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[54] RECLINING CHAIR

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- [52] U.S. Cl. 297/61
[51] Int. Cl. A47c 1/02
[58] Field of Search 297/61

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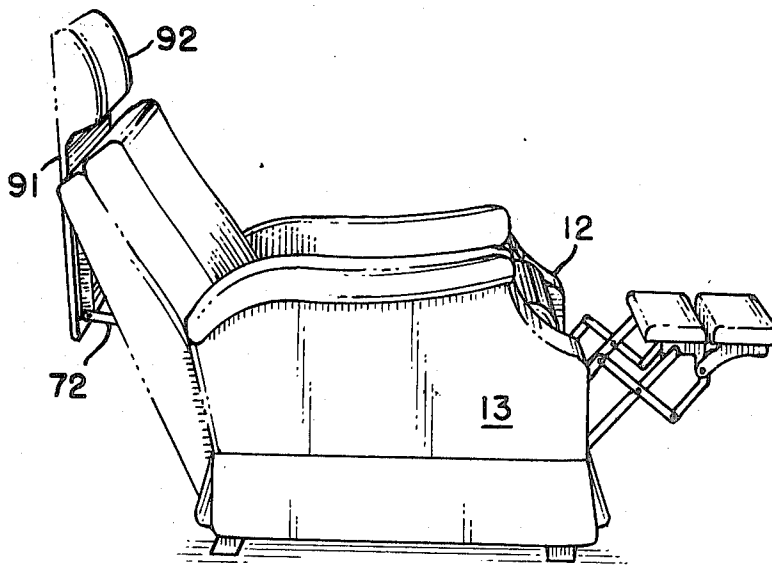
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[57] ABSTRACT

The invention discloses a low profile reclining chair having a primary and secondary backrests. The secondary backrest is positioned at the rear of the chair when the chair is in the upright position and is movable from such position to an operative position above the primary backrest upon reclining movement of the chair. Movement of the secondary backrest begins shortly after reclining movement of the chair begins, and is then continuous during substantially the entire reclining cycle of the chair.

18 Claims, 5 Drawing Figures



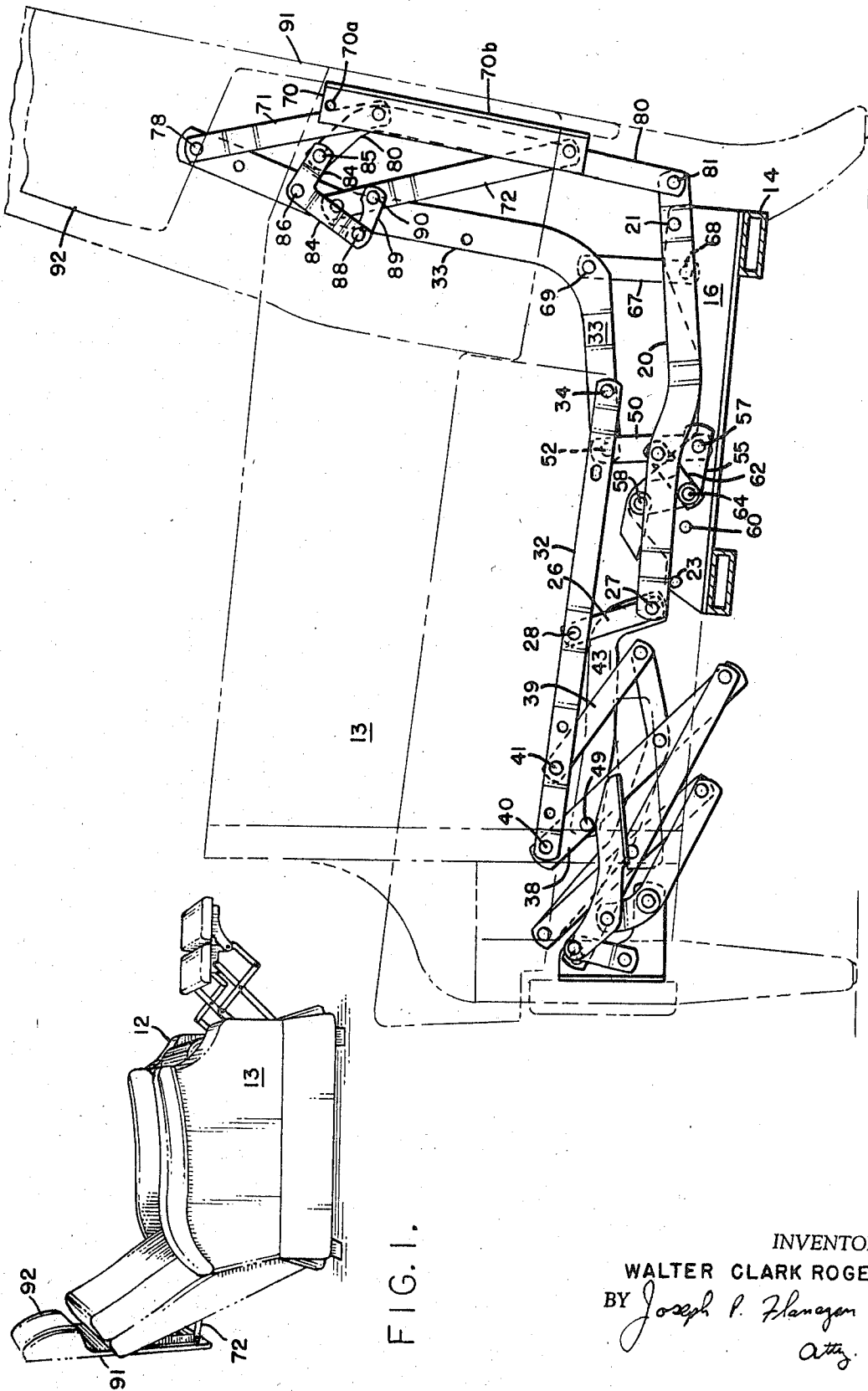


FIG. 1.

FIG. 2.

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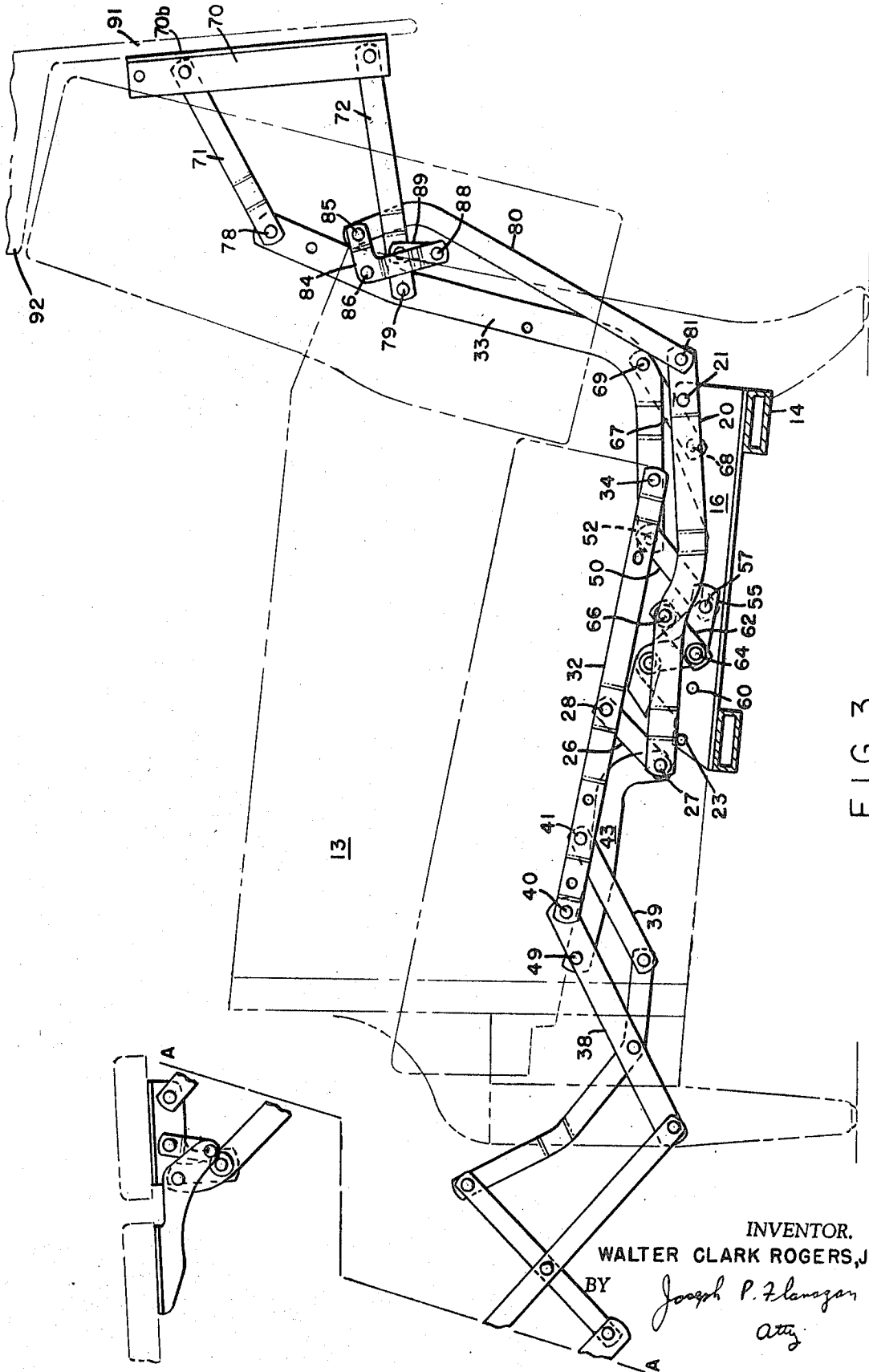


FIG. 3.

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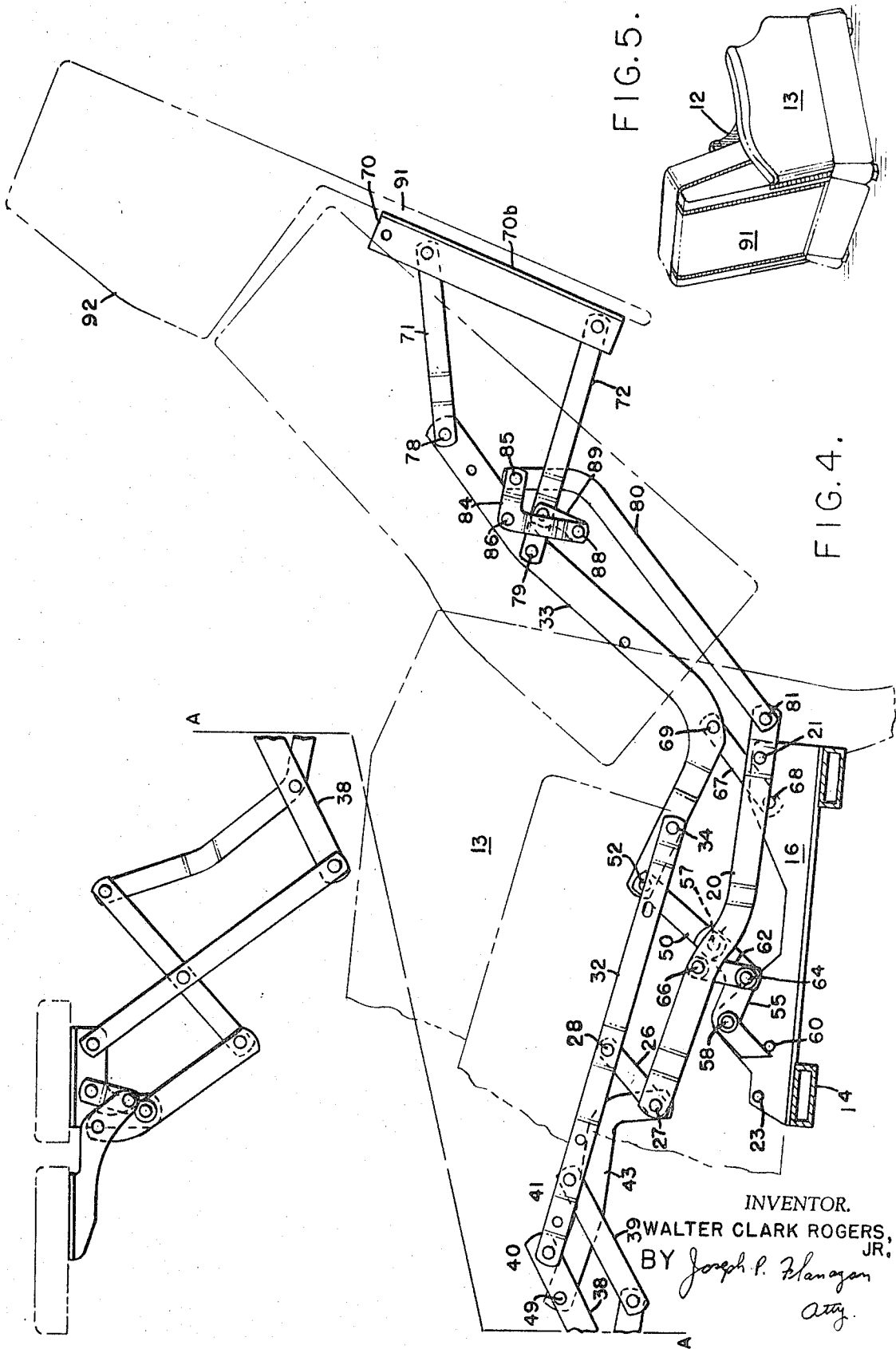


FIG. 5.

FIG. 4.

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RECLINING CHAIR

The present invention relates to reclining chairs and more particularly to a reclining chair having a secondary backrest which may be hidden from view when the chair is in a non-reclining position, but which may be brought into operative position as a result of reclining movement of the chair to support the head of an occupant seated in such chair.

It will be appreciated by those skilled in the art that reclining chairs have traditionally been built with high backs to provide for adequate support of the head of a person occupying such a chair when the chair is in a reclined position. Such high backs are readily acceptable when the overall design of the chair is such that the high back harmonizes with the chair's design; however, in the case where low profile furniture is desired, reclining chairs have generally not been found readily acceptable because a low back design is not conducive to chairs having the reclining feature inasmuch as, when the chair is reclined, the low back extends an insufficient distance to provide adequate support of an occupant's head. Many attempts have been made to remedy this deficiency in low back recliners, but as yet it does not appear that an adequate structure has been invented which will provide satisfactory results.

Prior attempts to provide such a chair appear to have concentrated on the addition of a headrest to a chair, whereas in the instant invention I have treated the problem not as that of adopting a headrest to the back of a reclining chair, but instead have sought to alter the back structure of a chair to provide the desired result.

Thus, the primary object of this invention is the provision of a reclining chair wherein a portion of the back structure itself may be moved from an inoperative to an operative position during reclining movement of the chair such that the movable portion is placed in position to provide support for the head of an occupant reclining in the chair when the chair is reclined. In this connection I have found that a chair occupant neither needs nor desires head support until the chair has come into a substantial reclining position; that is to say, in the case of a chair having both a TV and a fully reclined position, as such terms are known in the art, it is neither necessary nor desirable to provide head support until the chair reaches the TV position. Furthermore, it is not necessary that full and continuous support from the point of intersection of the back and seat to the point where the occupant's head rests is necessary, so long as the back and head are adequately supported—that is, it is not necessary, for example, that the area underlying the nape of the neck be fully supported.

It appears to have been thought necessary that head support be provided early in the reclining cycle, and that full support of the occupant's body should be provided in connection with this type of chair, for example, as disclosed in U.S. Pat. No. 2,884,992 issued to Albert M. Spound, et al. for "Reclining Chair Headrest Constructions." That patent stresses having forward and upward motion of the headrest only during the initial portion of motion of the backrest toward a reclining position, as well as the elimination of any gap between the adjustable head supporting structure and the back of the chair. These limitations, I have found, are neither necessary nor desirable, and instead I have attempted to provide a structure wherein movement of the adjustable back portion is continuous or nearly so during the major portion of the reclining cycle and, additionally, wherein in its extended operative position the adjustable portion is separated from the main body of the back for a functional purpose hereinafter described.

The above primary object, as well as other objects and advantages of the invention, will become readily apparent from the following description taken in connection with the accompanying drawings wherein:

FIG. 1 is an illustration of the chair of the instant invention.

FIG. 2 is a view of the linkage mechanism used in the chair of FIG. 1, the linkage mechanism being shown in the position it assumes when the chair is in the normal, upright, non-reclined position.

FIG. 3 is a view similar to FIG. 2 but showing the linkage mechanism in the TV position.

FIG. 4 is a view similar to FIG. 3 but showing the mechanism in the fully reclined position.

FIG. 5 is an illustration showing the rear of the chair of the instant invention.

Referring to FIGS. 1 and 2, the chair of my invention comprises a pair of side frame members such as the member 13 joined together by a plurality of cross frame members, all as well known in the art. As will be appreciated by those skilled in the art, a linkage structure is located on the inboard side of each such frame member, each linkage structure being substantially the same as the other except that minor variations will be present to accommodate the left or right hand side of the chair as the case may be. Positioned adjacent to the side frame member 13, in any suitable manner, is a main mounting bracket 16 which may be affixed to the member 13 or carried atop suitable positioned bracket members 14, and on which is carried a linkage assembly for a movable footrest, seat, and back assembly.

A main carrier link 20 is pivotally connected to the main mounting bracket 16 by a pivot member 21, which pivot member 21 extends through both the carrier link 20 and the bracket 16 to form a projecting stop means as described below. The carrier link 20 has its forward end resting on a stop 23 projecting from an upwardly extending portion of the main mounting bracket 16.

A forward carrier link 26 is pivoted at its lower end, on a pivot member 27, to the forward end of the carrier link 20, the other end of the forward carrier link 26 being pivotally connected by a pivot member 28 to a seat carrier link 32, which seat carrier link 32 is pivotally connected to a primary backrest link 33 by a pivot member 34. At the forward end of the seat carrier link 32, a footrest assembly is pivotally supported on footrest supporting links 38, 39 by means of pivot members 40, 41, respectively. A footrest control link 43 is pivotally connected at its forward end to the footrest supporting link 38 by a pivot member 49, the other end of the control link 43 being pivotally carried on the aforementioned pivot member 27.

An intermediate carrier link 50 has an upper end pivoted to the primary back rest link 33 by means of a pivot member 52. The lower end of the intermediate carrier link is, in turn, pivotally connected to a control link 55 by a pivot member 57. Pivotally carried on a pivot member 58 in an upstanding portion of the main mounting bracket 16, the control link 55 forms a somewhat Z-shape. A stop member 60, extending from the upstanding portion of the main mounting bracket 16, underlies the forward extension of the link 55 for a purpose hereinafter described.

A connecting link 62 connects the control link 55 to the main carrier link 20, the connecting link 62 having a lower end pivotally connected to the control link 55 by a pivot member 64 and an upper end pivotally connected to the main carrier link 20 by the pivot member 66. The rear carrier link 67 is pivotally interconnected between the main mounting bracket 16 and the primary backrest link 33 by pivots 68 and 69, respectively. The aforementioned stop formed by the extension of the pivot member 21 lies in the plane of travel of the rear carrier link 67.

A secondary backrest link 70 is pivotally carried on the distal ends of a pair of secondary backrest supporting links 71, 72. At its upper end the secondary backrest link 70 is provided with a stop 70a, which stop overlies one edge of the supporting link 71. These supporting links 71, 72, at their ends remote from their distal ends, are pivoted to the primary backrest supporting link 33 on pivot members 78, 79, respectively. A secondary backrest actuating link 80 is operatively connected between the secondary backrest supporting link 72 and the rearward end of the movable main carrier link 20.

The actuating link 80 is pivotally connected, at its lower end, to the main carrier link 20 by a pivot member 81, and at its upper end to an L-shape link 84 by a pivot member 85. The L-shape link 84 is pivotally mounted, at its angle, on a pivot member 86 carried by the primary backrest supporting link

33, and at its end remote from the pivot member 85, the L-shape link 84 is pivotally connected by a pivot member 88 to an actuating link 89, which actuating link 89 is, in turn, pivotally connected to the secondary backrest supporting link 72 by a pivot member 90. The secondary backrest link 70, and its counterpart, not shown, carry a secondary backrest member 91 having a cushioned upper portion 92.

The chair above described may be suitably framed, cushioned and upholstered, the details of which may be dictated by the styling, as will be appreciated by those skilled in the art.

As above stated, FIG. 2 shows the structure of the above described chair in what is termed its normal upright position, with the footrest tucked under the front of the chair and the secondary backrest positioned at the rear of the chair, the chair being in a non-reclined position. In this position, the stop 70a abuts the secondary backrest supporting link 71 to limit downward movement of the secondary backrest. When it is desired to recline the chair, an occupant seated therein may merely grasp the arms of the upper portion of the side frame members 12, 13 and push to apply pressure against the primary backrest structure. Such force causes the chair assembly to move rearwardly as the forward, intermediate, and rear carrier links 26, 50, and 67, move in a clockwise direction about their pivotal mountings 27, 57, and 68, respectively. As this movement occurs, the footrest will be extended by the action of the seat mounting link 32 pulling the pivotal member 40 to rotate the footrest supporting link 38 in a clockwise direction. Shortly after the rearward movement of the chair assembly begins and as the primary backrest link 33 moves rearwardly approaching the secondary backrest actuating link 80, the upper end of the secondary backrest actuating link 80 acts through the pivotal member 85 to rock the L-shaped link 84 in a counterclockwise direction to move the actuating link 89 in a counterclockwise direction relative to the pivot 79, thus actuating the backrest supporting link 72, and, since the distal ends of the secondary backrest supporting links 71, 72 are pivotally connected to the secondary backrest link 70, such movement of the supporting link 72 causes a similar movement of the supporting link 71. Movement of the secondary backrest structure continues as the chair reclines rearwardly until, when the rear carrier link 67 abuts the stop member 21, the chair is positioned in its TV position. At this time the secondary backrest has been moved first rearwardly, thence upwardly, thence forwardly from its FIG. 2 position to an operative position where it is in place to support the head of an occupant sitting in the chair. Should it be desired to move the chair from its TV position to its fully reclined position, the chair occupant merely leans back on the chair causing the assembly to rotate in a clockwise direction about the pivotal member 69. Such rotational movement of the primary backrest 33 actuates the intermediate carrier link 50 which, in turn, rotates the Z-shape control link 55 counterclockwise and this link, through its connection with the connecting link 62 causes rotation of the main carrier link 20 clockwise about its pivot 21. During this cycle of movement, that is, from TV to fully reclined position, the L-shaped link 84 continues its counterclockwise movement about its pivotal connection 86 with the primary backrest link 33 to reposition the secondary backrest structure relative to the primary backrest structure.

To collapse the chair from its TV or fully reclined position, it is merely necessary for an occupant to shift his weight forward in the chair, the structure thereby operating the reverse of that described above.

Having thus described my invention, I claim:

1. A reclining chair having a frame, a seat and back assembly supported on said frame, said back assembly including a primary backrest and a secondary backrest, said seat and back assembly movable relative to said frame from a first upright position to a reclining position, said secondary backrest member forming substantially the entire rear surface of said primary backrest member when the seat and back are in non-reclined position, said secondary backrest member

being movable in its entirety away from said frame and forming a body support when the chair is in reclined position, wherein said secondary backrest is actuated for movement relative to said primary backrest upon reclining movement of the seat and back assembly, said movement continuing during substantially the entire cycle of movement of said seat and back assembly from said first position to said reclining position, coupling means, wherein said seat and back assembly are carried on a movable linkage including a main carrier link and a plurality of auxiliary carrier links, and said secondary backrest member is supported by said primary backrest member and coupled to said main carrier link whereby upon reclining movement of said seat and back assembly said secondary backrest member is moved from said first position to said second position, wherein said coupling means includes a first link pivotally connected to said main carrier link, a second link pivotally connected to said primary backrest member, and a third link, said first and second links pivoted to each other and said second and third links pivoted to each other.

2. The invention of claim 1 wherein said link has a first arm and a second arm joined thereto at an angle, said second arm being shorter than said first arm.

3. The invention of claim 2 wherein said second arm is pivotally connected to said primary backrest member at a point intermediate the ends of said first and second arms.

4. The invention of claim 3 wherein said shorter arm of said second link is connected to said first link.

5. The invention of claim 4 wherein said secondary backrest member is supported on said primary backrest member by a pair of links, one of said links being shorter than the other of said links, one of said links being pivotally connected to said third link.

6. The invention of claim 5 wherein said secondary backrest member is provided with stop means, said stop means abutting one of said pair of links when said secondary backrest member is in said first position to limit movement of said secondary backrest member.

7. A reclining chair having a frame, a seat and back assembly supported on said frame, said back assembly including a primary backrest and a secondary backrest, said seat and back assembly movable relative to said frame from a first upright position to a reclining position, said secondary backrest member forming substantially the entire rear surface of said primary backrest member when the seat and back are in non-reclined position, said secondary backrest member being movable in its entirety away from said frame and forming a body support when the chair is in reclined position, wherein said secondary backrest is actuated for movement relative to said primary backrest upon reclining movement of the seat and back assembly, said movement continuing during substantially the entire cycle of movement of said seat and back assembly from said first position to said reclining position, coupling means, wherein said seat and back assembly are carried on a movable linkage including a main carrier link coupled to and non-movable relative to said frame during said movement of said seat and back to said reclining position, and a plurality of auxiliary carrier links, and said secondary backrest member is supported by said primary backrest member and coupled to said main carrier link whereby upon reclining movement of said seat and back assembly said secondary backrest member is moved from said first position to said second position, wherein said coupling means includes a first link pivotally connected to said main carrier link, a second link pivotally connected to said primary backrest member, and a third link, said first and second links pivoted to each other and said second and third links pivoted to each other.

8. The invention of claim 7 wherein said second link has a first arm and a second arm joined thereto at an angle, said second arm being shorter than said first arm.

9. The invention of claim 8 wherein said second arm is pivotally connected to said primary backrest member at a point intermediate the ends of said first and second arms.

10. The invention of claim 9 wherein said shorter arm of said second link is connected to said first link.

11. The invention of claim 10 wherein said secondary backrest member is supported on said primary backrest member by a pair of links, one of said links being shorter than the other of said links, one of said links being pivotally connected to said third link.

12. The invention of claim 11 wherein said secondary backrest member is provided with stop means, said stop means abutting one of said pair of links when said secondary backrest member is in said first position to limit movement of said secondary backrest member.

13. A reclining chair having a frame, a seat and back assembly supported on said frame, said back assembly including a primary backrest and a secondary backrest, said seat and back assembly movable relative to said frame from a first upright position to a reclining position, said secondary backrest member forming substantially the entire rear surface of said primary backrest member when the seat and back are in non-reclined position said secondary back member being movable in its entirety away from said frame and forming a body support when the chair is in reclined position, wherein said secondary backrest is actuated for movement relative to said primary backrest upon reclining movement of the seat and back assembly, said movement continuing during substantially the entire cycle of movement of said seat and back assembly from said first position to said reclining position, coupling means, wherein said seat and back assembly are operatively connected to a member connected to said frame and non-movable during said movement of said seat and back to said reclining position, and said secondary backrest

member is supported by said primary backrest member and coupled to said non-movable member whereby upon reclining movement of said seat and back assembly said secondary backrest member is moved from said first position to said second position, wherein said coupling means includes a first link pivotally connected to said non-movable member, a second link pivotally connected to said primary backrest member, and a third link, said first and second links pivoted to each other and said second and third links pivoted to each other.

14. The invention of claim 13 wherein said second link has a first arm and a second arm joined thereto at an angle, said second arm being shorter than said first arm.

15. The invention of claim 14 wherein said second arm is pivotally connected to said primary backrest member at a point intermediate the ends of said first and second arms.

16. The invention of claim 15 wherein said shorter arm of said second link is connected to said first link.

17. The invention of claim 16 wherein said secondary backrest member is supported on said primary backrest member by a pair of links, one of said links being shorter than the other of said links, one of said links being pivotally connected to said third link.

18. The invention of claim 17 wherein said secondary backrest member is provided with stop means, said stop means abutting one of said pair of links when said secondary backrest member is in said first position to limit movement of said secondary backrest member.

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