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RECLINING CHAIRS

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FIG. 1.

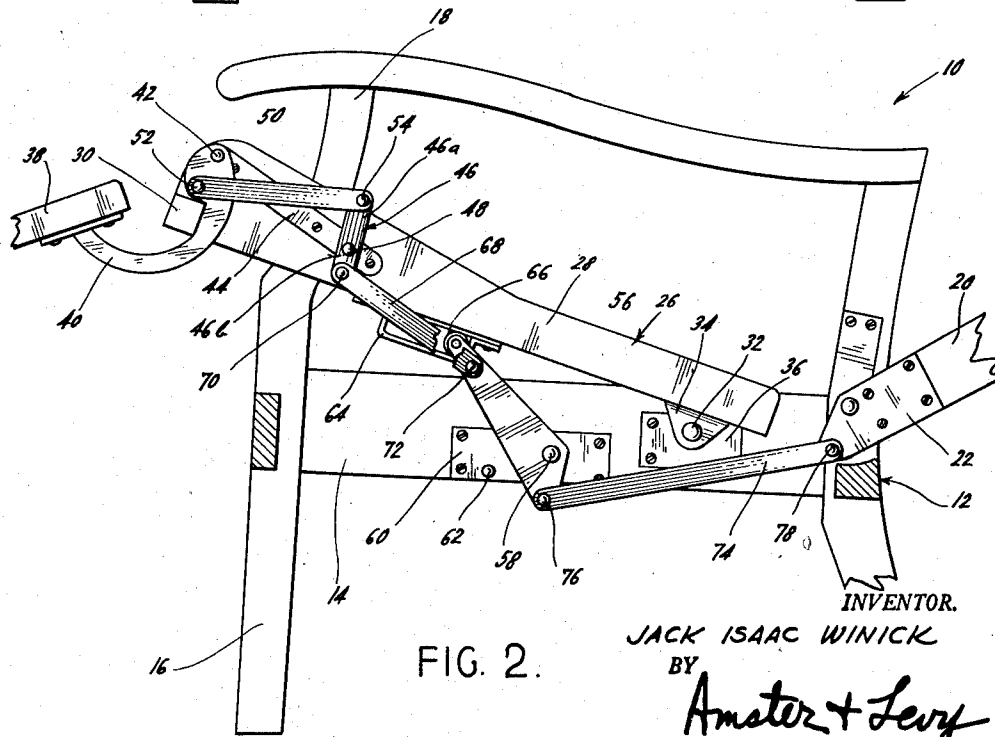
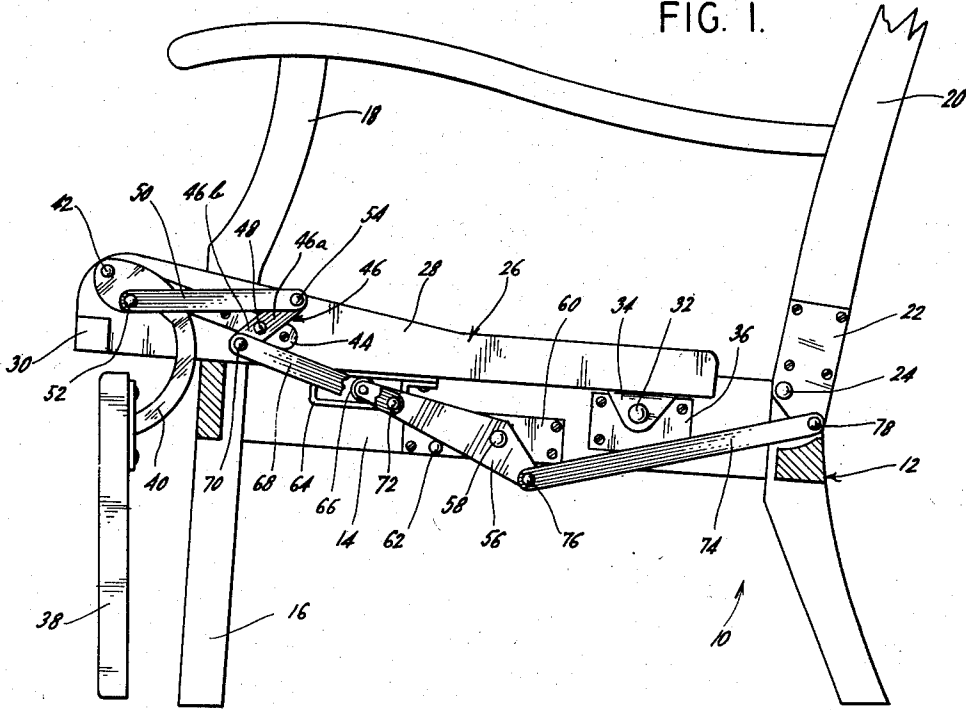


FIG. 2.

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**RECLINING CHAIRS**

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4 Claims. (Cl. 155—106)

The present invention relates generally to reclining chairs and in particular to a reclining chair of the type having a movable seat and movable back-rest and including improved coordinating mechanisms promoting the high styling of such chair.

A reclining chair usually comprises body-supporting means including a seat, back-rest, and a leg-rest disposed beneath the front of the seat, with appropriate mechanisms to swing the leg-rest upwardly into an extended and elevated leg-supporting position in substantial alignment with the forward end of the seat. In such chairs, the coordination of the leg-rest to the body-supporting means usually has been achieved by linkages which extend beneath the level of the seat thereby necessitating a chair frame of substantial vertical extent in the region of the seat to hide the coordinating mechanisms from view.

Broadly it is an object of the present invention to provide an improved leg-rest actuating and supporting mechanism which obviates the aforesaid difficulty. Specifically, it is within the contemplation of the present invention to provide a simple, yet effective leg-rest actuating and supporting mechanism which is positive in action and is substantially hidden from view during normal use of the chair.

It is a further object of the present invention to provide a reclining chair of the type including a movable seat, back-rest and leg-rest wherein the coordination of the movable components of the chair is achieved by a mechanism enabling the modern styling of the chair with high legs.

In accordance with an illustrative embodiment demonstrating features and advantages of the present invention, there is provided an improved reclining chair comprising a support including substantially horizontal side rails extending approximately at seat level, a back-rest movably mounted on the support, a seat movably mounted on the side rails, and a leg-rest movably mounted on the forward end of the seat. Means are operatively connected between the seat, leg-rest and back-rest for coordinating movement of the seat and leg-rest to reclining movement of the back-rest, said means being substantially accommodated within the vertical extent and length of the seat and side rails and including a lever arm pivoted adjacent its upper end to the forward end of the seat and supporting the leg-rest from its lower end, with the lower end of the lever arm being disposed above the under surface of the side rails. A first connecting link extends substantially lengthwise of the seat and side rails and is pivotally connected at its forward end to the lever arm at a point adjacent to the pivot for the lever arm. Actuating means likewise extend lengthwise of the seat and side rails, with pivotal connections respectively to the back-rest and to the connecting link whereby upon reclining movement of the back-rest, the leg-rest is brought to a raised or elevated leg-supporting position. The actuating means includes a double-arm lever pivoted on the seat and having its arms accommodated substantially within the vertical

extent of the seat, with appropriate means connecting the arms of the double-arm lever to the first connecting link and to the back-rest respectively.

Advantageously, with the accommodation of the coordinating or actuating mechanism for the leg-rest within the vertical extent and length of the seat and side rails, it is possible to design a chair of exceptionally modern appearance wherein the chair frame is supported at a substantial level off the floor by depending legs, giving the chair an open appearance beneath the seat.

The above brief description, as well as further objects, features and advantages of the present invention will be more fully appreciated by reference to the following detailed description of a presently preferred, but illustrative embodiment, when taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a side elevational view of a reclining chair demonstrating features of the present invention, with the upholstery removed and the chair shown in the upright or sitting position; and

Fig. 2 is an elevational view similar to Fig. 1, with parts broken away, and with the chair shown in a reclining position.

Referring now specifically to the drawings, there is shown a reclining chair according to the present invention, generally designated by the reference numeral 10, which comprises a chair frame or support 12 having substantially horizontal side rails 14 extending approximately at seat level. The chair frame is completed by depending legs 16 and an arm rest assembly 18, as is generally understood.

Movably mounted on the chair frame or support 10 is the back-rest 20 which is movable to various reclined positions. Specifically, the back-rest 20 is mounted through the provision of a back-rest mounting bracket 22 which is affixed to the back-rest and is mounted on the support side rail 14 at a back-rest pivot 24.

Movably mounted on the support is a seat 26 which moves into various inclined positions in coordination with the back-rest 20. The seat includes opposite seat side rails 28 interconnected adjacent their front and rear ends by cross-braces 30. The seat 26 is mounted on the support for inclining movement at a seat pivot 32 by means of a seat mounting bracket 34, with the seat pivot 32 being journaled in an appropriate plate 36 fixed to the adjacent support side rail 14.

Pivotally mounted adjacent the forward end of the seat 26 is a leg-rest 38 which is movable from a stored vertical position below the front end or edge of the seat 26 to an extended and elevated leg-supporting position forwardly of the seat, as shown in Fig. 2. The leg-rest 38 is mounted on a curved arm 40 which has a pivotal mount 42 via a mounting bracket 44 to the seat side rail 28, with the lower end of the arm 40 being secured by bolts, screws or the like to the leg-rest 38. The curvature of the arm 40 is such as to provide the necessary clearance relative to the front cross rail 30 of the seat, with the arm being dimensioned such that the lower end thereof is disposed above the under surface of the support side rail 14 in the upright or sitting position of the chair, as shown in Fig. 1.

Control or coordinating means are operatively connected to the seat 26 and to the leg-rest 38 and controlled from the back-rest 20 for achieving inclining movement of the seat and elevating movement of the leg-rest in response to reclining movement of the back-rest. The control or coordinating means is substantially accommodated within the vertical extent and length of the seat 26 and of the support side rails 14 and includes a double-arm lever 46 having a pivotal mount 48 to the seat at the mounting bracket 44 fixed to the seat 26. The double-arm lever 46 includes a first arm 46a extending upwardly

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and rearwardly from the pivotal mount 48 and a second arm 46b extending downwardly and forwardly from the pivotal mount in the upright or sitting position of the chair. The arm 46a is movable in a forward direction in response to turning movement of the lever 46 about its pivotal mount 48 in one direction and the arm 46b is movable in a rearward direction in response to turning movement of the lever 46. Extending lengthwise of the seat is a first connecting link 50 which has a pivotal connection 52 at its forward end to the arm 40 at a point spaced below the pivotal mount 42 thereof on the seat and a pivotal connection 54 at its rearward end to the arm 46a of the double-arm lever 46. Accordingly, in response to the forward turning movement of the arm 46a, a forward thrust is imparted to the first connecting link which is effective to swing the arm 40 in the clockwise direction about the pivotal mount 42 to elevate the leg-rest 38, as may be appreciated by progressively inspecting Figs. 1 and 2.

Extending lengthwise of the seat 26 is an actuating mechanism which is substantially accommodated within the vertical extent of the seat 26 and the support side rails 14, with respective operative connections to the back-rest 20 and to the arm 46b of the double-arm lever 46 such that reclining movement of the back-rest is effective to achieve the coordinating movement of the seat and leg-rest. The actuating mechanism or means includes a displaceable seat control member 56 having a pivotal mount 58 on the support side rail 14 via a mounting bracket 60. The displaceable seat control member 56 normally rests against stop 62 and is movable on its pivotal mount 58 in the clockwise direction through an upward arc, as may be seen by progressively inspecting Figs. 1 and 2. Appropriate means are interconnected between the seat 26 and the seat control member 56 for inclining the seat as a function of the turning movement of the seat control member. In this illustrative embodiment, a guide bracket 64 is fixed to the undersurface of the seat and engaged by a roller 66 which is journaled on the upper end of the seat control member 56. Extending lengthwise of the seat 26 is a second connecting link 68 having a pivotal connection 70 at its forward end to the arm 46b of the double-arm member 46 and having a pivotal connection 72 at its rearward end to the control member 56 contiguous to the upper end thereof. Further, there is provided a third connecting link 74 which extends lengthwise of the seat to the rear of the control member 56 and has a pivotal connection 76 at its forward end to the control member at a point spaced below and rearwardly of the pivotal mount 58 and a pivotal connection 78 at its rearward end to the mounting bracket 22 for the back-rest 20 at a point spaced below and rearwardly of the back-rest pivot 24.

In actual use, the chair occupant is seated in the chair 10 and leans against the back-rest 20 which causes the pivotal connection 78 to the connecting link 74 to move through a downward and forward arc which imparts a forward thrust to the connecting link 74. This in turn causes the arm of the control member 56 intermediate the pivotal mount 58 and the roller 66 to swing through an upward arc for the seat control function, with a rearwardly directed pull being imparted to the connecting link 68. This turns the double-arm lever 46 in a direction appropriate to impart a forward thrust to the connecting link 50 and to the arm 40 of the leg-rest 38. Thus the leg-rest 38 swings through an upward and forward arc from the stored position illustrated in Fig. 1 to the elevated leg-supporting position illustrated in Fig. 2. It is to be noted that the pivotal mount 42 for the arm or lever 40 is closely adjacent the upper end of the seat side rail 28, providing for the maximum throw or forward projection of the leg-rest 38 for a given height of seat.

From the foregoing, it will be appreciated that the chair coordinating mechanisms are located between the fixed and movable side rails 14, 28 of the frame 12 and

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the seat 26 respectively so that the mechanisms are substantially hidden by the combined depths of these rails. Accordingly when the chair is upholstered in this region or appropriately framed, such mechanisms are hidden, even when the leg-rest is moved to the extended and elevated leg-supporting position as shown in Fig. 2. This enables a latitude of variation and change in styling of the chair, with the chair being characterized by an open region beneath the seat and having high legs.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances some features of the invention will be used without a corresponding use of other features. Accordingly, it is appropriate that the claims be construed broadly and in a manner consistent with the spirit and scope of the invention herein.

I claim:

1. In a reclining chair, a support including substantially horizontal side rails extending approximately at seat level, a back-rest movably mounted on said support for movement into various reclined positions, a seat movably mounted on said support for movement into various inclined positions, a leg-rest, an arm having its lower end operatively connected to said leg-rest and pivoted on said seat to mount said leg-rest for movement into various elevated and extended leg-supporting positions, said arm being dimensioned such that said lower end is disposed above the under surface of said side rails of said support, and means operatively connected to said seat and leg-rest and controlled from said back-rest for coordinating movement of said seat and leg-rest to reclining movement of said back-rest, said means being substantially accommodated within the vertical extent and length of said seat and said side rails of said support and including a double-arm lever pivotally mounted intermediate its ends on said seat for turning movement, a first connecting link extending lengthwise of said seat and having one end pivotally connected to said arm at a point adjacent to and spaced below the pivotal mount of said arm on said seat whereby a forward thrust to said first connecting link is effective to impart movement to said leg-rest, the other end of said first connecting link being pivotally connected to one arm of said double-arm lever whereby said turning movement of said double-arm lever imparts said forward thrust to said first connecting link, and actuating means extending substantially lengthwise of said seat and said side rails of said support and having pivotal connections respectively to said back-rest and to the other arm of said double-arm lever, said actuating means being displaceable relative to said support in response to said reclining movement of said back-rest such that said other arm of said double-arm lever turns in a direction whereby said one arm imparts said forward thrust to said first connecting link to move said leg-rest into said various elevated and extended leg-supporting positions.

2. In a reclining chair, a support including substantially horizontal side rails extending approximately at seat level, a back-rest movably mounted on said support for movement into various reclined positions, a seat movably mounted on said support for movement into various inclined positions, a leg-rest, an arm having its lower end operatively connected to said leg-rest and pivoted on said seat to mount said leg-rest for movement into various elevated and extended leg-supporting positions, said arm being dimensioned such that said lower end is disposed above the under surface of said side rails of said support, and means operatively connected to said seat and leg-rest and controlled from said back-rest for coordinating movement of said seat and leg-rest to reclining movement of said back-rest, said means being substantially accommodated within the vertical extent and length of said seat and said side rails of said support and including a double-arm lever pivotally mounted intermediate its ends on said seat for turning movement, a first connecting link extending lengthwise of said seat and having one end pivotally

connected to said arm at a point adjacent to and spaced below the pivotal mount of said arm on said seat whereby a forward thrust to said first connecting link is effective to impart movement to said leg-rest, the other end of said first connecting link being pivotally connected to one end of said double-arm lever whereby said turning movement of said double-arm lever imparts said forward thrust to said first connecting link, and actuating means extending substantially lengthwise of said seat and said side rails of said support and having operative connections respectively to said back-rest and to the other arm of said double-arm lever whereby reclining movement of said back-rest is effective to achieve movement of said seat and leg-rest, said actuating means including a displaceable member, means mounting said displaceable member on said seat for rearward movement relative to said double-arm lever, means operatively connected to said displaceable member and to said back-rest to effect said rearward movement in response to said reclining movement of said back-rest, and a second connecting link coupling said displaceable member to said other arm of said double-arm lever for effecting said turning movement.

3. In a reclining chair, a support, a back-rest pivoted on said support for movement into various reclined positions, a seat pivoted on said support for movement into various inclined positions in coordination with said back-rest, a leg-rest pivoted adjacent the forward end of said seat for movement into various extended and elevated positions in coordination with said back-rest, a double-armed lever having a pivotal mount intermediate its ends on said seat and including first and second arms, a first connecting link having respective pivotal connections to said first arm of said double-armed lever and to said leg-rest for moving the latter into said extended and elevated positions in response to turning movement of said first arm about said pivotal mount in a first direction, a seat guiding and coordinating linkage having a driving connection from said back-rest for moving said seat into said inclined positions in response to movement of said back-rest, and a second connecting link having respective pivotal connections to said second arm of said double-armed lever and to said seat guiding and coordinating linkage and movable relative to said support in response to actuation of said seat guiding and coordinating linkage for turning said second arm about said pivotal mount in the opposite direction to impart said turning movement to said first arm in said first direction.

4. In a reclining chair, a support including substantially horizontal side rails extending approximately at seat level, a back-rest movably mounted on said support, a seat pivotally mounted on said side rails, a leg-rest pivotally mounted on the forward end of said seat, and means operatively connected between said seat, leg-rest and back-rest for coordinating movement of said seat and leg-rest to reclining movement of said back-rest, said means being substantially accommodated within the vertical extent and length of said seat and side rails and including a lever arm pivotal adjacent its upper end on the forward end of said seat and supporting said leg-rest from its lower end, said lower end of said lever arm being disposed above the undersurface of said side rail, a link extending substantially lengthwise of said seat and side rails and pivotally connected at its forward end to said lever arm at a point adjacent to the pivot for said lever arm, and actuating means extending substantially lengthwise of said seat and side rails and having pivotal connections respectively to said back-rest and to said link whereby upon reclining movement of the back-rest said leg-rest is brought to a raised position, said actuating means including a double-arm lever pivoted on said seat and having its arms accommodated substantially within the vertical extent of said seat, means pivotally connecting one arm of said double-arm lever to said link, and means operatively connecting the other arm of said double-arm lever to said back-rest, including a displaceable member, means mounting said displaceable member on said seat for rearward movement relative to said double-arm lever, means operatively connected to said displaceable member and to said back-rest for effecting said rearward movement in response to said reclining movement of said back-rest, and link means coupling said displaceable member to said other arm of said double arm lever for pivoting the latter in a direction appropriate to elevate said leg-rest in response to said rearward movement of said displaceable member.

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