June 19, 1962 F. F. SCHLIEPHACKE 3,039,814

IMPROVED RECLINING CHAIR OF THE DOUBLE MOVEMENT TYPE

Filed Oct. 30, 1958 3 Sheets-Sheet 1

FIG. 1.

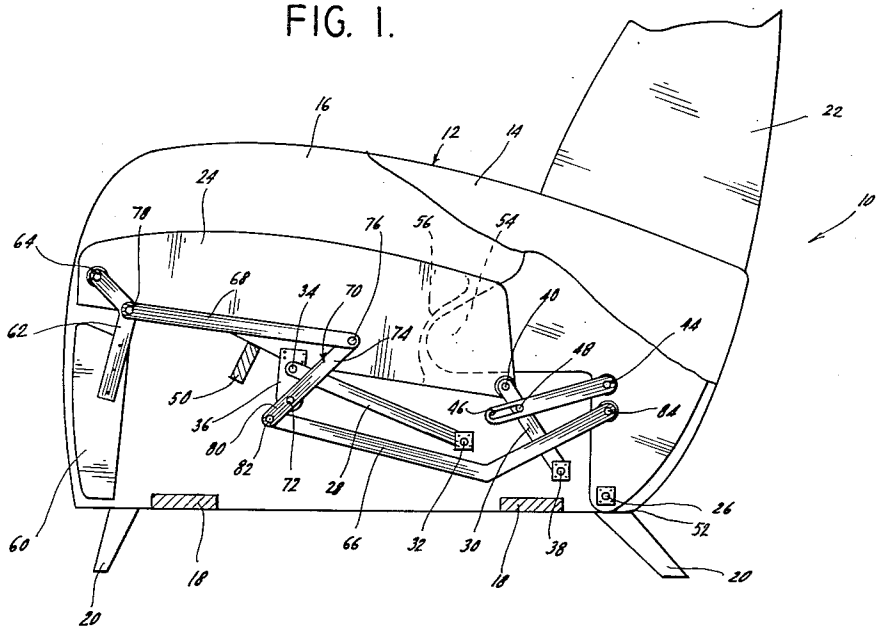
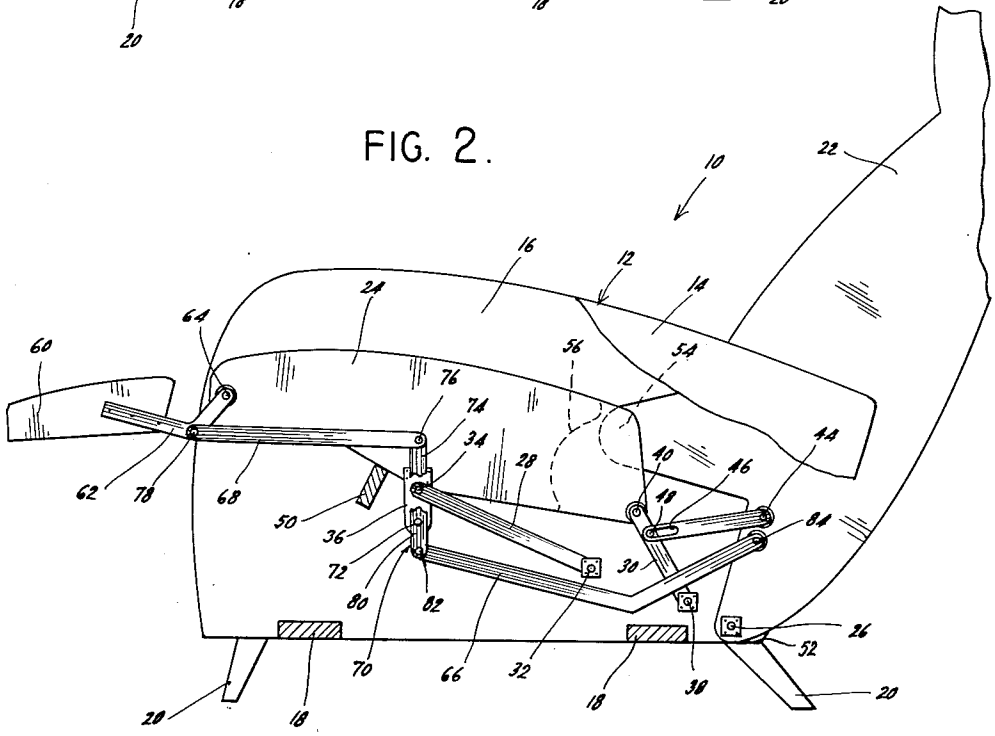


FIG. 2.



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FIG. 6.

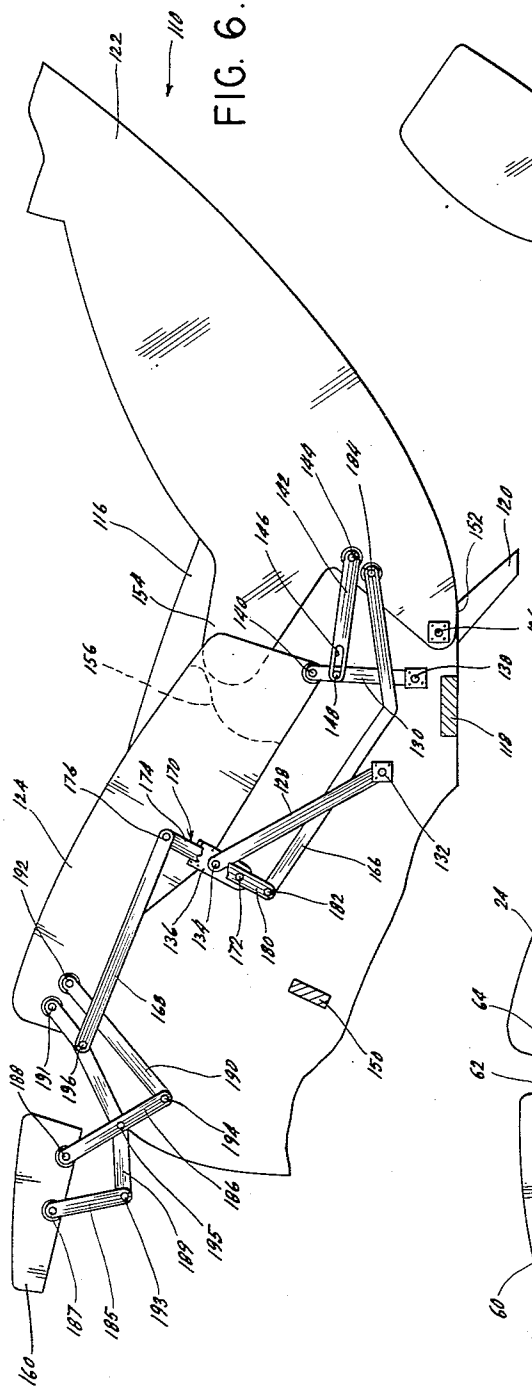
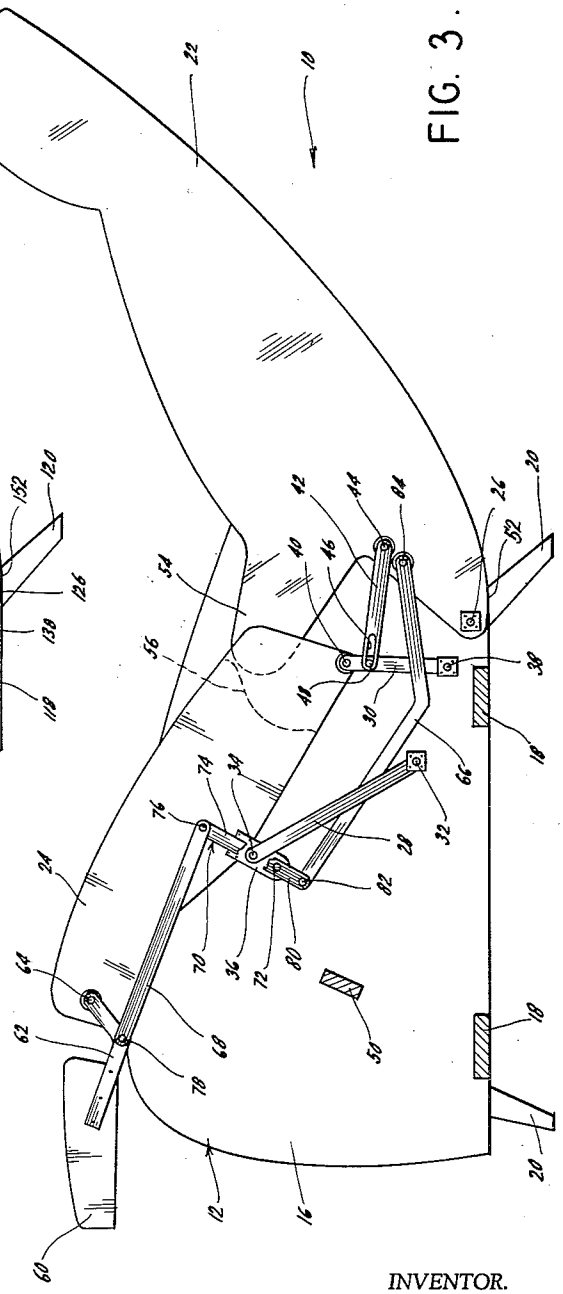


FIG. 3.



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FIG. 4.

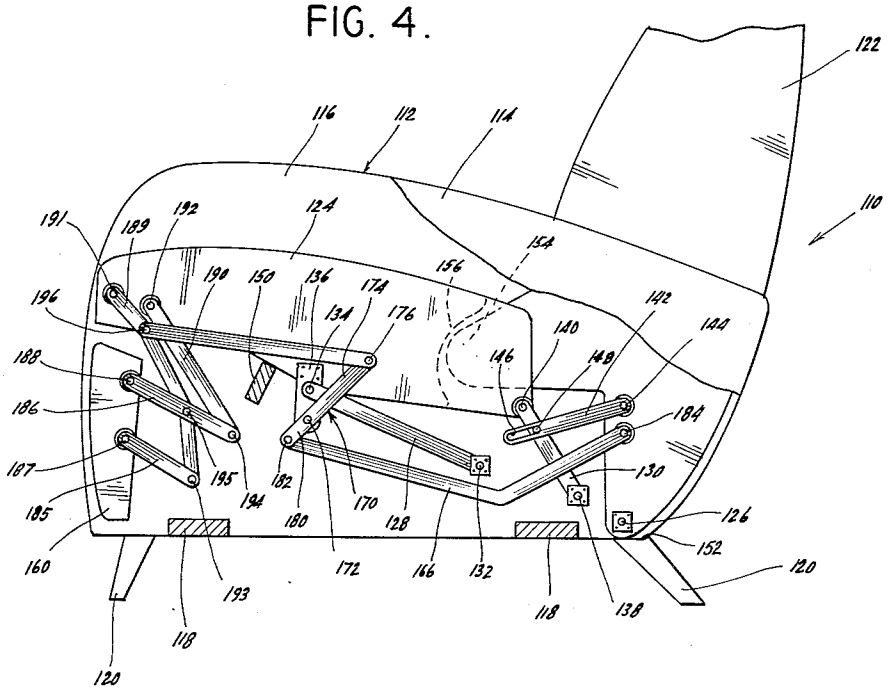
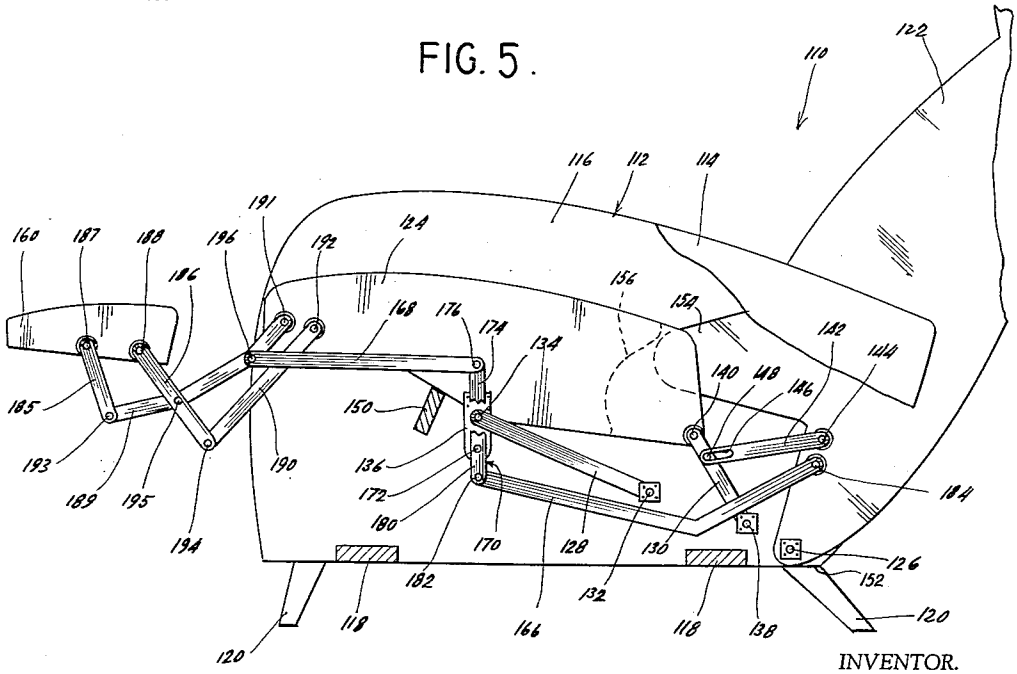


FIG. 5.



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IMPROVED RECLINING CHAIR OF THE DOUBLE MOVEMENT TYPE

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8 Claims. (Cl. 297—68)

The present invention relates to improvements in reclining chairs and in particular to a new and improved back-rest and seat control structure and a new and improved leg-rest control structure for a reclining chair of the double-movement type.

The usual reclining chair generally features a seat and a back-rest movably mounted on a support frame for movement between an upright sitting position and a rearwardly-inclined reclining position. A leg-rest is conventionally included in the chair structure and is provided with a control and actuating mechanism, generally in the form of a linkage, which is coupled to the seat and/or to the back-rest for coordinated movement of the leg-rest with the seat and back-rest. The leg-rest is normally disposed in a retracted position beneath the front end of the seat when the seat and back-rest are in their upright sitting position, and is then moved by the leg-rest linkage to an extended leg-supporting position forwardly of and substantially at the level of the seat when the seat and back-rest are brought to their reclining position.

A recent development in reclining chairs has been the "double movement" type of chair in which the seat and back-rest are constructed and arranged to be moved through a first motion phase to an intermediate or semi-reclined position and then to a fully-reclined position. In the intermediate or semi-reclined position the occupant of the chair is supported in a relaxed but still substantially upright attitude in which he may read, view television, or the like, with his legs extended and supported. In the fully-reclined position, the occupant is positioned in an attitude of repose for complete relaxation. In this type of double movement chair, a special leg-rest control linkage is required to bring the leg-rest to its extended position in the intermediate semi-reclined position of the chair, and to maintain the leg-rest extended at the level of the seat in the fully-reclined position of the chair.

It is an object of the present invention to provide a reclining chair of the double movement type which incorporates an improved back-rest and seat control mechanism which will guide the back-rest to a first inclined position relative to the seat in the intermediate or semi-reclined position of the chair, and will then automatically guide the seat to an inclined position and the back-rest to a further inclined position in the fully-inclined position of the chair.

Another object of the invention is the provision of a leg-rest control and actuating linkage for a double movement reclining chair of the character described, which is adapted to move the leg-rest to a first extended leg-supporting position in response to movement of the back-rest to its intermediate semi-reclined position, and is also adapted to maintain the leg-rest substantially at the level of the seat when the seat and back-rest are moved to their fully-reclined position.

A further object of the invention is the provision of a reclining chair of the character described in which the back-rest and seat control mechanism and leg-rest control mechanism are inter-related for cooperative automatic action in coordinating movement of the leg-rest with movement of the back-rest and seat, and in maintaining the leg-rest at the level of the seat when the latter is inclined in the fully-reclined position of the chair.

According to my invention, I provide a reclining chair

of the double movement type in which the back-rest is pivotally mounted on the support frame and the seat is mounted for rearward movement by front and rear guiding members. The seat is connected to the back-rest by coupling means providing a lost motion connection in such a manner that when the back-rest is initially pivoted rearwardly from an upright sitting position to an intermediate tilted position, the seat does not move but remains in a level position. At the end of this first motion phase, the lost motion connection engages so that in the further movement of the back-rest through a second motion phase from the semi-reclined position to a fully-reclined position, the back-rest carries the seat rearwardly with it, the seat being guided by the front and rear guiding members to a rearwardly tilted position.

The leg-rest control linkage includes a lever which is pivotally mounted on a portion of the seat and is connected at one end to an actuating link and at the other end through an intermediate linkage to the leg-rest. The actuating link is connected to the back-rest in such a manner that when the back-rest is tilted rearwardly, the actuating link turns the lever about its pivotal mount on the seat, thereby causing it to raise the leg-rest to its extended leg-supporting position through said intermediate linkage. During the second motion phase, the leg-rest control linkage remains in substantially the same position relative to the seat so that the leg-rest is maintained in extended, leg-supporting position at the fully-reclined position of the chair.

The above brief description will be more fully appreciated and additional objects and advantages of the invention will become apparent during the course of the following specification, when taken in conjunction with the accompanying drawings illustrating several illustrative embodiments of the invention, and in which:

FIG. 1 is a side elevational view of a double movement type of reclining chair made in accordance with the present invention, showing said chair in its upright sitting position, with portions thereof broken away or shown in section to reveal inner constructional details;

FIG. 2 is a similar side elevational view of the chair shown in FIG. 1, but illustrating the chair in its intermediate or semi-reclined position;

FIG. 3 is a side elevation similar to FIGS. 1 and 2, but showing the reclining chair thereof in its fully-reclined position;

FIG. 4 is a side elevational view of a modified embodiment of reclining chair made in accordance with the invention and incorporating a different type of leg-rest control structure, the chair being shown in its upright sitting position;

FIG. 5 is a side elevation of the chair shown in FIG. 4, but illustrating the intermediate or semi-reclined position of the structure; and

FIG. 6 is a side elevational view similar to FIGS. 4 and 5, but showing the chair illustrated therein in its fully-reclined position.

Referring in detail to the drawings, and particularly to FIGS. 1–3, there is shown a reclining chair made in accordance with the present invention, in which the leg-rest is connected directly to the front end of the seat. The reclining chair, designated generally by the reference numeral **10**, includes a support frame **12** having opposed side walls **14** and **16** which are rigidly connected by suitable cross bars or braces **18** and preferably raised above the floor level by depending legs **20** of any suitable type.

A body-supporting structure, which includes a back-rest **22** and a seat **24**, is movably mounted on the support frame **12** between the side walls **14** and **16**. The back-rest **22** is pivotally mounted at its lower end on

the support 12 by a pivot 26 so that it may be rearwardly tilted about said pivot 26 to its semi-reclined position shown in FIG. 2, and then further to its fully-reclined position shown in FIG. 3. The seat 24 is connected to the back-rest 22 by coupling means so arranged that the seat is maintained immovable when the back-rest is pivoted rearwardly from the sitting position of FIG. 1 to the intermediate semi-reclined position of FIG. 2, and is then drawn rearwardly with the back-rest when the latter is pivoted further rearwardly from the semi-reclined position to the fully-reclined positon of FIG. 3.

The seat 24 is movably mounted on the support frame 12 by a pair of guide links 28 and 30. The front guide link 28 is pivotally mounted at 32 on the support frame 12 and its free end is connected by pivot 34 to the seat 24 through a depending plate or extension 36 which is rigidly carried by the seat. The rear guide link 30 is pivotally mounted at 38 on the support frame 12 and its free end is connected by pivot 40 to the rear end of the seat 24.

The coupling means connecting the seat 24 and back-rest 22 comprises a connecting link 42 connected by pivot 44 to the back-rest 22 at a point above the back-rest pivot 26. The connecting link 42 is slidably engaged with the rear guide link 30, this slidable engagement being effected by an elongated slot 46 at the free end of the connecting link 42, and a pivot pin 48 rigid with the rear guide link 30 and slidably and rotatably extending through said slot 46.

In the upright sitting position of the chair, shown in FIG. 1, the seat 24 is supported in a substantially level position by a stop member 50, the forward portion of the seat resting upon said stop member 50 and the latter preventing the seat from moving forwardly and downwardly under the weight of the occupant. The front and rear guide links 28 and 30 are forwardly inclined from their respective pivotal mounts 32 and 38, and the pin 48 is located at the rear end of the slot 46.

When the occupant of the chair wishes to move to a more relaxed position, he shifts his weight rearwardly and applies rearward pressure against the back-rest 22. This will cause the back-rest 22 to pivot about its pivotal mount 26, the connecting link 42 being drawn rearwardly with the back-rest 22 and the slot 46 moving rearwardly relative to the pivot pin 48. Because of the sliding engagement of the pin 48 with the slot 46, the rear guide link 30 is not moved. Thus, during this first motion phase, the back-rest 22 pivots rearwardly to the intermediate semi-reclined position of FIG. 2, while the seat 24 remains stationary and in its level position.

The first motion phase is ended upon engagement of the pin 48 with the forward end of the slot 46, and the chair is now located in the intermediate semi-reclined position of FIG. 2 in which the occupant's body is still in a substantially upright, but more relaxed position, with the leg-rest in its extended leg-supporting position, as will be presently explained. This semi-reclined positon is suitable for comfortable reading, television viewing, sewing, or the like. If the occupant then wishes to recline in a completely relaxed position, he applies further rearward body pressure against the back-rest 22, causing the chair parts to move through a second motion phase to a fully-reclined position, shown in FIG. 3.

During the second motion phase, the connecting link 42, through its slot 46, exerts a rearward pulling force on the rear guide link 30, causing the same to turn rearwardly about its pivotal mount 38 and thus to move the seat 24 rearwardly in response to the rearward pivotal movement of the back-rest 22. As the seat 24 moves rearwardly it causes the front guide link 28 to turn rearwardly on its pivotal mount 32. As a result, the seat 24, during the second motion phase, moves rearwardly with the back-rest 22, and is guided in its rearward movement by both the front and rear guide links 28 and 30 which pivot simultaneously. It will be appreciated that in the preferred embodiment of the invention shown herein, the seat is coupled to the back-rest through the connecting link 42, the pin and slot connection 46, 48 and the rear guide link 30. As an obvious alternative, the connecting link 42 may be connected directly to the seat 24 by a pin and slot connection, the rear guide link 30 in this instance serving only to guide the movement of the rear of the seat.

It will be noted that the front guide link 28 is substantially longer than the rear guide link 30. Thus, when the seat 24 is drawn rearwardly during the second motion phase, and the guide links 28 and 30 pivot upwardly, the seat pivot 34 at the end of the front guide link 28 moves vertically a relatively long distance while the seat pivot 40 at the end of the rear guide link moves vertically a relatively short distance. This has the effect of providing a compound movement for the seat 24 during the second motion phase, in which the front end of the seat is raised relative to the rear end thereof, and the seat is disposed at a rearward inclination in the fully-reclined position of FIG. 3.

The second motion phase is halted in the fully-reclined position of the chair by engagement of a movable portion of the structure with suitably positioned stop means, such stop means being customary and well-known in conventional reclining chairs. For example, in the embodiment illustrated herein, the upper edge 52 of the rear leg 20 is positioned to engage the lower rear portion of the back-rest 22 and block further rearward pivotal movement thereof, as shown in FIG. 3.

As was previously described, the back-rest 22, in the first motion phase, moves rearwardly relative to the stationary seat 24. As a consequence, a gap or space will be formed between the rear end of the seat and the adjacent surface of the back-rest which gap will be greatest at the semi-reclined position of the structure. The presence of such a gap is undesirable both from the standpoint of comfort and appearance. To avoid the formation of such a gap, the back-rest 22 may be formed with a forwardly-projecting extension portion 54 in alignment with the rear of the seat 24, and the rear end of the seat may be provided with a pocket or recess 56 sized to receive the extension portion 54. The recess 56 is shaped to allow movement of the back-rest extension portion 54 therein, so that throughout the movement of the chair parts, the body-supporting surfaces of the seat and back-rest are contiguous and unbroken.

The chair of FIGS. 1–3 also includes a leg-rest 60 and a leg-rest control linkage mounted for coordinated movement with the back-rest 22 for raising the leg-rest 60 during the first motion phase from the retracted position beneath the seat 24, shown in FIG. 1, to the extended position of FIG. 2, in which it is located forwardly of and substantially at the level of the front of the seat.

In the embodiment of FIGS. 1–3, the leg-rest 60 is rigidly carried by a hanger arm or bar 62, the free end of which is mounted by pivot 64 on the front end portion of the seat 24. The leg-rest control linkage comprises an actuating link 66, a driven link 68 and an intermediate link or lever 70. The lever 70 is connected intermediate its ends by pivot 72 to the depending extension plate 36 of the seat 24, so that the lever 70 may be said to be pivotally mounted on the seat. The upper arm 74 of the lever 70 is connected by pivot 76 to the rear end of the driven link 68, the front end of the latter being connected by pivot 78 to an intermediate point on the hanger arm 62. The lower lever arm 80 is connected by pivot 82 to the front end of the actuating link 66, the rear end of which is connected by pivot 84 to a point on the back-rest 22 located above the back-rest pivot 26.

When the back-rest 22 is pivoted rearwardly during the first motion phase, the pivotal mount 72 of the lever 70 is stationary because the seat 24 does not move. The back-rest 22 carries the actuating link 66 rearwardly with

it, causing the latter to pull rearwardly upon the lever lower arm **80** and thereby causing the lever to turn in a counter-clockwise direction (as viewed in FIGS. 1 and 2) about its stationary pivot mount **72**. The lever upper arm **74** therefore moves in a forward direction, thrusting the driven link **68** forwardly to raise the leg-rest **60** to its extended position. It will be observed that the upper lever arm **74** is appreciably longer than the lower lever arm **80**. Hence the driven link **68** is provided with an amplified linear movement in response to a relatively short movement of the back-rest sufficient to raise the leg-rest to its extended position of FIG. 2.

During the second motion phase of the chair to its fully-reclined position, the seat **24** moves rearwardly with the back-rest **22**, and thus the seat extension plate **36**, lever **70**, and the lever mount **72** move rearwardly with the actuating link **66**. The actuating link **66** therefore ceases to apply a rearward pulling force on the lower lever arm **80**, but rather the leg-rest **60** and the entire leg-rest control linkage moves upwardly as a unit with the forward end of the seat. The leg-rest **60** is thus maintained throughout the second motion phase in a substantially constant relationship with the forward end of the seat.

To bring the chair parts from the fully-reclined position of FIG. 3 back to the semi-reclined position in FIG. 2, the occupants need only shift his weight forwardly on the seat **24**, and the latter will be guided forwardly on the front and rear guide links **28** and **30** until it engages the stop member **50** in the intermediate semi-reclined position. To bring the chair structure from the semi-reclined position of FIG. 2 to the upright position of FIG. 1, the occupant presses downwardly with his legs upon the leg-rest **60**, causing the leg-rest to move downwardly to its retracted position and simultaneously causing a forward pivoting of the back-rest **22** through the leg-rest control linkage.

In FIGS. 4–6 there is shown a modified form of reclining chair to illustrate that the seat and back-rest control mechanism and the leg-rest control mechanism may be used with alternate types of leg-rest guiding structures. The chair in FIGS. 4–6 is identical in structure to that illustrated in FIGS. 1–3 except for the leg-rest guiding linkage, and like parts are given corresponding reference numerals which are part of a "100" series. The reclining chair, designated generally by the reference numeral **110**, again includes a support frame **112** having opposed side walls **114** and **116** connected by cross bars **118** and supported by depending legs **120**.

The body-supporting structure, comprising a back-rest **122** and a seat **124**, is movably mounted on the support frame **112** between the sidewalls **114** and **116**. The lower end of back-rest **122** is pivotally mounted at **126** on the support frame **112** for rearwardly tilting movement to its semi-reclined position shown in FIG. 5, and then further to its fully-reclined position shown in FIG. 6. The seat **124** is again provided with lost motion coupling means so arranged that the seat is maintained in a stationary level position when the back-rest is pivoted rearwardly from the sitting position of FIG. 4 to the intermediate semi-reclined position of FIG. 5, and is then drawn rearwardly with the back-rest when the latter is pivoted further rearwardly from the semi-reclined position to the fully-reclined position of FIG. 6.

For movably mounting the seat **124** on the support frame **112**, the front guide link **128** is pivotally mounted at **132** on the support frame **112** and its free end is connected by pivot **134** to the seat **124** through a depending plate or extension **136** which is rigidly carried by the seat. The rear guide link **130** is pivotally mounted at **138** on the support frame **112** and its free end is connected by pivot **140** to the rear end of the seat **124**.

The coupling means connecting the seat **124** and back-rest **122** again comprises a connecting link **142** connected by pivot **144** to the back-rest **122** at a point above the back-rest pivot **126**. The connecting link **142** is slidably and pivotally connected to the rear guide link **130** by a pin and slot connection comprising an elongated slot **146** at the free end of the connecting link **142**, and a pivot pin **148** rigid with the rear guide link **130** and slidably and rotatably extending through said slot **146**.

In the upright sitting position of the chair **110**, shown in FIG. 4, the seat **124** is supported in its substantially level position by engagement of the forward portion of the seat with a fixed stop member **150**. The front and rear guide links **128** and **130** are forwardly inclined from their respective pivotal mounts **132** and **138**, and the pin **148** is located at the rear end of the slot **146**.

The operation of the seat and back-rest of the chair **110** is identical to that of the chair **10** shown in FIGS. 1–3 and previously described, hence a detailed description of such operation will not be repeated. In general, it will be understood that in the first movement phase, the back-rest **122** pivots rearwardly about its pivotal mount **126** and the lost motion movement of the pin and slot **148**, **146** maintains the seat immovably in its level sitting position, in the manner previously explained. The first motion phase is ended upon engagement of the pin **148** with the forward end of the slot **146**, and the chair is then located in the intermediate semi-reclined position of FIG. 5 in which the occupant's body is still in a substantially upright, but more relaxed position, with the leg-rest in its extended leg-supporting position.

During the second motion phase, the pin **148** and slot **146** are in non-slidable engagement, as shown in FIGS. 5 and 6, and the connecting link **142** exerts a rearward pulling force on the rear guide link **130**, causing the seat **124** to move rearwardly in response to the rearward pivotal movement of the back-rest **122**. As the seat **124** moves rearwardly during the second motion phase, it is guided in its rearward movement by both the front and rear guide links **128** and **130** pivoting simultaneously.

During the second motion phase, the guide links **128** and **138** pivot upwardly and rearwardly, and because the front guide link **128** is longer than the rear guide link **130**, the seat **124** is guided in a compound movement in which its front end is raised relative to the rear end thereof. Movement of the seat and back-rest in the second motion phase is halted by engagement of the lower portion of the back-rest **122** with the upper surface **152** of the rear leg **120**.

The chair shown in FIGS. 4–6 also includes a leg-rest **160** and a leg-rest control linkage for coordinating movement of the leg-rest with pivoting movement of the back-rest **122**. In this instance, however, the leg-rest is not pivotally mounted directly on the seat, as in the embodiment of FIGS. 1–3, previously described, but is rather carried by a guiding linkage which is mounted on the seat. The leg-rest **160** is supported by a pair of rearwardly-extending links **185** and **186** which are connected at spaced points on the leg-rest **160** by respective pivots **187** and **188**. The leg-rest guiding linkage also includes a pair of depending links **189** and **190** which have respective pivotal mounts **191** and **192** at spaced points on the forward portion of the seat **124**. The links **185** and **189** are connected in end-to-end relationship by pivot **193**, while the links **186** and **190** are connected end-to-end by a pivot **194**. The rearwardly-extending link **186** crosses over the front depending link **189** and is pivotally connected thereto at the crossing-over point **195**.

The leg-rest control linkage again comprises an actuating link **166**, a driven link **168** and a lever **170**, the latter being mounted intermediate its ends on the depending plate **136** of seat **124** by a pivot **134**. The actuating link **166** is connected at one end to the short arm **180** of the lever **170** by pivot **182**, and at the other end by pivot **184** to the back-rest **122** at a point above the back-rest pivot **126**. One end of the driven link **168** is connected by pivot **176** to the long lever arm **174**, while the other end

is connected by pivot **196** to an intermediate point on the front depending link **189**.

When the back-rest **122** is pivoted rearwardly during the first motion phase, the actuating link **166** moves rearwardly causing the lever **170** to turn about its temporarily stationary pivot **172** and move the driven link **168** forwardly. The driven link **168** in turn raises the front depending link **189**, to move the leg-rest **160** from its retracted position of FIG. 4 to its extended, leg-supporting position of FIG. 5.

The leg-rest guiding linkage forms an interconnected double four-bar linkage supporting and guiding the movement of the leg-rest **160** and effective to position the leg-rest further forwardly of the front end of the seat in its extended position, for supporting the legs of tall persons. One four bar linkage is formed by the link **190**, the portion of link **189** between pivots **191** and **195**, the portion of the link **186** between pivots **194** and **195**, and the portion of the seat **124** between pivots **191** and **192**. The other four bar linkage is formed by link **185**, the portion of link **186** between pivots **188** and **195**, the portion of link **189** between pivots **193** and **195**, and the portion of the leg-rest **160** between pivots **187** and **188**.

When the front depending link **189** is thrust forwardly by the driven link **168**, the double four-bar linkage construction is effective to thrust the leg-rest **160** outwardly from the front of the seat **124** to a greater degree than in the arrangement of FIGS. 1–3 wherein the leg-rest is hinged directly to the seat. In the second motion phase, the leg-rest control linkage **166**, **168** and **170** maintains the leg-rest in its extended leg-supporting position as shown in FIG. 6, and as previously described.

While preferred embodiments of the invention have been illustrated and described herein, it is obvious that numerous additions, changes and omissions may be made in such embodiments without departing from the spirit and scope thereof.

I claim:

1. A reclining chair comprising a support frame, a back-rest pivotally mounted at its lower end on said support frame, a seat, front and rear guide links mounting said seat on said support frame for rearward movement, a connecting link pivotally connected to the back-rest at a point above the pivotal mount of the back-rest on the support frame, and a pin-and-slot connection between said connecting link and the rear guide link, said back-rest being pivotable rearwardly in a first motion phase from an upright sitting position to a semi-reclined position, the pin sliding freely in said slot during said first motion phase and the connecting link moving rearwardly relative to the rear guide link whereby the seat and the front and rear guide links are maintained in a stationary position during the first motion phase, the back-rest being then further pivotable rearwardly in a second motion phase to a fully-reclined position, the pin engaging the end of the slot and rigidly coupling the connecting link with the rear guide link for moving said guide links and drawing said seat rearwardly with the back-rest through said connecting link during the second motion phase.

2. A reclining chair according to claim 1 in which the pin-and-slot connection comprises an elongated slot in said connecting link and a pin on said rear guide link and extending through said slot.

3. A reclining chair comprising a support frame, a back-rest mounted for pivoting movement on said support frame, a movable seat structure including a seat and front and rear guide means mounting said seat on said support frame for rearward movement from a level sitting position to an inclined position, lost motion coupling means connecting the seat structure to the back-rest, the back-rest being pivotable rearwardly in a first motion phase from an upright sitting position to a semi-reclined position, the lost motion coupling maintaining the seat structure in a stationary position with the seat in its level sitting position during the first motion phase, the back-rest being then further pivotable rearwardly in a second motion phase to a fully-reclined position, the back-rest drawing the seat structure rearwardly with it through said lost motion coupling during the second motion phase to move said seat rearwardly to its inclined position, a leg-rest, guide means mounting the leg-rest on the seat for movement between a retracted position beneath the seat and an extended leg-supporting position forwardly of the seat, and control means for moving the leg-rest guide means in response to pivoting movement of the back-rest, said control means comprising a double arm lever pivotally mounted on the seat, an actuating link connected at one end to a point on the back-rest above the pivotal mount of the back-rest on the support frame and connected at its other end to one arm of the lever, and a driven link connecting the other arm of the lever with the leg-rest guide means, the pivotal mount of said lever remaining stationary with said seat, said back-rest turning the lever during said first motion phase to raise the leg-rest to its extended position relative to the stationary seat, the lever, leg-rest guide means, and leg-rest being moved as a unit with the seat during the second motion phase to maintain the leg-rest in its extended position.

4. A reclining chair comprising a support frame, a back-rest mounted for pivoting movement on said support frame, a seat, front and rear guide links mounting said seat on said support frame for rearward movement, a connecting link pivotally connected to the back-rest at a point above the pivotal mount of the back-rest on the support frame, and a pin-and-slot connection between the connecting link and the rear guide link, the back-rest being pivotable rearwardly in a first motion phase from an upright sitting position to a semi-reclined position, the pin sliding freely in said slot and the connecting link moving rearwardly relative to the rear guide link and maintaining the seat in a stationary position during the first motion phase, the back-rest being then further pivotable rearwardly in a second motion phase to a fully-reclined position, said pin engaging the end of the slot and pivotally coupling the connecting link with the rear guide link for moving said guide link and drawing said seat rearwardly with the back-rest during the second motion phase, a leg-rest, guide means mounting the leg-rest on the seat for movement between a retracted position beneath the seat and an extended leg-supporting position forwardly of the seat, and control means for moving the leg-rest guide means in response to pivoting movement of the back-rest, said control means comprising a double arm lever carried by the seat, an actuating link connected at one end to a point on the back-rest above the pivotal mount of the back-rest on the support frame and connected at its other end to one arm of the lever, and a driven link connecting the other arm of the lever with the leg-rest guide means, the actuating link moving rearwardly with the back-rest to turn said lever and move the leg-rest to its extended position during the first motion phase, the lever driven link and leg-rest guide means rising as a unit with the forward end of the seat to maintain the leg-rest in extended position during the second motion phase.

5. A reclining chair according to claim 4 in which the leg-rest guide means includes a hanger arm rigid with the leg-rest and pivotally mounted on the forward end of the seat.

6. A reclining chair according to claim 4 in which the leg-rest guide means includes a pair of depending links pivotally mounted at spaced points on the forward portion of the seat, a pair of rearwardly-extending links pivotally mounted at spaced points on the leg-rest, pivot means inter-connecting said pairs of links to provide a double four-bar linkage carried by the seat and supporting the leg-rest, the driven link being pivotally connected to one of said depending links.

7. A reclining chair comprising a support frame, a back-rest mounted for pivoting movement on said support

frame, a movable seat structure including a seat and a front and rear guide means mounting said seat on said support frame for rearward movement from a level sitting position to an inclined position, and a slide connection between said seat structure and a point on said back-rest above its pivotal mount on the support frame, being turnable rearwardly about its pivotal mount in a first motion phase from an upright sitting position to a semi-reclined position, said slide connection providing a lost motion movement between said back-rest and seat structure whereby the latter is maintained stationary relative to the support frame with the seat in its level sitting position during the first motion phase as the back-rest turns rearwardly about its pivotal mount, the back-rest being then further pivotable rearwardly in a second motion phase to a fully-reclined position with the slide connection providing a drive connection between the back-rest and seat structure, whereby the back-rest draws the seat structure rearwardly with it through said slide connection during the second motion phase to move the seat to its inclined position.

8. A reclining chair comprising a support frame, a back-rest mounted for pivoting movement on said support frame, a movable seat structure including a seat and front and rear guide means mounting said seat on said support frame for rearward movement from a level sitting position to an inclined position, lost motion coupling means connecting the seat structure to the back-rest, the back-rest being pivotable rearwardly in a first motion phase from an upright sitting position to a semi-reclined position, the lost motion coupling maintaining the seat structure in a stationary position with the seat in its level sitting position during the first motion phase, the back-rest being then further pivotable rearwardly in a second motion phase to a fully reclined position, the back-rest drawing the seat structure rearwardly with it through said lost motion coupling during the second motion phase to move said seat rearwardly to its inclined position, a leg-rest, guide means mounting the leg-rest on the seat for movement between a retracted position beneath the seat and an extended leg-supporting position forwardly of the seat, and control means for moving the leg-rest guide means in response to pivoting movement of the back-rest, said control means comprising a double-arm lever pivotally mounted on the seat, an actuating link pivoted to one arm of said lever and to said back-rest, and means connecting the other arm of the lever with the leg-rest guide means, the pivotal mount of said lever remaining stationary with the seat and said back-rest turning the lever through said actuating link during said first motion phase to raise the leg-rest to its extended position relative to the stationary seat, the lever, leg-rest guide means and leg-rest being moved as a unit with the seat during the second motion phase to maintain the leg-rest in its extended position.

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