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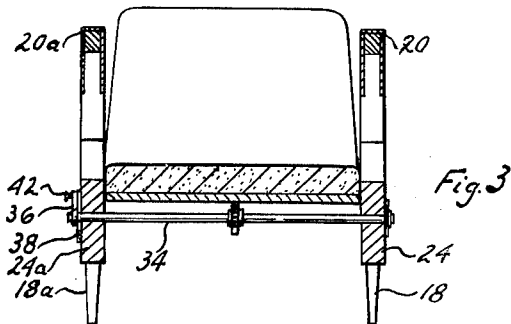
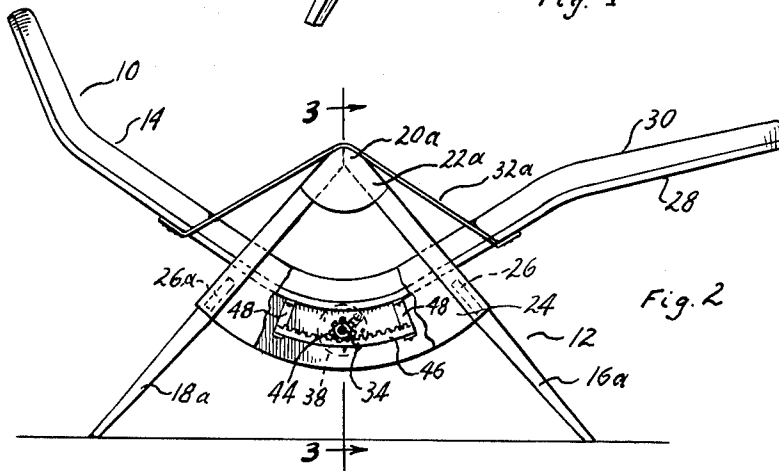
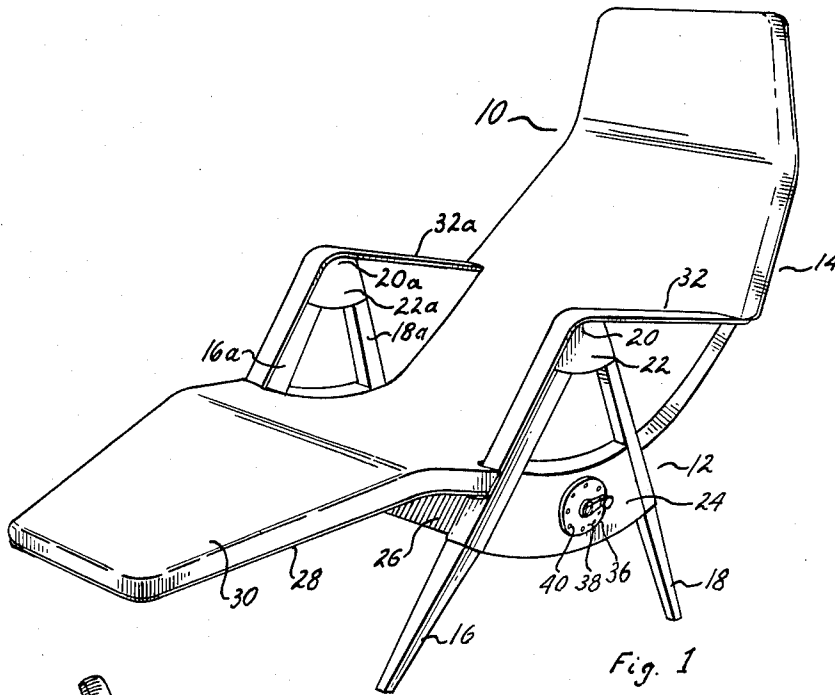
H. P. GLASS

3,235,304

ADJUSTABLE RECLINING CHAIR

Filed June 3, 1964

2 Sheets-Sheet 1



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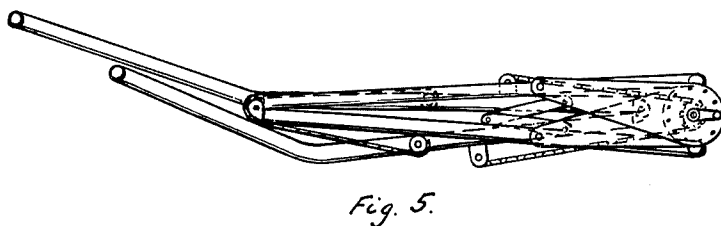
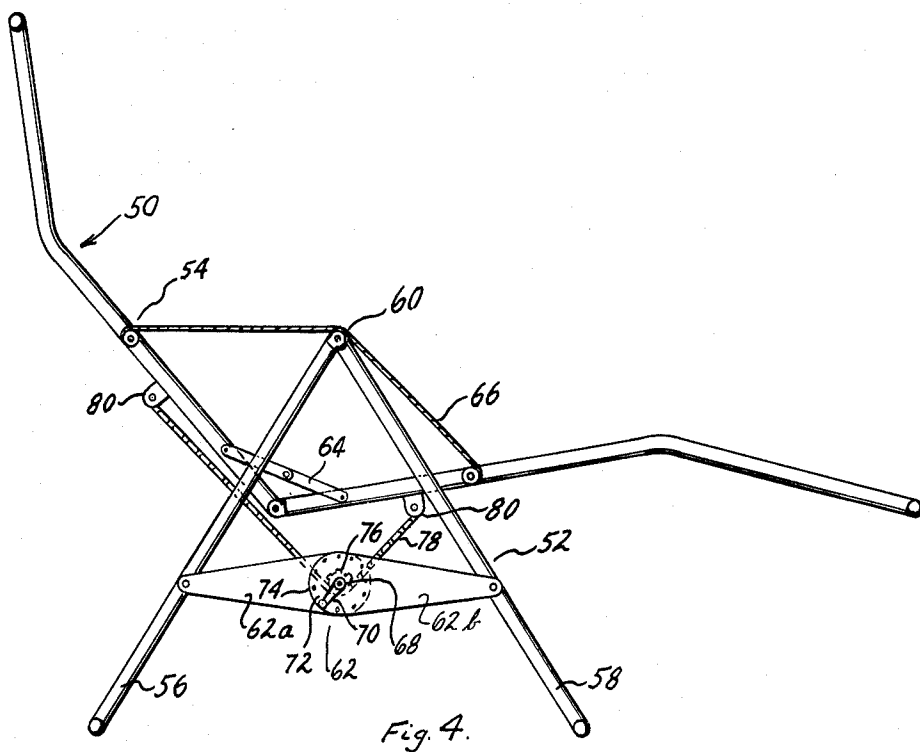
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ADJUSTABLE RECLINING CHAIR

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1 Claim. (Cl. 297—19)

This invention relates generally to reclining chairs. More particularly, it relates to reclining chairs having improved means to adjust the tilting thereof.

In reclining chairs, i.e., those wherein a person can sit with his feet raised from the ground or floor, it is advantageous to provide means whereby the occupant can adjust or control the tilting or angular position of the chair to select the angle at which he reclines.

It is, therefore, an object of the present invention to provide improved means to adjust or control the tilting of reclining chairs.

Another object is to provide means of the aforesaid character which can be operated by the occupant while he is seated in the chair.

Another object is to provide means of the aforesaid character which are adapted to be employed on chairs of the collapsible or non-collapsible type.

Other objects and advantages of the present invention will hereinafter appear.

In accordance with the present invention, there is provided a chair having a cradle or base portion and a body supporting portion which is movably mounted or suspended on the base portion by means of straps. Rotatable sprocket means are mounted on the base portion of the chair and engage drive means, such as a gear rack, a cord or sprocket chain, which is mounted on the body supporting portion of the chair. The point of engagement of the sprocket and drive means is located a predetermined radial distance from the point of suspension, i.e., where the strap contacts the base portion of the chair. This affords a mechanical advantage whereby rotation of the sprocket means effects tilting or rotation of the body supporting portion of the chair about the point of suspension. Means are provided to lock or latch the sprocket in various positions.

Two embodiments of the invention are disclosed herein. In one embodiment the chair is non-collapsible and employs a rack and pinion type adjustment means. In the other embodiment the chair is collapsible and employs a sprocket and flexible chair type adjustment means.

Both embodiments of my chair illustrated in the drawings incorporate the additional feature of the strap which supports the body supporting portion performing a dual function. The strap which is supported at a pivot point at its center portion not only supports the body portion, but that part of the strap which extends from the pivot to the back of the chair also constitutes an arm rest.

The accompanying drawings illustrate preferred embodiments of the invention but it is to be understood that the embodiments illustrated are susceptible of modifications with respect to details thereof without departing from the scope of the appended claims.

In the drawings:

FIG. 1 is a perspective view of a non-collapsible type of reclining chair incorporating the present invention;

FIG. 2 is a side elevational view of the chair in FIG. 1;

FIG. 3 is a cross-sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is a side elevational view of a collapsible type of reclining chair incorporating the present invention; and

FIG. 5 is a side elevational view of the chair shown in FIG. 4 but shows the chair in collapsed or folded position.

Referring to FIGS. 1, 2 and 3, the numeral 10 designates a non-collapsible reclining chair incorporating the

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present invention. Chair 10 comprises a cradle or base portion 12 and a body supporting portion 14 movably mounted thereon. Base portion 12 of chair 10 comprises a first pair of legs 16 and 18 which are joined together to form an apex or suspension point 20 by means of a bracket 22 and a side plate or member 24. Base portion 12 further comprises a second pair of legs 16a and 18a which are joined together by a bracket 22a and a side plate 24a to provide a suspension point 20a. The first and second pairs of legs are joined together by suitable braces 26 and 26a.

Body supporting portion 14 of chair 10 comprises a rigid portion 28 which is fabricated to a desired shape and further comprises, for example, an upholstered portion 30. Body supporting portion 14 of chair 10 is adapted to support the reclining body of an occupant.

Body supporting portion 14 of chair 10 is movably or tiltably supported on base portion 10 by means of a pair of straps 32 and 32a. Preferably the straps 32 and 32a are flexible. Strap 32, for example, is secured in any suitable manner at both of its ends to rigid portion 28 of body supporting portion 14 of chair 10. Strap 32a is similarly connected. Straps 32 and 32a overlie the suspension points 20 and 20a, respectively, on base portion 12 and in this manner body supporting portion 14 of chair 10 is hung or suspended from base portion 12. As is apparent, body supporting portion 14 is movably supported and is pivotable or tiltable for a limited distance about an axis between the suspension points 20 and 20a, unless otherwise restrained.

Means are provided to tilt or pivot body supporting portion 14 of chair 10 on base portion 12 about the aforesaid axis. Thus, there is provided a shaft 34 which is mounted for rotational movement between the side plates 24 and 24a of base portion 12 of chair 10. Shaft 34 is provided with a handle or crank 36 which is rigidly secured thereto and by means of which the shaft can be rotated by an occupant of the chair. An indexing means, including a plate 38 having holes 40 therein around its periphery, is mounted on side plate 24 in association with handle 36. The indexing means further include a retractable pin or snap button 42 (shown in FIG. 3) for cooperation with the holes 40 on plate 38 to rotate and locate the main shaft 34 in any desired rotational position. Shaft 34 is provided with a rotatable driving member or pinion gear 44 which is rigidly secured thereto and rotatable therewith. Pinion gear 44 is adapted to engage a driven member such as a toothed rack 46, shown in FIG. 2, which is rigidly secured as by bracket 48 to the underside of rigid portion 28 of body supporting portion 14 of chair 10.

Chair 10 is operated in the following manner. Assume for example, that chair 10 is initially in the position shown in FIG. 1, i.e., in its most upright position. An occupant of the chair reaches down and disengages pin 42 from an indexing hole 40 in plate 38 and rotates crank 36 clockwise with respect to FIG. 1. This causes corresponding rotation of pinion gear 44 which in turn causes movement of rack 46 and body supporting portion 14 of chair 10. Body supporting portion 14 of chair 10 pivots or tilts with respect to base portion 12 about the axis between pivot points 20 and 20a, moving clockwise with respect to FIG. 1 to a position such as that shown in FIG. 2 or to some other more horizontal position. When a desired position is reached, rotation of crank 36 is stopped and indexing pin 42 is permitted to engage the closest adjacent indexing hole 40 in plate 38 to maintain body supporting portion 14 of chair 10 in the selected position. It will be apparent that movement of body supporting portion 14 of chair 10 is possible even while the chair is occupied if appropriate crank handle length and gear ratios are selected. Such movement is, however,

facilitated by increasing the radial distance between the axis between points 20 and 20a and the point at which the rack 46 and pinion gear 44 mesh.

Referring now to FIGS. 4 and 5, the numeral 50 designates a collapsible type of reclining chair incorporating the present invention. Chair 50 may be assumed, for example, to be a type of wooden or metal-framed canvas type chair such as is commonly used outdoors. Chair 50 comprises a base portion 52 and a body supporting portion 54 movably mounted thereon. Base portion 52 is understood to comprise two pairs of legs but only one pair comprising the legs 56 and 58 are shown. The legs 56 and 58 are pivotally connected to each other at a pivot or suspension point 60. The legs 56 and 58 are also joined together by a side plate means 62 which comprises two members 62 and 62b which are pivotally connected to each other and which are pivotally connected to the legs 56 and 58, respectively.

Body supporting portion 54 of chair 50 comprises two portions which are pivotally connected together as at a point 64. Body supporting portion 54 of chair 50 is movably or tiltably supported on base portion 52 by means of a pair of flexible straps, only one of which, 66, is shown. Strap 66 is secured in any suitable manner at both of its ends to body supporting portion 54 of chair 50; each end being secured to one of the two portions thereof. Strap 66 overlies suspension point 60 on base portion 52 of chair 50 and in this manner body supporting portion 54 of chair 50 is movably hung or suspended from the base portion. As will be understood, body supporting portion 54 is pivotable or tiltable for a limited distance about an axis on which suspension point 60 lies.

Means are provided to tilt or pivot body supporting portion 54 of chair 50 on base portion 52 about the axis on which point 60 lies. Thus, there is provided a shaft 68 which is mounted for rotational movement on side bracket 62. Shaft 68 also serves as the pivotal connection for the members 62a and 62b of bracket 62. Shaft 68 is provided with a handle or crank 70 which is rigidly secured thereto and by means of which the shaft can be rotated. An indexing means, including a plate 72 having holes 74 therein is mounted on the outermost member 62b of side bracket 62. The indexing means also include a retractable pin (not shown) which is understood to be mounted on crank 70 for cooperation with the holes 74. Shaft 68 is provided with a rotatable driving member or pinion gear 76 which is rigidly secured thereto and rotatable therewith. Pinion gear 76 is adapted to engage a flexible driven member such as a chain 78 which is secured at both of its ends to suitable brackets 80 to the frame of body supporting portion 54 of chair 50; each end being secured to one of the two portions thereof. Chain 78 and strap 66 cooperate to prevent body supporting portion 54 of chair 50 from collapsing at the pivot point between the back rest and the seat portion when the chair is occupied, but to provide for greater rigidity a collapsible link 64 is interposed between these portions.

Chair 50 is operated in a manner similar to chair 10 hereinbefore described in that rotation of crank 70 and gear 76 causes movement of chain 78 and body supporting portion 54 to tilt with respect to base portion 52 about an axis on which pivot point 60 lies. Crank 70 and the indexing means operate in the same manner as the corresponding elements hereinbefore described in connection with FIGS. 1, 2 and 3.

It is to be understood that a chair such as chair 50, if of the tubular frame type, could have a chain or chains

associated with either one or both sides, respectively, of its frame. If two chains are employed, then obviously two pinion gears 76 would be required. Or, a single chain and pinion gear could be disposed near the center of the chair. In any event, if a long shaft 68 is required, the shaft may be journaled or supported on brackets similar to bracket 62 shown provided on either side of base portion 52 of chair 50.

Chair 50 is collapsible to the position shown in FIG. 5; the flexibility of chain 78 and straps 66, as well as the location of the various pivot points, permitting this.

Furthermore, although a chain and sprocket or gear have been shown, it is apparent that a flexible wire, cable or band wound around a drum on shaft 68 could be employed instead of the chain and sprocket.

Having now described my invention with reference to the embodiment illustrated in the drawings, I do not wish to be limited thereto, but what I wish to protect by Letters Patent of the United States of America is set forth in the appended claim.

I claim:

In a collapsible reclining chair, in combination, a base comprising two pairs of legs, each pair of legs comprising two legs pivotably connected together at one end to provide an apex, a bracket for connecting the two legs in each pair, said bracket comprising two portions each portion pivotably connected to the other at one of its ends and pivotably connected to one leg at its other end, a body supporting portion comprising two sections pivotably connected together, a pair of flexible straps for pivotably supporting said body supporting portion on said base, each strap being located on a side of said body supporting portion and connected to one section thereof at each of its ends, each of said straps being adapted to overlie an apex on said base, at least one flexible driven member having each of its ends connected to one section of said body supporting portion, a shaft serving as a pivot for the said two portions of said bracket and rotatable with respect thereto, a rotatable member rigidly mounted on said shaft for driving said flexible driven member, a crank for effecting rotation of said rotatable member, and means on said crank for cooperation with indexing means on one portion of said bracket.

References Cited by the Examiner

UNITED STATES PATENTS

47,342	4/1865	Sayre	297—327
153,478	7/1874	Cutter	297—328
358,454	3/1887	Johnson	297—327
481,119	8/1892	Parks	267—281
557,097	3/1896	Archer	297—88
766,836	8/1904	Miller	297—282
1,438,667	12/1922	Schops	297—329
2,133,471	10/1938	Opperman	297—328
2,572,149	10/1951	Hind et al.	297—313
2,807,310	9/1957	Sellner	297—329
2,966,202	12/1960	Morse	297—328
3,115,366	12/1963	Glass	297—417

FOREIGN PATENTS

Ad. 70,462	12/1958	France.
1,151,003	9/1957	France.
5,508	10/1878	Germany.
1,044,354	11/1958	Germany.

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