June 28, 1949. A. LORENZ 2,474,265

RECLINING ARTICLE OF FURNITURE

Filed Aug. 22, 1946

FIG. 1

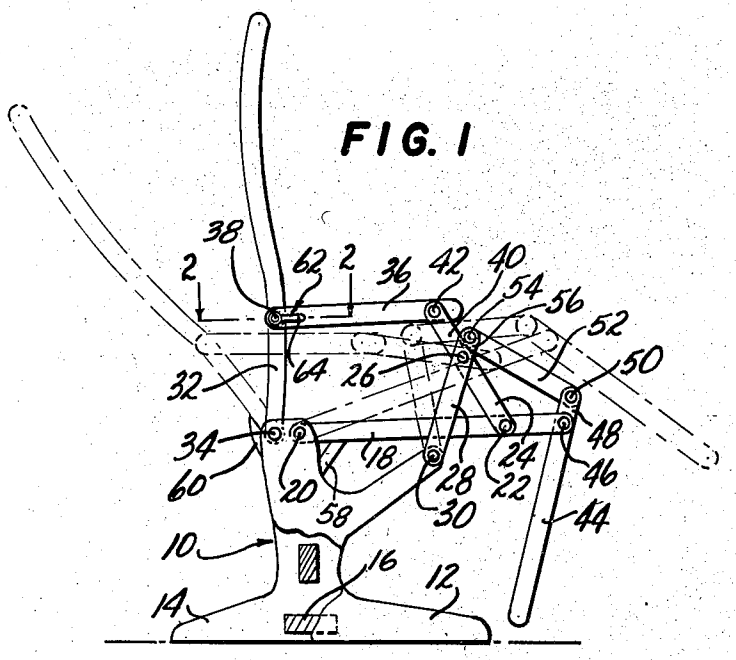


FIG. 2

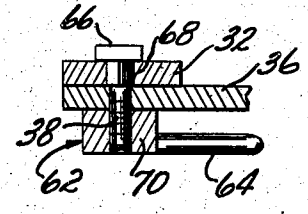
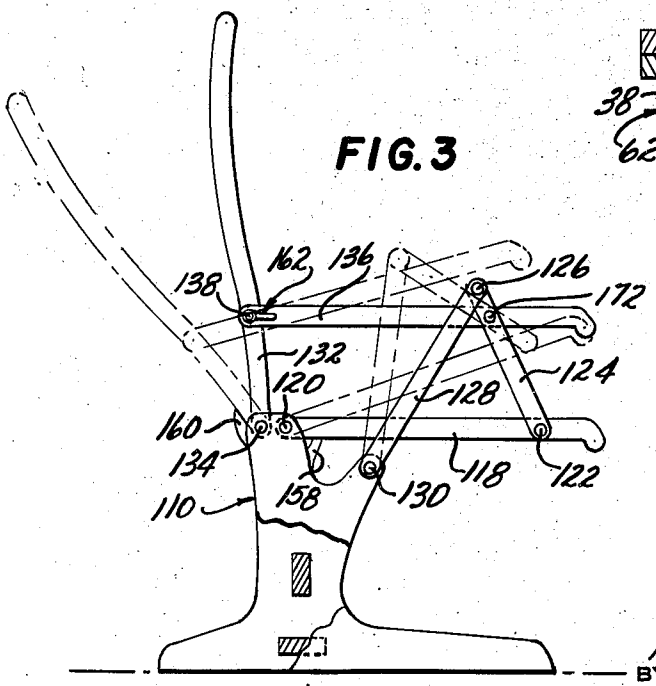


FIG. 3



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RECLINING ARTICLE OF FURNITURE

Anton Lorenz, Buffalo, N. Y.

Application August 22, 1946, Serial No. 692,224

5 Claims. (Cl. 155—105)

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This is a continuation-in-part of patent application Serial #626,287, relating to a Reclining article of furniture, filed November 2, 1945.

This invention relates to articles of furniture, and more particularly to a reclining article of furniture, wherein the seat and the back-rest form movable links of a polygonal compound linkage swingably mounted on a support, a portion of the latter forming the stationary link of said linkage.

An object of the present invention is to provide a reclining article of furniture of above described type, wherein the movable members of the article of furniture are very well balanced, so that an occupant resting in the article of furniture may bring the movable members of the article of furniture from one position into another position without great effort.

A further object of the present invention is to provide a reclining article of furniture of above described type equipped with a leg-rest swingably mounted on the seat and controlled by a controlling mechanism, wherein the leg-rest may be swung through a relatively large angle during a movement of the movable members of the article of furniture from their sitting position into their extreme reclined position.

Still another object of the invention is to improve upon reclining articles of furniture as now ordinarily made.

With the above and other objects of the invention in view, the invention consists in the novel construction, arrangement and combination of various devices, elements and parts, as set forth in the claims hereof, certain embodiments of the same being described in the specification and being illustrated in the accompanying drawings forming part of this specification, wherein:

Fig. 1 is a side elevational view of an adjustable reclining chair according to the invention, a portion of a side frame of the support being broken away,

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1, and

Fig. 3 is a side elevational view of another embodiment of an adjustable reclining chair according to the invention.

Referring now to Fig. 1, 10 generally indicates a support comprising the side frames 12 and 14. Said side frames are connected with each other by cross bars 16.

The rear portion of a seat 18 is pivoted to said support 10 at 20. On each side of the chair the front portion of said seat 18 is pivotally connected at 22 with the lower portion of a front

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link 24. Said front link 24 is pivotally connected at 26 at a point above the pivotal connection 22 between the front link 24 and the seat 18 with the upper end portion of a connecting link 28, the lower end portion of which is pivoted to the support 10 at 30 at a point spaced from the pivotal connection 20 between the seat 18 and the support 10. Thus, the movable seat 18, the movable front link 24, the movable connecting link 28 and the stationary portion of the support 10 between the pivotal connection 30 of the connecting link 28 with said support and the pivotal connection 20 of the seat 18 with said support form the links of a four-bar link-mechanism.

The lower end of a back-rest 32 is pivoted to the support 10 at 34 at a point spaced from the pivotal connection 20 between the seat 18 and the support 10. On each side of the chair, the rear portion of a top link 36 is pivoted to an intermediate point 38 of the back-rest 32 above the pivotal connection 34 between the back-rest 32 and the support 10. The front link 24 has an extension 40 projecting beyond its pivotal connection 26 with the connecting link 28. The front portion of the top link 36 is pivoted at 42 to said extension 40 of the front link 24 at a point spaced from the pivotal connection 26 of said front link 24 with the connecting link 28.

Above described four-bar link-mechanism 18, 24, 28, 30—20 and the link-chain 32, 36 form in combination with each other a polygonal compound linkage. The links of said polygonal compound linkage may be readily arranged in such a manner and in such proportions, that the movable members of the chair are very well balanced, so that an occupant resting in the chair may bring the movable members of the chair from one position (for example the sitting position shown in full lines) into another position (for example the extreme reclined position shown in dash and dot lines) without great effort. Furthermore, a leg-rest 44 is swingably mounted on the front portion of the seat 18 at 46. Said leg-rest 44 has an upward extension 48 pivotally connected at 50 with one end of a controlling link 52, the other end of which is pivoted at 54 with an extension 56 of the connecting link 28. Said controlling link 52 serves to control the swinging movements of the leg-rest 44 about its pivot 66 when the movable members of the chair are moved from one position, for example the sitting position shown in full lines, into another position, for example the extreme reclined position shown in dash and dot lines.

The sitting position of the movable members

of the chair is limited by a stop 58 mounted on the support 10 for abutting engagement with the seat 18. The extreme reclined position of the movable members of the chair is limited by a stop 60 mounted on the support 10 for cooperation with the back-rest 32.

When the occupant of the chair leans the weight of his body against the back-rest 32, the latter will be swung from its upright position shown in full lines into a reclined position shown in dash and dot lines. At the same time, the seat 18 and the leg-rest 44 will be lifted into the dash and dot line position through the medium of above described linkage and controlling means.

The movable members of the chair may be held in any desired position, for example in the extreme reclined position shown in dash and dot lines or in any other intermediate reclined position, by means of a locking device generally indicated by 62 and arranged on the pivot 38 connecting the top link 36 with the back-rest 32. As best shown in Figs. 1 and 2, said locking device 62 comprises a handle 64 screwed on the threaded end of the pivot 38. Said pivot 38 has a head 66 resting against the surface of the back-rest 32. A square portion 68 of the pivot 38 is inserted into a corresponding square aperture of the back-rest 32, whereby the pivot 38 is prevented from rotation. When the user of the chair loosens the locking handle 64, the surface of the hub 70 of said handle is disengaged from the surface of the top link 36, so that the movable members of the chair may be freely moved from one position into another one. When the locking handle 64 is tightened, the surface of the hub of the handle is pressed against the top link 36, whereby the latter is pressed against the back-rest 32 engaged with the head 66 of the pivot 38, so that the members of the chair are held in their position. Of course, any other type of locking device may be used instead of said locking device 62, if desired.

According to the embodiment of an adjustable reclining chair shown in Fig. 3, again the seat 118 pivoted to the support 110 at 120, the front link 124 pivoted to the seat 118 at 122, the connecting link 128 pivoted to the front link 124 at 126 and pivoted to the support 110 at 130 as well as the stationary portion of the support 110 between the pivots 130 and 120 form the links of a four-bar link-mechanism. Furthermore, again the lower end of the back-rest 132 is pivoted to the support 110 at 134 at a point spaced from the pivotal connection 120 between the seat 118 and the support 110. Furthemore, the rear portion of the top link 136 is pivoted to an intermediate point of the back-rest 132 at 138. According to Fig. 3, however, the front portion of said top link 136 is pivoted at 172 to an intermediate point of the front link 124 between the pivotal connection 122 of the front link 124 with the seat 118 and the pivotal connection 126 of the front link 124 with the connecting link 128.

The sitting position of the movable members of the chair shown in full lines is limited by the stop 158 on which the seat 118 comes to a rest. The extreme reclined position of the movable members of the chair is limited by a stop 160 cooperating with the back-rest 132. When the back-rest 132 is swung from its upright position into the reclined position shown in dash and dot lines, the seat 118 is lifted into the reclined position shown in dash and dot lines through the medium of above described linkage.

The movable members of the chair may be held in any desired position by means of the locking device 162 arranged on the pivot 138.

I have described preferred embodiments of my invention, but it is understood that this disclosure is for the purpose of illustration, and that various omissions or changes in shape, proportion, and arrangement of parts, as well as the substitution of equivalent elements for those, herein shown and described, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

For example one or more of the links of the linkage of the chairs may be in the shape of a bent link instead of a straight link as shown in the drawings.

Furthemore, one or more of the links of the linkage of the chairs may be made of adjustable lengths so as to vary the relative positions and movements of the members of the chair.

Furthermore, the invention may be applied to other articles of furniture than the type of chairs shown in the drawings, for example to desk chairs, garden chairs, chairs for use in railroad cars, chairs for use in airplanes, loungets, etc.

What I claim is:

1. A reclining article of furniture, comprising: a support, a seat, the rear portion of said seat being pivoted to said support, a front link, the lower portion of said front link being pivoted to the front portion of said seat, a connecting link, one end portion of said connecting link being pivoted to said front link at a point above the pivotal connection between the front link and the seat, the other end portion of said connecting link being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, said seat, said front link, said connecting link and the stationary portion of the support between the pivotal connections of the connecting link with the support and of the seat with the support forming the links of a four-bar link-mechanism, a back-rest, said back-rest being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, and a top link, the rear portion of said top link being pivoted to an intermediate point of said back-rest above the pivotal connection between the back-rest and the support, and the front portion of said top link being pivoted to a point of the front link spaced from its pivotal connection with the connecting link.

2. A reclining article of furniture, comprising: a support, a seat, the rear portion of said seat being pivoted to said support, a front link, the lower portion of said front link being pivoted to the front portion of said seat, a connecting link, one end portion of said connecting link being pivoted to said front link at a point above the pivotal connection between the front link and the seat, the other end portion of said connecting link being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, said seat, said front link, said connecting link and the stationary portion of the support between the pivotal connections of the connecting link with the support and of the seat with the support forming the links of a four-bar link-mechanism, a back-rest, said back-rest being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, a top link, the rear portion of said top link being pivoted to an intermediate point of said back-rest above the pivotal connection between the back-rest and the support, the front portion of said top link being pivoted to a point

of the front link spaced from its pivotal connection with the connecting link, and locking means between two adjacent relatively movable members of the article for locking the movable members thereof in a predetermined position, at least one of said adjacent relatively movable members being a member of the link-system.

3. A reclining article of furniture, comprising: a support, a seat, the rear portion of said seat being pivoted to said support, a front link, the lower portion of said front link being pivoted to the front portion of said seat, a connecting link, one end portion of said connecting link being pivoted to said front link at a point above the pivotal connection between the front link and the seat, the other end portion of said connecting link being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, said seat, said front link, said connecting link and the stationary portion of the support between the pivotal connections of the connecting link with the support and of the seat with the support forming the links of a four-bar link-mechanism, said front link having an extension projecting beyond its pivotal connection with the connecting link, a back-rest, said back-rest being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, and a top link, the rear portion of said top link being pivoted to an intermediate point of said back-rest above the pivotal connection between the back-rest and the support, and the front portion of said top link being pivoted to said extension of the front link.

4. A reclining article of furniture, comprising: a support, a seat, the rear portion of said seat being pivoted to said support, a front link, the lower portion of said front link being pivoted to the front portion of said seat, a connecting link, one end portion of said connecting link being pivoted to said front link at a point above the pivotal connection between the front link and the seat, the other end portion of said connecting link being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, said seat, said front link, said connecting link and the stationary portion of the support between the pivotal connections of the connecting link with the support and of the seat with the support forming the links of a four-bar link-mechanism, a back-rest, said back-rest being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, and a top link, the rear portion of said top link being pivoted to an intermediate point of said back-rest above the pivotal connection between the back-rest and the support, and the front portion of said top link being pivoted to an intermediate point of the front link between the pivotal connections of the latter with the connecting link and the seat.

5. A reclining article of furniture, comprising: a support, a seat, the rear portion of said seat being pivoted to said support, a front link, the lower portion of said front link being pivoted to the front portion of said seat, a connecting link, one end portion of said connecting link being pivoted to said front link at a point above the pivotal connection between the front link and the seat, the other end portion of said connecting link being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, said seat, said front link, said connecting link and the stationary portion of the support between the pivotal connections of the connecting link with the support and of the seat with the support forming the links of a four-bar link-mechanism, a back-rest, said back-rest being pivoted to said support at a point spaced from the pivotal connection between the seat and the support, a top link, the rear portion of said top link being pivoted to an intermediate point of said back-rest above the pivotal connection between the back-rest and the support, the front portion of said top link being pivoted to a point of the front link spaced from its pivotal connection with the connecting link, a leg-rest swingably mounted on the front portion of said seat, and controlling means in operative connection with a member of the article for controlling the movements of the leg-rest, said member being exclusive of the seat.

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