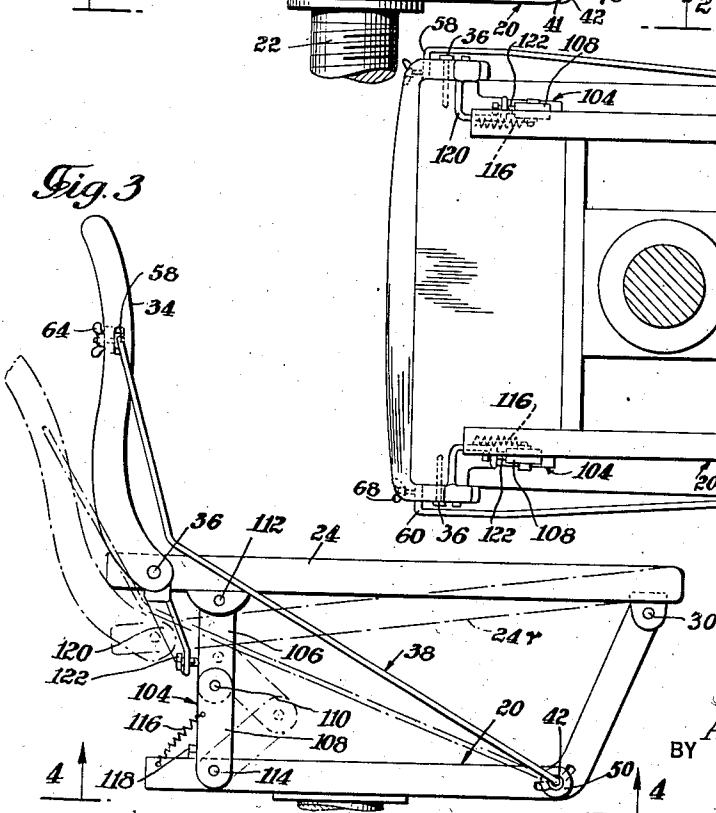
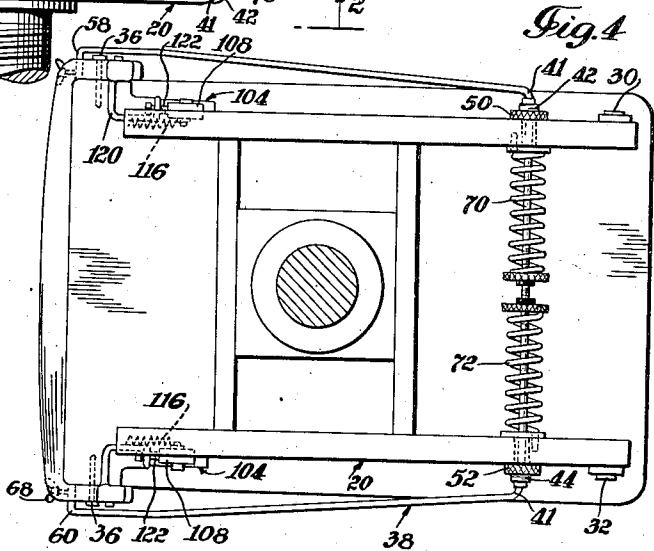


Fig. 4



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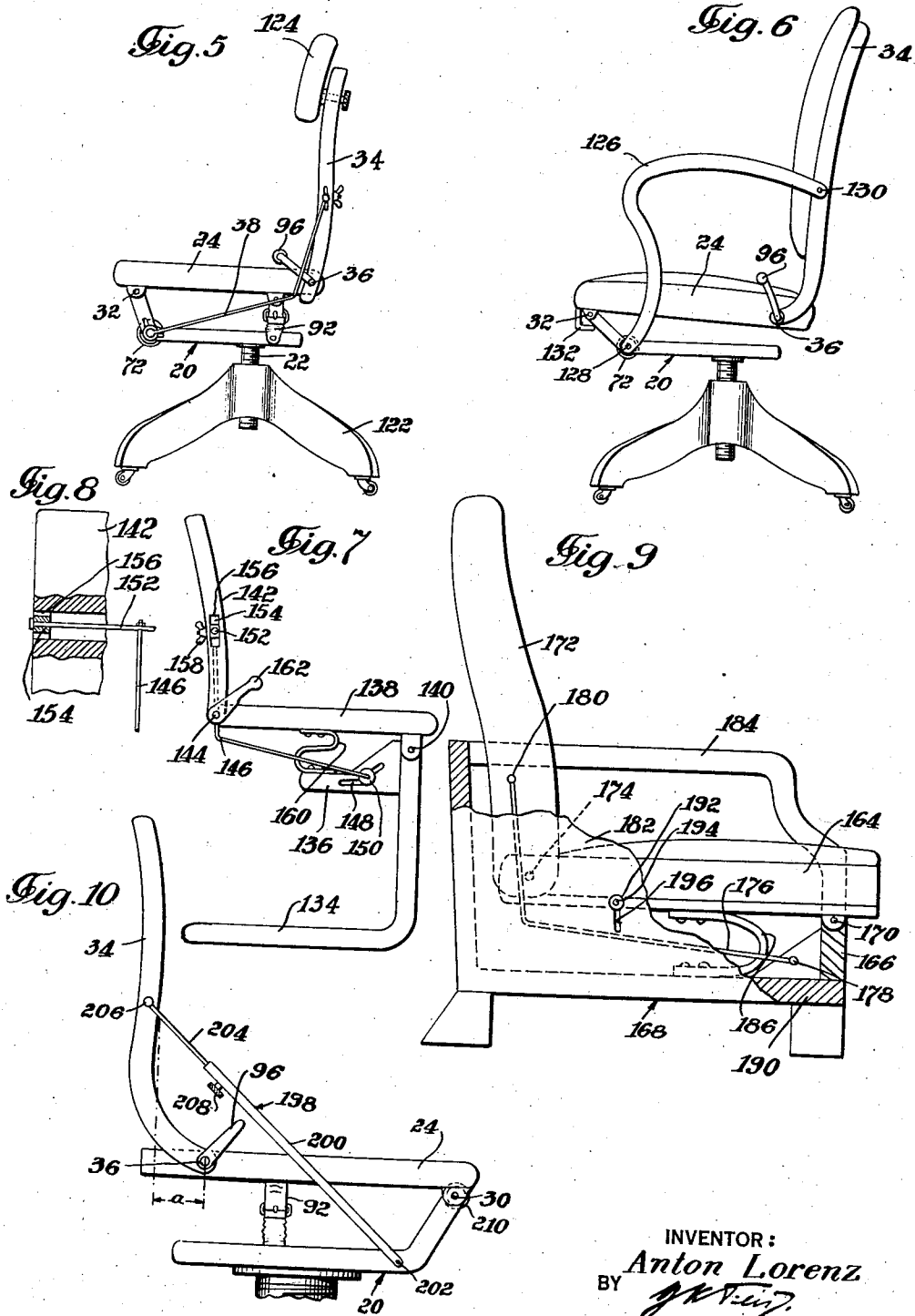
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE

2,365,200

## ADJUSTABLE CHAIR

Anton Lorenz, Chicago, Ill.

Application March 16, 1942, Serial No. 434,849

19 Claims. (Cl. 155—55)

My invention relates to chairs, and more particularly to adjustable chairs of the so-called posture chair type, wherein the front portion of the seat is pivoted to a support, the rear portion of the seat is hinged to a back-rest, and a mechanism is provided for an automatic variation in the angle between the back-rest and the seat when the seat is moved from a sitting position into an inclined position and vice versa, so that the back-rest automatically adjusts itself into position to support the back of a person sitting on the chair.

One object of my invention is to provide an adjustable chair of above described type wherein the mechanism for the automatic variation in the angle between the back-rest and the seat is of simple construction, so that the chair may be manufactured at low costs.

Another object of my invention is to provide an adjustable chair of above described type equipped with adjusting means for a preadjustment of the relative position between the back-rest and the seat.

A further object of my invention is to provide an adjustable chair of above described type wherein the seat may be moved from a substantially horizontal sitting position into a forwardly inclined position under a simultaneous decrease of the angle between the back-rest and the seat and wherein the seat may be moved from the substantially horizontal sitting position into a rearwardly inclined position under a simultaneous increase of the angle between the back-rest and the seat.

Still another object of my invention is to provide a chair, wherein the back-rest is pivoted to the seat in such a manner, that a relative movement between the back-rest and the back of the user of the chair is practically eliminated during a relative movement between the back-rest and the seat.

In order to carry out my invention in practice, I provide an adjustable chair comprising a support, a seat, a back-rest, the front portion of said seat being pivoted to said support at a stationary point, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being normally in a substantially horizontal sitting position and being arranged for a tilting about its

front pivot from said sitting position into a rearwardly inclined position and into a forwardly inclined position, said intermediate point of the back-rest being guided along a continuous circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the rearwardly inclined position and whereby said angle is decreased when the seat is tilted from said sitting position into the forwardly inclined position, resilient means arranged between said support and a movable part of the chair for urging said seat into said forwardly inclined position, and limiting means connected with the seat and arranged for cooperation with said support for limiting the forwardly inclined position of the seat.

The above mentioned objects and advantages as well as other objects and advantages will be more fully disclosed in the following specification reference being had to the accompanying drawings forming part of this specification, wherein:

Fig. 1 is a fragmentary side elevational view of an adjustable chair according to the invention,

Fig. 2 is a sectional view of the chair shown in Fig. 1, taken on line 2—2 of Fig. 1,

Fig. 3 is a fragmentary side elevational view of a different embodiment of an adjustable chair,

Fig. 4 is a sectional view of the chair shown in Fig. 3, taken on line 4—4 of Fig. 3,

Figs. 5 and 6 are side elevational views of two further embodiments of an adjustable chair according to the invention,

Fig. 7 is a side elevational view of still another embodiment of an adjustable chair according to the invention,

Fig. 8 is a fragmentary front elevational view of the back-rest of the chair shown in Fig. 7, partly in section,

Fig. 9 is a side elevational view of an arm chair according to the invention, a portion of the side wall being broken away, and

Fig. 10 is a side elevational view of still another embodiment of a chair according to the invention.

Referring now to Figs. 1 and 2, 20 generally indicates a supporting frame carried by a threaded spindle 22, which may be screwed into a threaded opening of a supporting pedestal (not shown in Figs. 1 and 2). 24 indicates a seat, the front portion of which is pivoted to the side bars 26 and 28 of the supporting frame 20 at 30 and 32. The seat 24 may be tilted about the pivots 30 and 32 from a substantially horizontal sitting position shown in full lines in Fig. 1 into a rearwardly in-

clined position 24r shown in dash lines or into a forwardly inclined position 24f shown in dot and dash lines. 34 indicates a back-rest, the lower portion of which is pivotally connected with the rear portion of the seat 24 by means of a transverse rod 36 extending through a transverse bore of the seat. 38 generally indicates guiding link-means, one end of which is pivoted to an intermediate point of the back-rest 34, the other end of which is pivoted to the supporting frame 20 at a point, which is spaced from the front pivot 30 of the seat 24 and is positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot 30 of the seat. Thus, the intermediate point of the back-rest 34 is guided along a continuous circular path by said guiding link-means 38 during a tilting of the seat 24 about the pivot 30. When the seat 24 is tilted about the front pivot 30 from the sitting position into the rearwardly inclined position 24r the angle between the seat and the back-rest 34 is increased, and when the seat is tilted from the sitting position into the forwardly inclined position the angle between the seat and the back-rest is decreased.

According to Figs. 1 and 2 the guiding link-means 38 comprises a substantially U-shaped rod 40 having its base 41 rotatably arranged in sleeves 42 and 44. Said sleeves 42 and 44 adjustably arranged in curved slots 46 and 48 of the side bars 26 and 28 are held in their position by nuts 50 and 52 screwed on a threaded portion of the sleeves for urging the collars 54 and 56 of the sleeves against the wall of the side bars 26 and 28. The ends 58 and 60 of the legs of the U-shaped rod 40 are bent toward the back-rest 34. The end 58 is rotatably arranged in a block 62 adjustably arranged in a slot 63 of the back-rest 34; the block 62 and the end 58 may be held in their adjusted position by means of a thumb-screw 64. Likewise, the end 60 is rotatably arranged in a block 66 adjustably arranged in a slot (not shown) of the back-rest 34; the block 66 and the end 60 may be held in the adjusted position by a thumb-screw 68. Obviously, the adjusting means 42, 44, 46, 48, 50, 52 and/or 62, 64, 66, 68 may be used for a preadjustment of the angle between the back-rest 34 and the seat 24 when the latter is in a certain position, for example in the sitting position. For example, if it is desired to reduce the angle between the back-rest and the seat, the blocks 62 and 66 may be brought from their intermediate position shown in Fig. 1 into an upper extreme position wherein they contact the upper end of the slots of the back-rest. Of course, during a tilting of the seat 24 from the sitting position into a rearwardly inclined position or into a forwardly inclined position, said preadjusted angle between the back-rest and the seat is increased or decreased as described above. The above mentioned preadjustment of the angle between the back-rest and the seat also results in an adjustment of the degree of variation in the angle between the back-rest and the seat during a tilting of the seat. For example, the greater the distance between the pivotal connection 58 and the pivot 36, the larger the degree of variation in the angle between the back-rest and the seat during a tilting of the seat, and vice versa. Or, the nearer the pivotal connection 41 to the pivot 30, the smaller the degree of variation in the angle between the back-rest and the seat during a tilting of the seat, and vice versa.

As best shown in Fig. 2, two torsional springs 70 and 72 are arranged around the base 41 of 75

the U-shaped rod 40 between the side bars 26 and 28 of the supporting frame 20. One end 74 of the spring 72 passing through a hole in the collar 56 of the sleeve 44 is in engagement with a recess 76 of the side bar 28; the shape of said recess 76 corresponds to the shape of the slot 48. The other end 78 of the spring 72 is secured to an adjusting nut 80 screwed on a threaded portion of the base 41 and held in its position by a lock-nut 82. Likewise, the end 84 of the spring 70 passing through a hole of the collar 54 of the sleeve 42 is in engagement with a recess (not shown) of the side bar 26, and the end 86 of said spring is secured to an adjusting nut 88 screwed on a threaded portion of the base 41 and held in its position by a lock-nut 90. Said torsional springs 70 and 72 counteract the load of the user of the chair and tend to urge the seat 24 into its extreme forwardly inclined position 24f, which is limited by adjustable belts 92 and 94 having their ends connected with the supporting frame 20 and the seat 24 respectively. The adjusting nuts 80 and 88 serve to adjust the tension in the springs 70 and 72 in accordance with the load of the user of the chair, so that always the same extreme rearwardly inclined position 24r of the seat may be obtained irrespective of the weight of the person sitting on the chair.

A locking lever 96 keyed to the transverse rod 36 serves to lock the movable parts 24, 34, 38 of the chair in any adjusted position. As best shown in Fig. 2, the hub 98 of the lever 96 has a cam-shaped inner surface 100 cooperating with one side of the back-rest 34, and the end of the transverse rod 36 opposite the lever 96 carries a head 102 resting against the other side of the back-rest. If the lever 96 is depressed and turned in clock-wise direction as viewed in Fig. 1, the cam 100 causes a clamping of the back-rest against the seat, whereby the movable parts of the chair are locked. Of course, any other locking means may be used, if desired.

The above described adjustable chair may be used in the following manner: The tension in the springs 70 and 72 is adjusted by means of the adjusting nuts 80 and 88 to such a degree, that, upon a release of the movable parts of the chair by a turning of the lever 96 in counter-clockwise direction, the springs 70 and 72 hold the seat 24 in a substantially horizontal sitting position when the user of the chair sits in upright position. If the user of the chair wishes to relax and leans his body against the back-rest 34, the back-rest and the seat are moved against the action of said springs into a reclining position indicated by dash lines in Fig. 1. If the user of the chair leans his body forwardly for the performance of a certain work on a desk, for example, the springs 70 and 72 cause a movement of the seat and the back-rest into the forwardly inclined position shown in dash and dot lines in Fig. 1. Owing to the decrease of the angle between the back-rest and the seat, the back-rest remains in contact with the back of the user of the chair for supporting same during said upward tilting of the seat. If desired, the movable parts of the chair may be locked in any suitable position by depressing the locking lever 96.

The principal parts of the chair shown in Figs. 3 and 4 correspond to that of the chair shown in Figs. 1 and 2 and do not need to be described in detail. The back-rest 34 is pivotally connected with the rear portion of the seat 24 at 36; the front portion of the seat 24 is pivoted to the support 20 at 32 and 34 respectively. One end of

the guiding link-means 38 is pivoted to an intermediate point of the back-rest 34, the other end of the guiding link-means is pivoted to the supporting frame 20. The pivotal connections 58, 60 between the guiding link-means and the back-rest 34 may be held in an adjusted position by means of thumb-screws 64 and 68, while the pivotal connections 41, 42 and 41, 44 between the guiding link-means and the frame 20 may be held in their adjusted positions by the adjusting nuts 50 and 52. The torsional springs 70 and 72 acting on the guiding link-means 38 tend to urge the seat 24 into its uppermost position shown in full lines in Fig. 3, which is limited by the limiting means 104 arranged on each side of the chair. According to the embodiment of the chair shown in Fig. 3 the uppermost position of the tiltable seat 24 represents its sitting position. The seat cannot be tilted into a forwardly inclined position, but it may be tilted into a rearwardly inclined position 24r shown in dash lines.

Each limiting means 104 consists of a toggle lever mechanism comprising two levers 106 and 108 pivotally connected with each other at 110. The lever 106 is pivoted to the seat at 112 and the lever 108 is pivoted to the frame 20 at 114. A spring 116 stretched between the lever 108 and the frame 20 tends to draw the lever 108 against a stop 118 mounted on the frame 20, so as to bring the levers 106 and 108 substantially in alignment as shown in full lines in Fig. 3. Said spreading position of the levers 106 and 108 limits the uppermost or sitting position of the seat 24.

As will be readily understood, the action of the spring 116 counteracts to a certain degree a downward movement of the seat 24, and the action of the spring 116 must be overcome before the levers 106 and 108 may be swung out of their spreading position by a pressure exerted on the back-rest. Therefore, a user of the chair sitting in upright position may rest with his back on the back-rest without causing a movement of the levers 106 and 108. In other words, the spring loaded toggle lever mechanism also acts as locking means holding the movable parts of the chair in the sitting position, and a special locking lever may be omitted.

On each side of the chair an extension 120 is secured to the lower portion of the back-rest 34. An adjustable actuating member or screw 122 screwed into the free end of the extension 120 is arranged for cooperation with the lever 106 of the toggle lever mechanism. If the user of the chair wishes to relax and leans his back against the back-rest for exerting an increased pressure thereon, the actuating member 122 acts on the lever 106 and causes a swinging thereof in counter-clockwise direction after the overcoming of the action of the spring 116. Thus, the toggle lever mechanism is released and the movable parts of the chair may be brought into the reclining position indicated by dash lines in Fig. 3. When the user of the chair brings his body again in upright position, the springs 70, 72 and 116 return the movable parts of the chair into the sitting position. Of course, the spring loaded toggle lever mechanism could be replaced by other means which may limit the sitting position of the seat and also may cause a locking of the movable parts of the chair.

Fig. 5 illustrates the application of my new chair construction according to Fig. 1 to a chair which may be used by typists, switch-board operators, etc. The spindle 22 carrying the supporting frame 20 is screwed into a conventional ped-

estal 122. The front portion of the seat 24 is pivoted to the frame 20 at 32, and the back-rest 34 is pivoted to the rear portion of the seat 24 at 36. The movement of the back-rest is controlled by guiding link-means 38 pivotally connected with the frame 20 and the back-rest 34. The spring 72 tends to urge the seat 24 upwardly into its uppermost position limited by the adjustable limiting belt 92. The locking lever 96 serves to lock the movable parts of the chair in any adjusted position. The back-rest 34 carries an adjustable head-rest 124.

According to the embodiment shown in Fig. 6, the guiding link-means form the arm-rests 126 of a desk chair. One end of each arm-rest is pivoted to the supporting frame 20 at 128, the other end of each arm-rest is pivoted to an intermediate point of the back-rest 34 at 130. The pivotal connections between the arm-rests and the frame and between the arm-rests and the back-rest are not adjustable in this embodiment of a chair. The back-rest 34 is pivoted to the seat 24 at 36, and the seat is pivoted to the frame 20 at 32. The spring 72 tends to urge the seat 24 into its uppermost position limited by a stop 132 arranged on the seat for cooperation with a bar of the frame 20. The locking lever 96 serves to lock the parts of the chair in an adjusted position.

Figs. 7 and 8 illustrate a different type of a chair having a support 134 formed of tubular material. Said support 134 carries a bracket 136 arranged substantially in the middle of the chair. The front portion of the seat 138 is pivoted to the support 134 at 140, and the rear portion of the seat is pivotally connected with the back-rest 142 at 144. The chair has only a single guiding link 146 arranged in the middle of the chair. One end of the link 146 is pivotally arranged in a slot 148 of the bracket 136, and the pivotal connection between the link 146 and the bracket 136 may be held in the adjusted position in the slot 148 by means of an adjusting nut 150. The other end of the guiding link 146 is connected with a transverse rod 152. Each end of said transverse rod 152 is pivotally mounted in a block 154 slidably and adjustably arranged in a slot 156 of the back-rest 142. The block 154 may be held in an adjusted position by means of a thumb-screw 158. An S-shaped spring 160 having its ends secured to the bracket 136 and the seat 138 tends to urge the seat 138 into the sitting position shown in Fig. 7. Furthermore, said spring 160, if expanded, limits the sitting position of the seat, so that the latter cannot be tilted further upward. A locking lever 162 connected with a suitable locking mechanism (not shown) serves to lock the movable parts of the chair in any adjusted position.

Fig. 9 illustrates the application of my chair construction to an arm-chair. The front portion of the seat 164 is pivoted to the front wall 166 of the support 168 at 170. The back-rest 172 is pivoted to the rear portion of the seat 164 at 174. A guide link 176 is arranged on each side of the chair. One end of each guide link 176 is pivoted to the support 168 at 178, the other end of each guide link is pivoted to the back-rest at 180. At least a portion of said guide links may be arranged within the side walls 182 and 184 of the support, so that they are covered by the upholstery of said side walls. A U-shaped spring 186 having its ends secured to the seat 164 and to the bottom 190 of the support 168 tends to urge the

seat into its uppermost sitting position limited by the spring 186 if expanded. Instead of a single spring 185 several springs may be arranged next to each other, if desired. The movable parts of the chair may be locked in their adjusted position by means of a locking nut 192 screwed on a pin 194, which is secured to the seat 164 and passes through a curved slot 196 of the side wall 182.

The construction of the chair shown in Fig. 10 differs from that shown in Fig. 1 in the embodiment of the adjustable guiding link means and in the arrangement of the torsional spring.

The chair according to Fig. 10 has two guiding link-means 198, one on each side of the chair. Each guiding link-means comprises a hollow rod 200 pivoted to the frame 20 at 202 and a rod 204 pivoted to the back-rest 34 at 206. The rod 204 is shiftably inserted into the free end of the hollow rod 200 for a variation in the length of the guiding link-means 198 and may be held in its position by an adjusting screw 208. It will be readily understood that an adjustment of the length of the guiding link-means 198 results in a preadjustment of the angle between the back-rest 34 and the seat 24. The torsional spring 210 is arranged in such a manner, that it acts directly on the seat 24 for tilting same upwardly about the pivot 30. The uppermost position of the seat is limited by the adjustable belt 92, and the locking lever 96 serves to lock the movable parts of the chair in an adjusted position.

As pointed out above, the back-rest of the chair according to the invention remains in contact with the back of the user of the chair during an adjustment of the movable parts of the chair from the sitting position into an inclined position and vice versa. According to a preferred embodiment of my invention I arrange the pivot point 36 (see Fig. 10 for example) between the back-rest 34 and the seat 24 at a point spaced from the front surface of the main portion of the back-rest at a distance  $a$  of about 3 inches toward the front portion of the seat, whereby a relative movement between the back-rest and the back of the user is avoided during a swinging movement of the back-rest as the pivot point is substantially in the same plane as the hip-joint of the person sitting on the chair. Of course, it is understood, that this spacing of the pivot point between the back-rest and the seat from the front surface of the main portion of the back-rest may be applied to other chair constructions which do not comprise the tiltable arrangement of the seat and/or the guiding link-means shown in the drawings.

I have described preferred embodiments of my invention, but it is clear that numerous changes and omissions may be made without departing from the spirit of my invention.

What I claim is:

1. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support at a stationary point, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being normally in a substantially horizontal sitting position and being arranged for a tilting about its front pivot from said sitting position into a rearwardly inclined position and into a forwardly in-

clined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the rearwardly inclined position and whereby said angle is decreased when the seat is tilted from said sitting position into the forwardly inclined position, resilient means arranged between said support and a movable part of the chair for urging said seat into said forwardly inclined position, and limiting means connected with the seat and arranged for cooperation with said support for limiting the forwardly inclined position of the seat.

2. An adjustable chair as claimed in claim 1 including adjustable guiding link-means for a preadjustment of the relative position between the back-rest and the seat.

3. An adjustable chair as claimed in claim 1 including means for effecting adjustment of the pivotal connections between the guiding link-means and the support and between the guiding link-means and the back-rest for a preadjustment of the relative position between the back-rest and the seat.

4. In combination with an adjustable chair as claimed in claim 1, said support having a slot, and said back-rest having a slot, the pivotal means of said guiding link-means being engaged with said slots, and adjusting means for holding the pivotal means of the guiding link-means in an adjusted position in said slots for a preadjustment of the relative position between the back-rest and the seat.

5. An adjustable chair as claimed in claim 1 including guiding link means of variable length, and means for adjusting the length of said guiding link-means for a preadjustment of the relative position between the back-rest and the seat.

6. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being normally in a substantially horizontal sitting position and being arranged for a tilting about its front pivot from said sitting position into a rearwardly inclined position and into a forwardly inclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the rearwardly inclined position and whereby said angle is decreased when the seat is tilted from said sitting position into the forwardly inclined position, spring means arranged between said support and said guiding link-means for urging said seat into said forwardly inclined position, and limiting means connected with the seat and arranged for cooperation with said support for limiting the forwardly inclined position of the seat.

7. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding

link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being normally in a substantially horizontal sitting position and being arranged for a tilting about its front pivot from said sitting position into a rearwardly inclined position and into a forwardly inclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the rearwardly inclined position and whereby said angle is decreased when the seat is tilted from said sitting position into the forwardly inclined position, spring means arranged between said support and said guiding link-means for urging said seat into said forwardly inclined position, adjusting means for an adjustment of the tension in said spring means, and limiting means connected with the seat and arranged for cooperation with the support for limiting the forwardly inclined position of the seat.

8. An adjustable chair as claimed in claim 6 including torsional spring means associated with the pivotal connection between the guiding link-means and the support for urging said seat into said forwardly inclined position.

9. An adjustable chair as claimed in claim 1 including adjustable guiding link-means for an adjustment of the relative position between the back-rest and the seat, and spring means arranged between said support and said guiding link-means for urging said seat into said forwardly inclined position.

10. An adjustable chair as claimed in claim 1 including locking means associated with the movable parts of the chair for locking same in an adjusted position.

11. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being arranged for a tilting about its front pivot from a substantially horizontal sitting position into an extreme reclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the reclined position, resilient means arranged between said support and a movable part of the chair for urging said seat into said sitting position, and a toggle lever mechanism arranged between said seat and said support for limiting the sitting position of the seat.

12. An adjustable chair as claimed in claim 11 including a spring stretched between said support and said toggle lever mechanism for urging the levers thereof into a spreading position limiting the sitting position of the seat.

13. In combination with an adjustable chair as claimed in claim 11, said toggle lever mechanism locking said seat in its sitting position

when the levers of the toggle lever mechanism are substantially in alignment, and releasing means projecting from said back-rest for cooperation with the toggle lever mechanism so as to release same when the back-rest is pressed rearwardly.

14. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being arranged for a tilting about its front pivot from a substantially horizontal sitting position into an extreme reclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the reclined position, torsional spring means associated with the pivotal connection between the guiding link-means and the support for urging said seat into said sitting position, a toggle lever mechanism arranged between said seat and said support, a spring stretched between said support and said toggle lever mechanism for urging the levers thereof into a spreading position, said toggle lever mechanism locking said seat in its sitting position when the levers of the toggle lever mechanism are substantially in alignment, and releasing means projecting from said back-rest for cooperation with the toggle lever mechanism so as to release same when the back-rest is pressed rearwardly.

15. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being arranged for a tilting about its front pivot from a substantially horizontal sitting position into an extreme reclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the reclined position, and a spring arranged between the support and the seat for urging the seat into its sitting position and limiting said sitting position.

16. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said guiding link-means being adjustable for a preadjustment of the relative position between the back-rest and the seat, said

seat being arranged for a tilting about its front pivot from a substantially horizontal sitting position into an extreme reclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the reclined position, spring means arranged between said support and a movable part of the chair for urging said seat into said sitting position, and limiting means connected with the seat and arranged for cooperation with the support for limiting the sitting position of the seat.

17. In combination with an adjustable chair as claimed in claim 16, said support having a slot, and said back-rest having a slot, the pivotal means of said guiding link-means being engaged with said slots, and adjusting means for holding the pivotal means of the guiding link-means in an adjusted position in said slots for a preadjustment of the relative position between the back-rest and the seat.

18. An adjustable chair comprising: a support, a seat, the front portion of said seat being pivoted to said support, a back-rest pivoted to the rear portion of said seat, the pivot point between the back-rest and the seat being spaced from the front surface of the main portion of the back-rest at a distance of about 3 inches toward the front portion of the seat, guiding link-means, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, said seat being arranged for a tilting about its front pivot from a substantially horizontal sitting position into an extreme reclined position, said intermediate point of the back-rest being

guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the reclined position, resilient means arranged between said support and a movable part of the chair for urging said seat into said sitting position, and limiting means connected with the seat and arranged for cooperation with the support for limiting the sitting position of the seat.

19. An adjustable chair comprising: a support, a seat, a back-rest, the front portion of said seat being pivoted to said support, the back-rest being pivoted to the rear portion of said seat, guiding link-means of variable length, one end of said guiding link-means being pivoted to said support at a point positioned in the front portion of the chair in a plane below the horizontal plane of said front pivot of the seat, the other end of said guiding link-means being hinged to an intermediate point of said back-rest, means for adjusting the length of said guiding link-means for a preadjustment of the relative position between the back-rest and the seat, said seat being arranged for a tilting about its front pivot from a substantially horizontal sitting position into an extreme reclined position, said intermediate point of the back-rest being guided along a circular path by said guiding means during a tilting of said seat whereby the angle between the seat and the back-rest is increased when the seat is tilted from the sitting position into the reclined position, resilient means arranged between said support and a movable part of the chair for urging said seat into said sitting position, and limiting means connected with the seat and arranged for cooperation with the support for limiting the sitting position of the seat.

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