

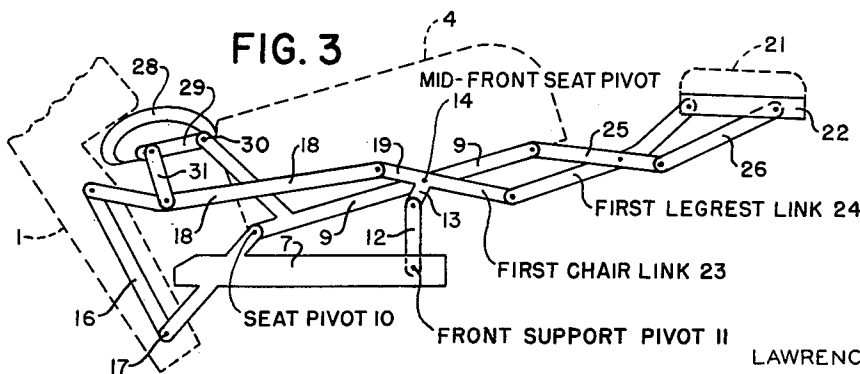
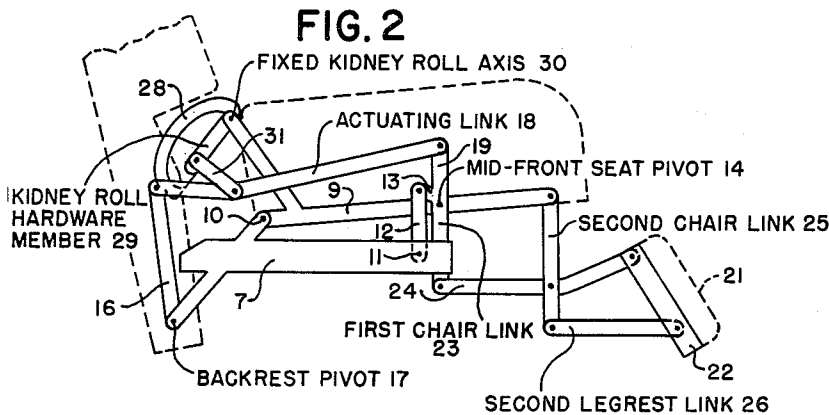
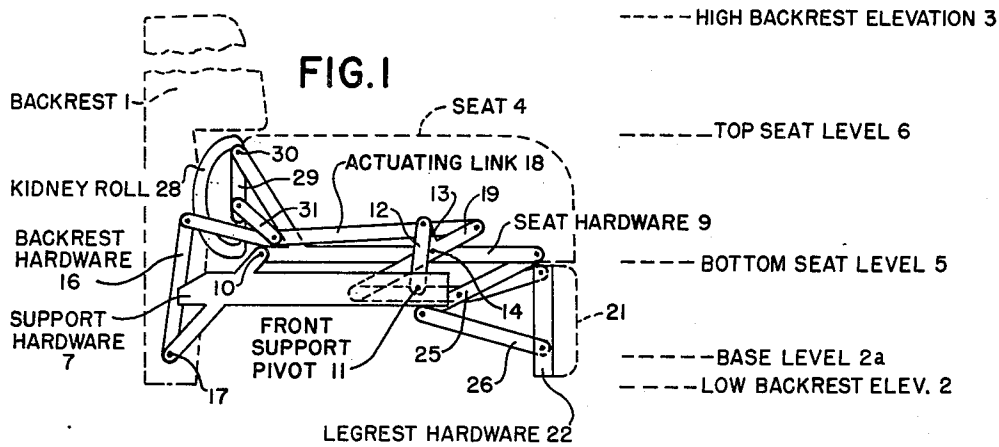
Dec. 26, 1961

L. PILCHER ET AL

3,014,757

RECLINING CHAIR OF MULTI-ACTION TYPE

Filed Aug. 12, 1959



INVENTORS

LAWRENCE PILCHER
NORMAN L. PILCHER

BY

Arthur Robert

ATTORNEY

1

3,014,757

RECLINING CHAIR OF MULTI-ACTION TYPE
Lawrence Pilcher and Norman L. Pilcher, St. Matthews,
Ky., assignors to Middletown Manufacturing Company,
Middletown, Ky., a corporation of Kentucky
Filed Aug. 12, 1959, Ser. No. 833,215
9 Claims. (Cl. 297—85)

The present invention relates to reclining chairs of the multi-action type.

In all recliners, i.e., reclining chairs, presently available on the commercial market, the backrest is pivoted for reclining movement about an axis located adjacent the rear end of the seat. With this pivotal arrangement, when the backrest is made long enough to support the head of the occupant in the reclining position, it stands too high in the upright position giving the chair the unattractive appearance of being out of proportion. It has been proposed to overcome this objection by (1) lowering the upright backrest as a whole, (2) pivoting it on an axis located substantially below the rear end of the seat and (3) providing means for rendering the upper end of the backrest effective, when reclined, to support the head of the occupant, this being done either by raising the backrest or by lowering the rear end of the seat to the requisite degree. None of these proposed arrangements has proven satisfactory. The first arrangement requires the backrest to be raised either while the chair is occupied which is difficult or after the chair has been vacated which is objectionable. The second arrangement is subject to the obvious objections of lowering the occupant as the chair is reclined and of supporting a reclining occupant at an uncomfortably low level.

The principal object of this invention is to provide a recliner, of the type having its backrest pivoted on an axis located substantially below the rear end of the seat, with means for effectively and comfortably supporting the occupant of the chair as it is being reclined without requiring the backrest to be raised or the rear end of the seat to be lowered.

Another important object is to accomplish the principal object by simple and inexpensive means.

Our invention may be carried out by (1) lowering the upright backrest as a whole, (2) pivoting it on an axis located substantially below the rear end of the seat for reclining movement away from the rear end of the seat so as to cooperate therewith in forming a progressively widening gap during the reclining movement and (3) providing relatively movable body supporting means for bridging this gap. In carrying out the invention, we mount a body supporting member or "kidney roll" adjacent the rear end of the seat and arrange it for coordinated movement into and out of the gap between the seat and the backrest as the backrest is reclined and returned to an upright position. With this arrangement, it is unnecessary to move the rear end of the seat either rearwardly or downwardly as the backrest is reclined. While the seat as a whole could remain stationary, we prefer to mount its rear end upon a fixed axis and to rock the seat about that axis between horizontal sitting and forwardly inclined positions.

The invention is illustrated in the accompanying drawing wherein:

FIG. 1 is a side elevation of a reclining chair in an upright sitting position and embodying the present invention with the chair's backrest, seat and legrest being shown in dotted lines, its base frame being omitted and a portion of its backrest being broken away;

FIG. 2 is a side elevation similar to FIG. 1 showing the chair in a partially reclined position; and

FIG. 3 is a side elevation showing the chair in a fully reclined position.

2

Reclining chairs may be conventionally constructed: (a) as single action chairs wherein only the backrest moves; or (b) as 2-action chairs wherein only the backrest and the seat or the backrest and the legrest move; or (c) as 3-action chairs wherein the backrest, seat and legrest all move in coordinated fashion. The present invention is applicable to any reclining chair of the single or multiple action type having a backrest which opens a gap between it and the rear end of the seat as the backrest is reclined.

The chair illustrated in the drawing is a 3-action chair without an extensible-retractable legrest and a 4-action chair with it. It conventionally includes a base frame which is not shown and otherwise conventionally comprises: (a) a movable backrest 1 extending from a low elevation 2 to a high elevation 3; (b) a relatively movable seat 4 extending at a relatively intermediate elevation, the seat having levels ranging from the bottom level 5 of the lower end of its frame, up to the top level 6 of its upper seating face, which is also designated 6; (c) a horizontally elongate support hardware member 7 adapted to be mounted on the base frame of the chair to extend at a level adjacent the bottom seat level 5; (d) a horizontally elongate seat hardware member 9; a rear seat pivot 10 pivotally interconnecting the rear ends of the seat and support hardware members 9 and 7 at a level adjacent the bottom seat level 5; (e) means supporting the front end of the seat 4 on the front end of the support hardware in a manner accommodating the swinging movement of the seat about its rear seat pivot 10, said supporting means including at least two tandem links 12 and 13 interconnecting a pivot 11 on the front end of the support with a pivot 14 on the mid-front portion of the seat hardware 9, the links 12 and 13 forming an inverted V linkage wherein link 13 extends from the front support pivot 11 upwardly where it connects with link 14 which extends downwardly to the mid-front seat pivot 14; (f) a vertically arranged backrest hardware member 16 extending from the low backrest elevation 2 upwardly to the high backrest elevation 3; a low backrest pivot 17 pivotally supporting the lower end of the backrest on the rear end of the support hardware 7 at the base level 2a; and linkage means interconnecting the backrest hardware member 16 and the seat hardware member 9 to compel their coordinated movement between positions corresponding to the upright and reclining positions of the chair, this linkage means being in the form of an inverted V linkage including an elongate actuating link 18 pivoted to backrest member 16 in the vicinity of the bottom seat level and extending elongately forward therefrom with its front end pivotally connected to a rearwardly declined link 19 which is not only pivoted to the mid-front seat pivot 14 of the seat hardware member 12 but also welded or otherwise rigidly connected to tandem link 13. It should be understood that the chair will contain one set of hardware on each of its sides.

The chair illustrated in the drawing may also include a legrest assembly. This legrest assembly conventionally includes: a legrest 21; a legrest hardware member 22; and a "Dove linkage" mounting the legrest hardware member 22 on the seat hardware member 9 for extension and retraction between a retracted upright position and a forwardly-extended, relatively-elevated reclined position, said "Dove linkage" being composed of (1) a first V extending from the seat hardware member 9 to the legrest hardware member 22 and including a first chair link 23 which is pivoted at its upper end to the seat hardware, and a first legrest link 24 which is pivoted at its lower end to the lower end of the chair link 23 and at its upper end to the upper end portion of the legrest hardware 22; and (2) a second V also extending from the seat hardware 9 to the legrest hardware member 22 and including a second chair link 25

which is located on the front side of the first chair link 23, pivoted at its upper end to the seat hardware member 9 and also pivoted intermediate its ends to an intermediate portion of the first legrest link 24, and a second legrest link 26 pivoted at its lower end to the lower end of the second chair link 25 and at its upper end to the lower portion of the legrest hardware member 22.

By using the mid-front seat pivot 14 as a pivot for the first chair link 23 and by connecting the first chair link 23 rigidly to link 19 of the actuating linkage (i.e. the inverted V linkage, which connects through actuating link 18 with the backrest hardware member at the seat level), the legrest assembly will operate coordinately with the backrest. While the "Dove linkage" is mounted on the seat, it may be mounted on the support or on both with one chair link on the seat and the other on the support. Naturally, all hardware is preferably composed of metal.

In operation, it will be seen that as the backrest 1 is swung rearwardly it will, through the actuating linkage (18, 19) swing the first chair link 23 of the "Dove linkage" to actuate the legrest assembly. At the same time, it will swing link 13, of the inverted V- seat-support linkage (13, 12), to actuate the seat hardware member 9 upwardly about its rear pivot 10. It will be observed that, during full extension, the rear pivot 10 does not move rearwardly at all while the rear upper corner of the seat at the top seat level moves rearwardly to a very slight degree. At the same time, the backrest hardware member 16 swings substantially rearward about its pivot 17 and thus opens a large gap in the supporting surface of the chair between the upper rear corner of the seat and the adjacent portion of the backrest.

In accordance with our invention, we maintain this gap closed and provide a body support across it by a structure comprising: a kidney roll 28; and second hardware means including means mounting said kidney roll adjacent the rear end of the seat for movement into said gap and linkage means interconnecting the kidney roll mounting means with the first hardware means (which supports the backrest and seat and interconnects them and the support), to effect the gap bridging movement of the kidney roll coordinately as the chair is reclined.

While the kidney roll may be mounted on the seat, backrest or support for slidable or other movement into its gap bridging positions, it preferably is mounted on the seat for pivotal movement to and from its gap bridging positions. Accordingly, the second hardware mounting means includes: a kidney roll hardware member 29, which extends vertically in the upright position of the chair; and means pivoting the upper end of the kidney roll hardware member 29 to the seat hardware 9 for swinging movement about a fixed axis 30 extending along the top seat level 6 adjacent the upper rear end of the seat. In the retracted position of the chair, kidney roll 28 and its hardware member 29 will depend downwardly from the kidney roll pivot 30.

In the second hardware means, the linkage means may interconnect the kidney roll 28 with any suitable movable member, in the first hardware means, which is operative to swing said kidney roll rearwardly upward about the axis 30 coordinately as the chair is reclined. While this may be readily accomplished by any of a variety of linkages, in the structure illustrated, it is easily, simply and effectively accomplished by linking the lower end portion of kidney roll hardware member 29 with actuating link 18 through link 31 which is pivotally connected to both.

Having described our invention we claim:

1. A reclining chair of the multi-action type comprising: a seat; a backrest; a support; first hardware means, including stationary and movable parts, mounting said seat and backrest on said support, the backrest being mounted for movement from an upright position to a reclined position during which the backrest moves relatively away from the rear end of the seat so as to widen a gap between the backrest and the rear end of the seat; a kidney roll;

and second hardware means including means mounting said kidney roll adjacent the rear end of the seat for movement into said gap and linkage means interconnecting the kidney roll with a movable part of said first hardware means to effect the gap bridging movement of the kidney roll coordinately as the chair is reclined.

2. The chair of claim 1 wherein: said kidney roll is mounted for swinging movement about an axis extending adjacent the rear end of said seat.

3. The chair of claim 2 wherein, in the upright position of the backrest: said kidney roll extends downwardly; and said axis is adjacent the upper end of said kidney roll.

4. The chair of claim 2 wherein: said kidney roll mounting means includes a pair of opposed pivotal connections between the seat-mounting hardware and the kidney roll-mounting hardware, said connections being located at opposite sides of the chair in axial alignment with each other to provide said axis about which the kidney roll swings.

5. The chair of claim 2 wherein: said interconnecting linkage means is operative to swing said kidney roll rearwardly upward about the said axis to bridge said gap coordinately as the chair is reclined.

6. Hardware for a reclining chair of a multi-action type having a backrest which, as it moves to a reclining position, also moves relatively away from the rear end of the seat so as to widen a gap between the backrest and the rear end of the seat, comprising: a support hardware member; a seat hardware member; a backrest hardware member; hardware mounting means mounting the backrest and seat hardware members on the support hardware member for backrest movement between upright and reclined positions and for coordinated seat movement between horizontal and forwardly inclined positions, said seat member moving about a first pivot on its rear end portion; a kidney roll hardware member pivoted to the rear end of said seat hardware member for swinging movement about a rear axis extending at a level higher than that of said first pivot; and means interconnecting said kidney roll hardware member and said hardware mounting means to swing said kidney roll member rearwardly upward about said elevated rear axis coordinately as the chair is reclined.

7. Hardware for a reclining chair of a multi-action type, having, in a position corresponding to the upright position of the chair, a seat extending horizontally between spaced top and bottom seat levels and an upright backrest which, as it moves to a reclining position, also moves relatively away from the rear end of the seat so as to widen a gap between the backrest, and the rear end of the seat, comprising: horizontal support and seat hardware members having their rear ends pivotally interconnected through a rear seat pivot adjacent said bottom seat level and their front end portions interlinked by means supporting the front end portion of the seat hardware member on the front end portion of the support hardware member when the chair is upright and permitting the front end of the seat to swing a limited distance upwardly about said rear seat pivot as the chair is reclined; an upright backrest hardware member having an elevated section adjacent said bottom seat level and its lower end pivoted to the rear end of said support at a base level substantially below the level of said rear seat pivot so that said elevated section will move rearwardly away from said seat member as said backrest member is reclined; linkage means interconnecting said elevated backrest section with the front end portion of the seat member; said backrest member from its base level support pivot to its upper section, said interconnecting linkage means from the upper backrest section to the front end portion of the seat member and the said seat member from its front end portion to its rear support pivot, cooperatively constituting a constrained linkage which insures the coordinated movement of said backrest and seat members; a kidney roll hardware member extending upwardly when the backrest is upright with its upper end pivoted to the rear end of the seat hardware member at a

5

level adjacent the top seat level; and means interconnecting said kidney roll hardware member with said constrained linkage to swing said kidney roll hardware member about its pivot coordinately with said seat and backrest.

8. The hardware of claim 7 wherein the interconnecting linkage means of said constrained linkage includes an actuating link pivoted to said elevated backrest section and extending forwardly therefrom.

9. The hardware of claim 8 wherein the means interconnecting said kidney roll hardware member with said constrained linkage includes a link extending between the kidney roll hardware member and said actuating link and pivotally connected to both.

5

639,076
855,656
1,025,645
2,670,476
2,746,520
2,894,565
2,922,464

10

6

References Cited in the file of this patent

UNITED STATES PATENTS

May ----- Dec. 12, 1889
McNamara et al. ----- June 4, 1907
Rilling ----- May 7, 1912
Travis ----- Mar. 2, 1954
Ducrot ----- May 22, 1956
Conner ----- July 14, 1959
Belisle ----- Jan. 26, 1960