United States Patent

[11] **3,572,823**

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[21] Appl. No. **788,760**
[22] Filed **Jan. 3, 1969**
[45] Patented **Mar. 30, 1971**
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[54] **RECLINING CHAIR**
15 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **297/85,** 297/83
[51] **Int. Cl.** **A47c 1/02**
[50] **Field of Search** 297/384, 68, 75, 83, 84, 85, 89, 91, 258

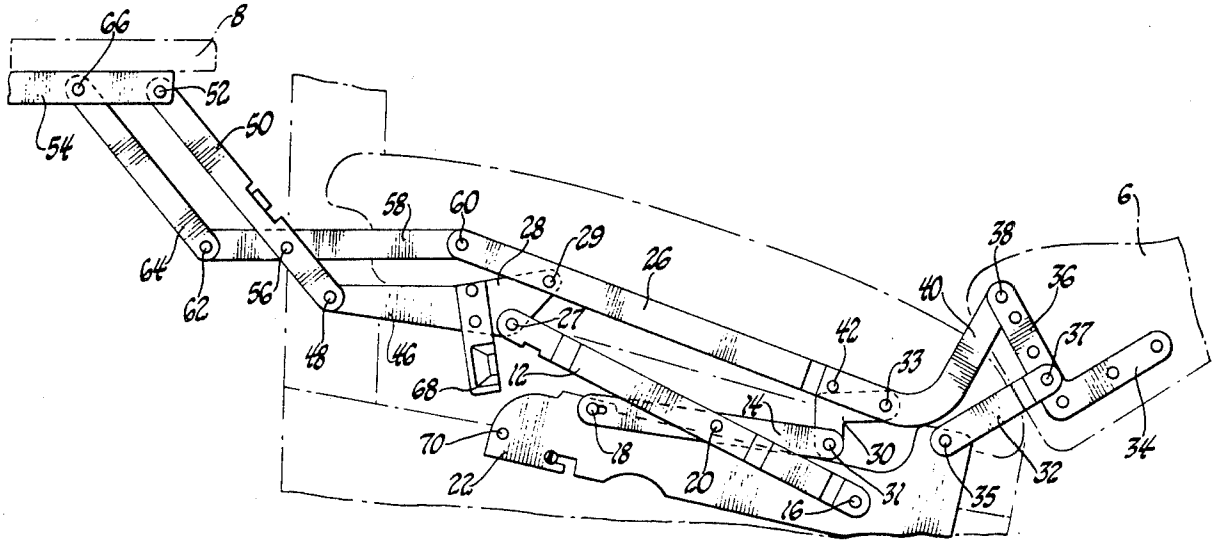
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ABSTRACT: A reclining chair having relatively movable base, seat and back portions with an extensible and retractable legrest operable between an upright position with the legrest retracted, a semireclined position with the legrest extended, and a fully reclined position with the back portion tilted rearwardly with respect to the seat and base portions. Interconnecting means between the base, seat and back portions actuates the seat portion to a raised, fully reclined position with respect to the base portion as the back portion is tilted to its fully reclined position.



PATENTED MAR 30 1971

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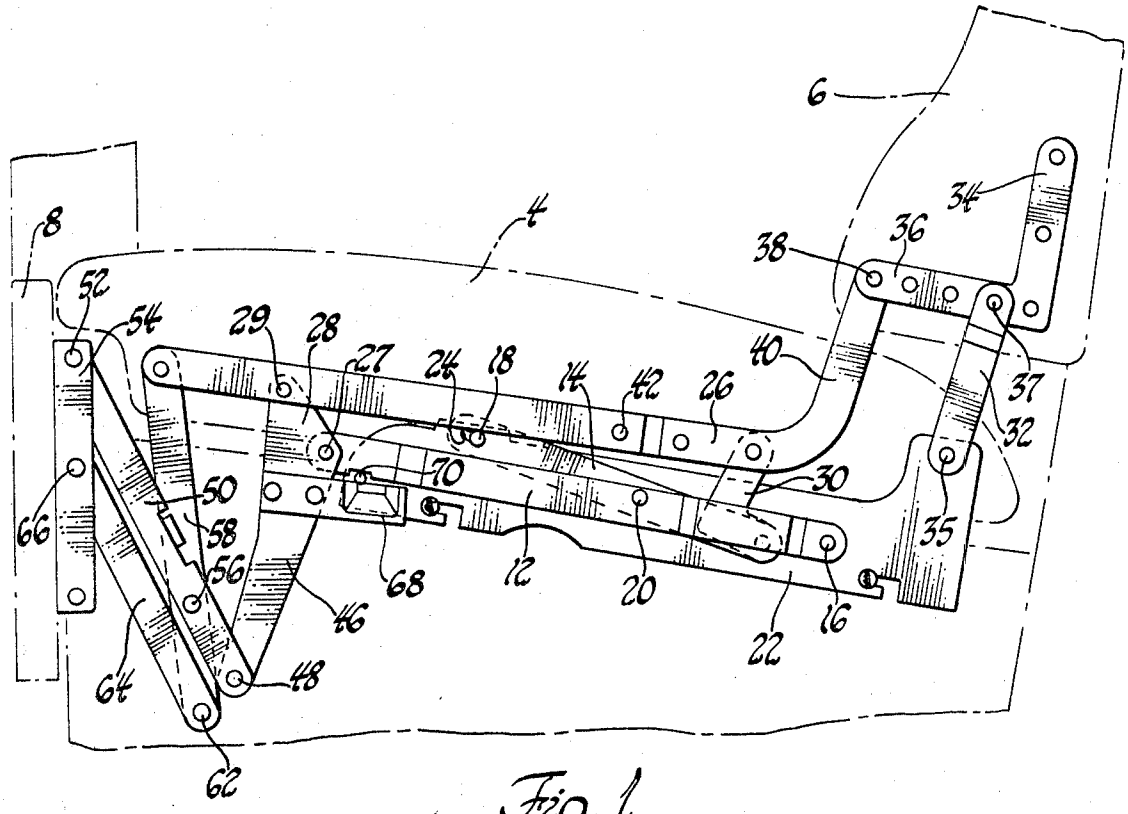


Fig. 1

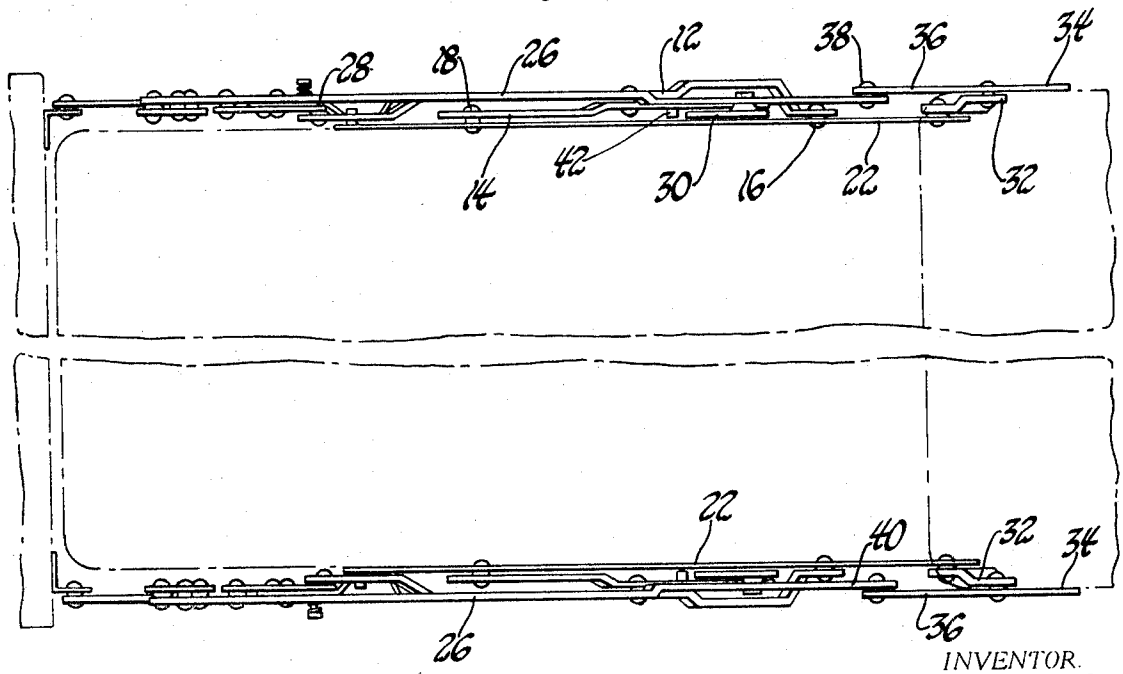


Fig. 2

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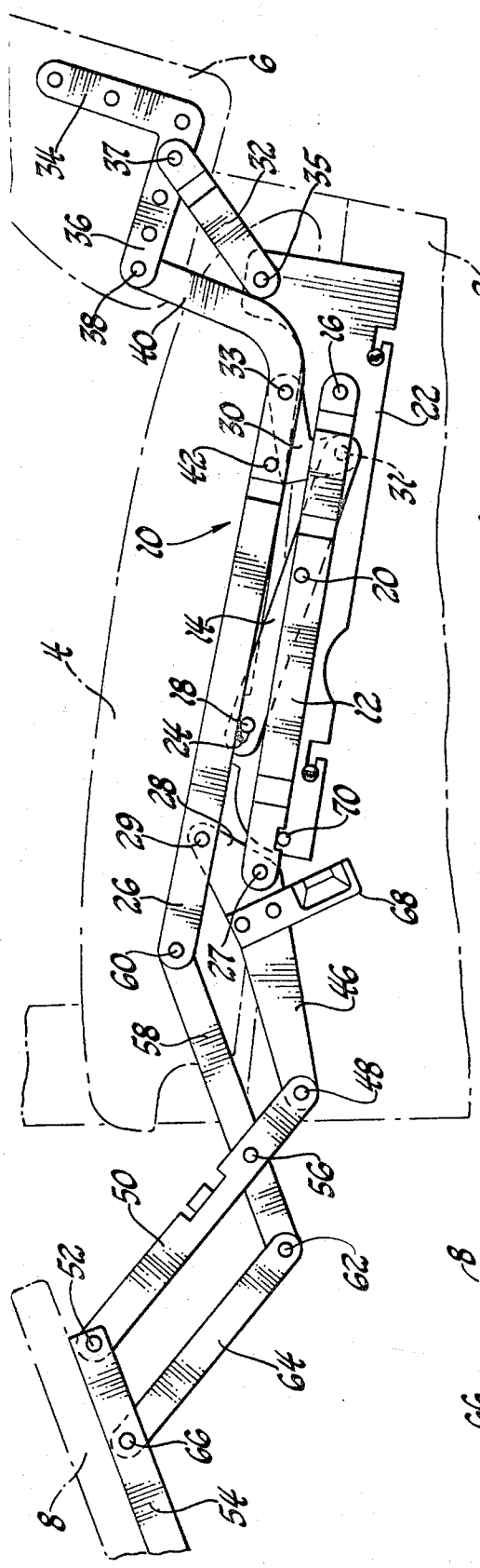


Fig. 3

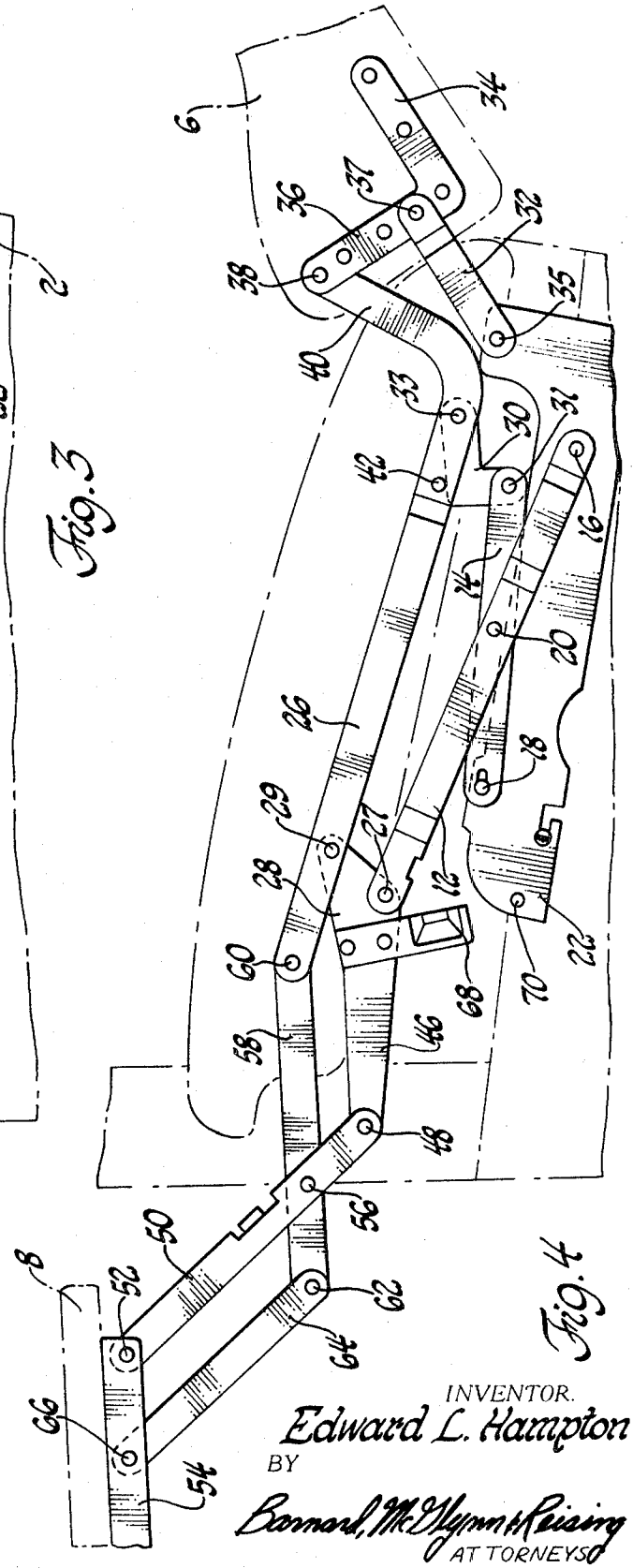


Fig. 4

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RECLINING CHAIR

This invention relates to reclining chairs, and more particularly to a three-position reclining chair wherein rearward tilting movement of the back portion of the chair causes the seat portion to be raised to a reclining position relative to the base portion.

In chairs of the type known as three-position reclining chairs, a seat portion and a legrest portion are supported upon a stationary base for coordinated movement relative to the base between three positions. The first position may be referred to as the upright position of the chair in which the seat unit is supported upon the base with the back portion in an upright position and in which the legrest is retracted so that the outer appearance of the chair is that of a conventional chair. In the second or semireclined position of the chair, the seat portion is slightly reclined as compared to its previously described upright position and the legrest is extended forwardly in leg supporting relationship to the seat of the chair. In the third or fully reclined position, the seat portion is located at an extreme reclined position upon the base with the legrest elevated in leg supporting relationship with the seat, and the back portion tilted rearwardly relative to the base. In the usual case, there is very little relative movement between the seat portion of the chair and the legrest portion between the semireclined position and the fully reclined position.

A basic problem in providing a satisfactory three-position reclining chair arises by virtue of the fact that it is difficult to obtain a smooth adjustment of the chair from the semireclined position to the fully reclined position because of the distribution of the weight of the person sitting on the chair. If the chair is stable in the semireclined position, it is frequently difficult to move the chair into its fully reclined position, and it frequently occurs that a slight shifting of the weight in the fully reclined position causes the chair to return to the semireclined position against the desires of the person seated in the chair.

It is therefore an object of this invention to provide a three-position chair in which the chair can be shifted from the semireclined to fully reclined position by shifting of the weight of the person occupying the chair, and in which the chair is stable in both the semireclined and fully reclined positions.

A further object is to provide a three-position reclining chair in which the application of pressure by the occupant of the chair to the back portion of the chair tending to push it to a rearwardly tilted position relative to the base portion and seat portion causes the seat portion to rise to a fully reclined position and shift the weight of the person so as to maintain the chair in a stable condition in the fully reclined position.

Another object is to provide a reclining chair having relatively movable base, seat and back portions with an extensible and retractable legrest, the chair being operable between an upright position with the legrest retracted, a semireclined position with the legrest extended, and a fully reclined position with the back portion tilted rearwardly with respect to the seat and base portions, wherein interconnecting means between the base, seat and back portions actuates the seat portion to a raised position with respect to the base portion as the back portion is tilted rearwardly to its fully reclined position.

In carrying out the foregoing, and other objects, a reclining chair according to the present invention has relatively movable base, seat and back portions with an extensible and retractable legrest. The reclining chair is operable between an upright position with the back portion in the normal seating position with the legrest retracted, a semireclined position with the legrest extended and back portion remaining in a substantially upright position, and a fully reclined position with the back portion tilted rearwardly with respect to the seat and base portions. Interconnecting means between the base, seat and back portion actuates the seat portion to a raised, fully reclined position with respect to the base portion as the back portion is tilted rearwardly to its fully reclined position.

The interconnecting means includes an expandable and contractable linkage between the base and seat portions, the linkage being expandable to move the seat portion to the raised position upon rearward tilting of the back portion.

Other objects, advantages and features of the invention will become apparent from the following description taken in connection with the accompanying drawings in which:

FIG. 1 is an elevational view of a reclining chair embodying the present invention with the seat, back and base portions indicated in phantom lines for clarity to expose the operating mechanism of the chair;

FIG. 2 is a plan view of the operating mechanism of the chair shown in FIG. 1;

FIG. 3 is a view similar to FIG. 1 with the chair in its semireclined position; and

FIG. 4 is a view similar to FIG. 1 with the chair shown in its fully reclined position.

The drawings illustrate a reclining chair having a relatively movable base portion 2, seat portion 4, and back portion 6 with an extensible and retractable legrest 8. An expandable and contractable linkage designated collectively by reference numeral 10 interconnects the base, seat and back portions for actuating the seat portion to a raised, fully reclined position shown in FIG. 4 in response to rearward tilting of the back portion 6 to its fully reclined position of FIG. 4.

The linkage 10 includes a pair of support links 12 and 14 each having one end operatively connected with the base portion and its other end operatively connected with the seat portion, the end operatively connected with the seat portion being swingable about the end connected with the base portion upon movement of the seat portion to its raised position relative to the base portion. Support link 12 is pivotally mounted by a pivot pin 16 with a base bracket 22, the base bracket 22 being secured to the base portion 2, and support link 14 is mounted at one end on the base bracket 22 by a pivot pin 18. Support links 12 and 14 are pivotally connected to each other intermediate their ends by a pin 20, and support link 14 is formed with a slot 24 which receives pivot pin 18 so that support link 14 is slidably and pivotally connected with the base bracket 22. The support links 12 and 14 are thus pivotally connected to each other intermediate their ends for movement between an expanded position when the seat portion is in its raised position as shown in FIG. 4 and a collapsed position when the seat portion is not in the raised position as shown in FIGS. 1 and 3.

The other ends of support links 12 and 14 opposite pivot pins 16 and 18 are operatively connected with the seat portion 4 and are swingable about pivot pins 16 and 18 upon movement of the seat portion to its raised position relative to the base portion. Mounted on the seat portion 4 is a seat bracket 26, and the other ends of support links 12 and 14 are operatively connected with the seat bracket 26 by front and rear actuating links 28 and 30, respectively. The front actuating link is connected with seat bracket 26 by pivot pin 29 and with the outer end of support link 12 by a pivot pin 27. The rear actuating link 30 is of L-shaped configuration and has one end pivotally connected with the seat bracket 26 by a pivot pin 33, and its other end pivotally connected by a pin 31 with the free end of support link 14. Thus, the seat portion 4 can move forwardly and rearwardly relative to the base portion 2 by pivoting the actuating links 28 and 30 about the pivot pins 27 and 31, respectively, without expanding the linkage 10.

Back portion 6 is connected with the base bracket 22 by a back support link 32 having one end connected by pivot pin 35 with the base bracket 22, and its other end connected by pivot pin 37 with a back support bracket 34 secured to the back portion. Projecting forwardly from the back support bracket 34 is a lever arm 36 which is pivotally connected by a pivot pin 38 with an arm 40 projecting upwardly from the rear end of the seat bracket 26. Thus, clockwise rotation of lever arm 36 about pivot pin 37 tends to act through the seat bracket 26 to expand the linkage 10 to the position shown in FIG. 4. Rearward movement of seat bracket 26 from the position of FIG. 3 is prevented by engagement of the rear actuating link 30 with a stop pin 42 on seat bracket 26. Subsequent

clockwise rotation of lever arm 36 about pivot pin 37 causes upward movement of arm 40 and seat bracket 26 which, in turn, causes the rear actuating link to pull upwardly on pivot pin 31 to cause counterclockwise pivotal movement of support link 14 about the pivot pin 18. The counterclockwise movement of support link 14 acts through pivot pin 20 to cause clockwise movement of support link 12 about pivot pin 16, and the seat portion is thus raised by the expansion of the linkage 10 until the left end of slot 24 (as viewed in FIGS. 3 and 4) engages pin 18 as indicated in FIG. 4. Conversely, counterclockwise movement of the lever arm 36 caused by forward movement of the back portion 6 from its reclined position of FIG. 4 causes the seat bracket 26 to return to the position of FIG. 3.

Motion is transmitted to the legrest mechanism by a legrest operating arm 46 on link 28 having its end pivotally connected by a pin 48 with one end of a legrest actuating link 50. Link 50 has its other end connected by a pivot pin 52 with a legrest support bracket 54. Link 50 is connected by a pin 56 intermediate its ends with a cross link 58. Cross link 58 is connected by a pin 60 with the forward end of seat bracket 26 and by a pin 62 with one end of a legrest positioning link 64, link 64 in turn having its other end connected by a pivot pin 66 with the legrest support bracket 54. Secured to the legrest operating arm portion 46 of link 28 is a rearwardly projecting arm 68 engageable with the underside of a stop pin 70 on the forward portion of base bracket 22 as shown in FIG. 1.

FIGS. 1 and 2 illustrate the chair in the normal or upright position in which the legrest is retracted and the seat portion 4 and back portion 6 are in their upright or normal seating positions. By applying rearward pressure to the back portion 6, the seat bracket 26 will shift rearwardly causing clockwise movement of the actuating links 28 and 30 about their respective pivot pins 27 and 31 until the rear actuating link 30 engages the stop pin 42. The back portion 6 will remain in its substantially upright position throughout this movement and seat portion 4 thus assumes a semireclined position. The clockwise movement of the front actuating link 28 about pivot pin 27 causes the legrest 8 to move to its extended position. Thus, clockwise movement of link 28 causes pivot pin 48 to swing in a clockwise direction about pivot pin 27 which movement in turn causes clockwise movement of the cross link 58 about its pivot pin 60 due to the connection of cross link 58 with actuating link 50 through pin 56. The legrest is thus extended to assume the position shown in FIG. 3. With the chair in the semireclined position of FIG. 3 with the legrest extended and the back and seat portions in a substantially upright position, the chair is in a suitable position for viewing television.

In order to move the chair to its fully reclined position of FIG. 4, it is merely necessary for the occupant of the chair to shift his weight sufficiently to apply rearward pressure on the back portion above the pivot pin 37 to cause rearward tilting movement of the back portion and thus expand the linkage 10 so that as the back tilts rearwardly, the seat portion will move to the raised or fully reclined position shown in FIG. 4. The seat will remain in the fully reclined position so long as the person's weight is fully distributed over the seat and back portion in a reclined position. However, when the person in the chair rises toward a seating position from his reclined position, the resulting shifting of his weight will be sufficient to cause the chair to return to the semireclined position of FIG. 3, and by shifting forwardly on the seat, the legrest will return to its retracted position of FIG. 1.

While a specific form of the invention has been illustrated and described in the foregoing specification and accompanying drawings, it should be understood that the invention is not limited to the exact construction shown, but that various alternatives in the construction and arrangement of parts, all falling within the spirit of the invention, will be apparent to those skilled in the art.

I claim:

1. A reclining chair having relatively moveable base, seat and back portions and an extensible and retractable legrest, said chair being operable between an upright position with the legrest retracted, a semireclined position with the legrest extended, and a fully reclined position with the back portion tilted rearwardly with respect to the seat and base portions; interconnecting means between the base, seat and back portions for actuating the seat portion to a raised, fully reclined position with respect to the base portion as the back portion is tilted to its fully reclined position; said interconnecting means including an expandable and contractable linkage between the base and seat portions; said linkage being expandable to move the seat portion to the raised position in response to rearward tilting of the back portion and including a pair of support links each having one end operatively connected with the base portion and its other end operatively connected with the seat portion, each of said other ends being swingable about its respective one end upon movement of the seat portion to its raised position relative to the base portion; said support links being pivotally connected to each other intermediate their ends for movement between an expanded position when the seat is in its raised position and a collapsed position when the seat portion is not in the raised position; a base bracket mounted on the base portion, said one end of said support links being connected with said base bracket; said one ends of said support links being pivotally connected with said base bracket; and said one end of at least one of said support links being slidably connected with said base bracket.

2. A reclining chair having relatively movable base, seat and back portions and an extensible and retractable legrest; an expandable and contractable linkage between the base, seat and back portions for selectively operating the chair between an upright position in which the seat and back portions are in the normal seating positions and the legrest is retracted; a semireclined position in which the seat portion is shifted rearwardly with the back portion remaining substantially in an upright position and the legrest is extended; and a fully reclined position in which the seat portion is in a raised position with respect to the base portion with the back portion tilted rearwardly to a reclined position and the legrest is extended.

3. A reclining chair as claimed in claim 2 wherein said linkage includes a pair of support links each having one end operatively connected with the base portion and its other end operatively connected with the seat portion, each of said other ends being swingable about its respective one end upon movement of the seat portion to its raised position relative to the base portion.

4. A reclining chair as claimed in claim 3 wherein said support links are pivotally connected to each other intermediate their ends for movement between an expanded position when the seat portion is in its raised position and a collapsed position when the seat portion is not in the raised position.

5. A reclining chair as claimed in claim 4 further including a base bracket mounted on the base portion, said one ends of said support links being connected with said base bracket.

6. A reclining chair as claimed in claim 1 further including a seat bracket mounted on said seat portion, said other ends of said support links being operatively connected with said seat bracket.

7. A reclining chair as claimed in claim 6 further including actuating links operatively connecting said other ends of said support links with said seat bracket.

8. A reclining chair as claimed in claim 7 wherein said actuating links include front and rear actuating links respectively connecting the other ends of said support links to said seat bracket at spaced locations thereon.

9. A reclining chair as claimed in claim 8 further including a back support link having its ends respectively pivotally connected to the back and base portions.

10. A reclining chair as claimed in claim 9 further including a back support bracket mounted on said back portion, said back support link being connected with said back portion through said back support bracket.

11. A reclining chair as claimed in claim 10 further including a lever arm projecting from said back support bracket, said lever arm being pivotally connected with said seat bracket and operable to extend said linkage upon rearward tilting movement of said back portion about said back support link.

12. A reclining chair as claimed in claim 11 further including an arm projecting upwardly from the rear of the seat bracket, said lever arm being pivotally connected with said upwardly projecting arm to actuate the seat portion to its raised positions.

13. A reclining chair as claimed in claim 12 wherein the rear actuating link is L-shaped, and further including a stop member mounted on said seat bracket spaced from the pivotal connection between said rear actuating link and seat bracket and engageable by said rear actuating link to limit of movement of the seat portion from the raised position.

14. A reclining chair as claimed in claim 5 wherein said one ends of said support links are pivotally connected with said base bracket, and further including a seat bracket mounted on said seat portion, the other ends of said support links being operatively connected with said seat bracket.

15. A reclining chair as claimed in claim 14 including front and rear actuating links respectively connecting the other ends of said support links to said seat bracket at spaced locations thereon, said actuating links being pivotal.