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RECLINING CHAIR

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Fig. 1.

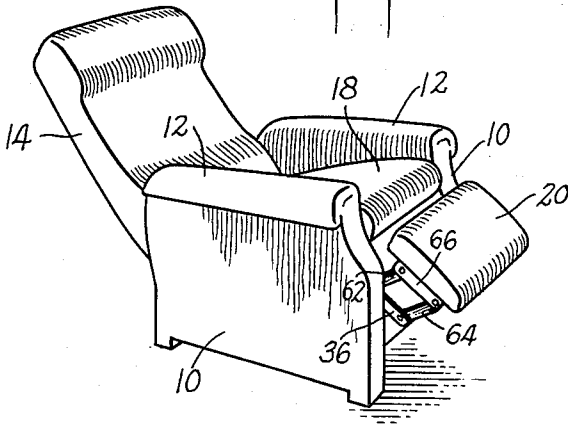


Fig. 3.

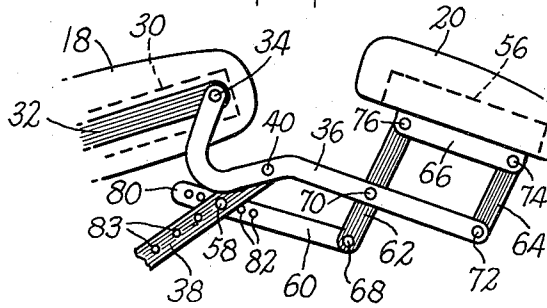
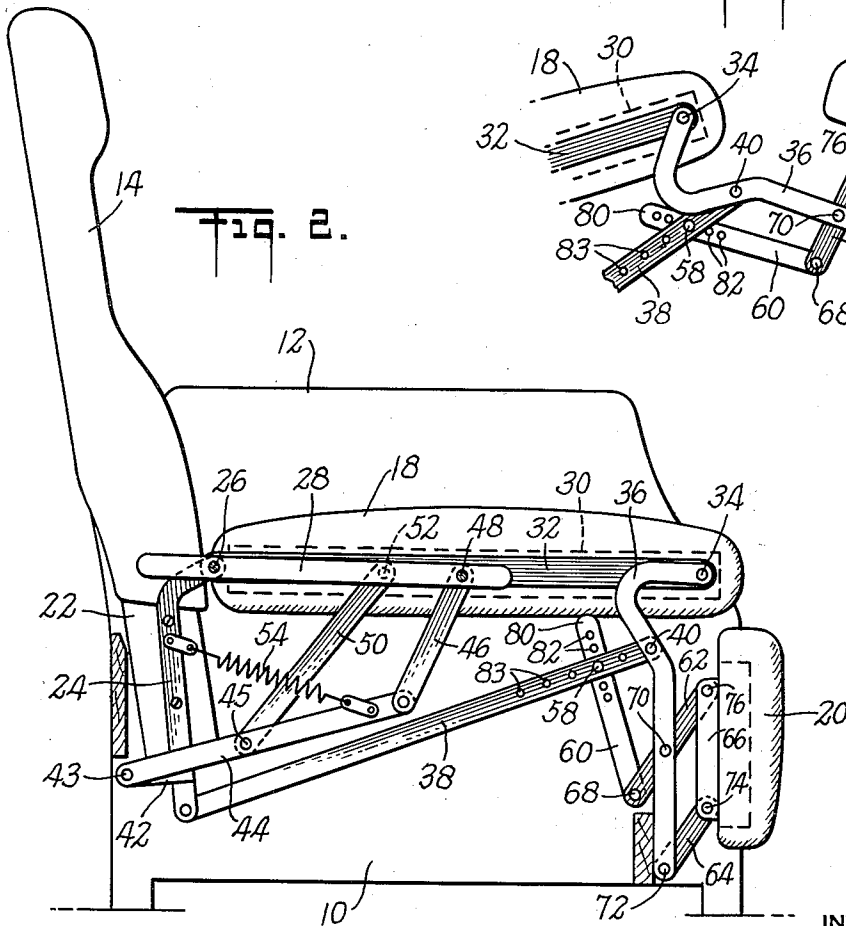


Fig. 2.



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## RECLINING CHAIR

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2 Claims. (Cl. 155—106)

This invention relates to chairs and more particularly to reclining chairs having a relatively movable leg-rest.

Prior to the present invention various types of reclining chairs with movable leg-rests have hereto been proposed to provide comfort to the chair user. While the better of these chairs provided comfort to some users they did not satisfy everyone. The cause of dissatisfaction was the general practice of pivotally mounting the leg-rest directly on the front portion of the chair seat. When a chair with such a leg-rest was placed in a reclining position the pivoted leg-rest abutted the front end of the seat cushion as an extension thereof providing a limited and often insufficient length of reclining surface. A person of average height using the chair found his feet and the lower part of his legs extending beyond the end of the leg-rest. This lack of support naturally made the chair occupant uncomfortable. To overcome this difficulty an extendable leg-rest was provided. However, the operating means for such extendable leg-rests were of complicated construction, expensive to manufacture and not readily adaptable to existing reclining chairs.

Accordingly it is an object of the present invention to provide an improved operating mechanism for an extendable leg-rest used on reclining chairs that is of simple construction and economical to manufacture.

It is also an object of this invention to provide a leg-rest extension apparatus that may be used advantageously with control linkage used on existing reclining chairs.

It is a further object of this invention to provide an extendable leg-rest arrangement that is movable to several forward projected positions so that a chair user of any height may position the footrest so as to afford him the greatest comfort.

In the accompanying drawings a preferred embodiment of the present invention is shown and the same described in detail in this specification. However it is to be understood that the drawings and description are not intended to be either exhaustive or limiting of the invention, but, on the contrary, are for the purpose of illustrating and describing the invention in order that others skilled in the art may so fully understand the invention, its principles and the application thereof, that they may embody it and adapt it in numerous forms, each as may be best suited to the requirements of its particular use.

In the drawings:

Figure 1 is a perspective view of a chair adjusted to a reclining position and showing the forward projection of the leg-rest arrangement in accordance with the present invention;

Figure 2 is a side elevational view of the reclining chair of Figure 1 in its upright position with the leg-rest retracted and showing the operating mechanism for extending the leg-rest when the chair is adjusted to a reclining position; and

Figure 3 is a side elevational view of the leg-rest operating mechanism of Figure 2 but in its extended position.

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Referring now to the drawings, one embodiment of the invention is shown applied to a reclining chair having control linkage of the type illustrated and described in a copending application for U.S. Letters Patent of John J. Barabas, Serial No. 560,965, filed January 24, 1956, now Patent No. 2,892,484. Suffice it to state herein that the chair shown in Figure 1 comprises a frame arrangement having spaced apart side portions 10 forming the sides and arms 12 of the chair with cross struts, not shown, connecting these side portions to form a rigid structure. Located between the side portions 10 of the frame is a backrest 14, a seat 18 and a leg-rest 20. The backrest 14 and seat 18 are mounted between the frame portions 10 and controlled by a linkage which permits movement of said elements to various reclining positions between that shown in Figure 1 and the erect position of Figure 2. To this end, each frame portion 10 has a side frame plate 28 of strap iron on which the backrest 14 and seat 18 are mounted to rock about the common axis through the fixed pivot 26. While only one linkage arrangement is illustrated in Figure 2 and described in this specification, it will be understood that similar linkage arrangements are preferably provided on both of the spaced side portions 10 of the chair frame.

The backrest 14 has an extension 22 depending therefrom and a rigid strap iron backrest lever 24 is attached to the side of the extension 22. The upper portions of this backrest lever 24 is curved and pivotally connected at a fixed pivot 26 to the strap iron side frame plate 28 for rocking movement between the position illustrated in Figure 1 and that illustrated in Figure 2. Seat 18 is firmly fixed to a wood frame 30 and attached on the side of frame 30 is a seat mounting plate 32 formed of strap iron. The rear portion of this seat plate 32 is also pivotally connected to the side frame plate 28 at the fixed pivot 26 so that the seat 18 is adapted to be tilted from the position illustrated in Figure 2 to that illustrated in Figure 1. A leg-rest lever 36 is preferably pivotally mounted at 34 on the front portion of seat 18. The upper portion of the leg-rest lever 36 is curved and a strap iron thrust link 38 is connected by a pivot 40 to this curved portion of the leg-rest lever 36. The other end of the thrust link 38 is pivotally connected to the lower depending end portion of the backrest lever 24.

An intermediate linkage is provided between the chair frame 10 and the seat 18 for tilting the seat upwardly when the back 14 is lowered. The linkage comprises an intermediate link 44 having one end pivotally connected at 43 to a tab projecting rearwardly from the back plate 24 and its opposite end pivotally connected to one end of a control link 46. The other end of this control link 46 is connected by a pivot 48 to the side frame plate 28. A connecting link 50 is connected to the seat strap 32 by pivot 52 and to the intermediate link 44 by pivot 45. A coil spring 54 is fastened to the forward portion of the intermediate link 44 and to the upper portion of the backrest lever 24. This spring tends to hold the linkage in a position whereby the chair is in an upright position. However, the pull of the spring 54 may be overcome as desired by the user to depress the chair into a selected position of recline.

In accordance with the present invention a novel linkage mechanism is provided for mounting the leg-rest 20. The linkage comprises a guiding link 60, an extending link 62, a leg-rest connecting link 64, and a leg-rest mounting plate 66, said linkage co-acting with the chair reclining mechanism. Guiding link 60 is pivotally connected in its upper end portion at 58 to the thrust link 38. The lower end of the guiding link 60 is connected to one end of the extending link 62 by a pivot 68. The extending link 62 is directed forwardly and upwardly and is pivotally connected at an intermediate point 70 to the

leg-rest lever 36. The forward end of the extending link 62 is pivotally connected at 76 to the upper end of the leg-rest mounting plate 66. The connecting link 64 is fastened by pivot 72 to the lower end of the leg-rest lever 36. The other end of the connecting link 64 is pivoted at 74 to the lower end of the leg-rest mounting plate 66. This mounting plate 66 is fixedly attached to the frame 56 of the leg-rest 20.

In the upright chair position, as shown in Figure 2, it will be noted that the extending link 62 and the leg-rest lever 36 are pivotally connected at an upper angle of less than ninety degrees.

When the chair is moved from an upright to a reclining position the thrust link 38 urges the leg-rest lever 36 forward as shown in Figure 3. Since the upper end of the leg-rest lever 36 is pivoted to the seat plate 32 at 34, the lower portion of the leg-rest lever swings upwardly and forwardly and carries with it the connecting link 64, the extending link 62 and the leg-rest 20. As the leg-rest lever 36 moves upwardly the leg-rest guiding link 60 rocks the extending link 62 on its pivot 70 so that the leg-rest 20 is moved forwardly away from the leg-rest lever 36. This action causes the leg-rest 20 to be moved to a position more forwardly and upwardly than would be the case if it were mounted directly on the leg-rest lever 36. It is obvious that the same forward extension of the leg-rest 20 will not provide every chair user with the maximum of comfort. Short persons do not care to have the leg-rest 20 as far away from the end of seat 18 as taller persons. It is therefore necessary to allow the chair user to select the forward projection of the leg-rest 20 that gives him the greatest comfort. To accomplish this a series of positions 82 are provided in the upper portion 80 of the guiding link 60 and another series of positions 83 in the thrust link 38. To project the leg-rest 20 further forwardly than normally required the pivotal connection at 58 is moved to one of the rear positions 83. Positions 82 provide means for easy alignment of the pivot 58 in the desired position 83 as well as means of locating the leg-rest 20 so that it is in the proper relationship to the seat 18 when the chair is in an upright position. The location of pivot 58 may be permanently fixed when the mechanism is assembled, or removable connections may be used allowing each user to select his own preferred position.

It is to be understood that the reference to iron and wood in describing the composition of the components of the illustrated mechanism is not intended to limit the scope of our invention. Such reference is merely descriptive of the illustrated embodiment. Any equivalent material may obviously be substituted therefor.

We claim:

1. A reclining chair having spaced side frames, a seat mounted between the side frame and a backrest pivotally

mounted between the spaced side frames for rocking movement to a reclining position, said backrest having an extension depending below its pivotal mounting, a leg-rest lever pivotally connected to the seat and depending downwardly therefrom, a thrust link extending between the depending extension of the backrest and said leg-rest lever and pivotally connected thereto for rocking the leg-rest lever upwardly on its pivotal mounting when the backrest is rocked to a reclining position, a leg-rest, and leg-rest extension means comprising a pair of links extending between the leg-rest and leg-rest lever and pivotally connected thereto, one of said pair of links extending rearwardly of the leg-rest lever, a guiding link extending between the thrust link and the rearward portion of said one link to provide a pantograph which expands to project the leg-rest forwardly from the seat as the leg-rest lever is moved upwardly by the thrust link, and selective connection positions in said guiding link and said thrust link whereby the forward projection of said leg-rest may be varied.

2. A reclining chair having an improved leg rest, said chair comprising a frame, a seat and a backrest each pivoted to said frame for swinging movement to between an upright and a reclining position, said backrest having an extension depending below its pivotal mounting, a leg rest platform, a leg-rest lever pivotally connected to the seat and depending downwardly therefrom, a thrust link extending between the depending extension of the backrest and said leg-rest lever and pivotally connected thereto for swinging the leg-rest lever upwardly on its pivotal mounting when the backrest is moved to a reclining position, and leg-rest extension means comprising a pantograph and including a pair of support links extending between said leg-rest platform and leg-rest lever and pivotally connected thereto, one of said pair of support links extending rearwardly of the leg-rest lever, and a guiding link positioned generally parallel to and behind said leg rest lever and extending between said thrust link and said rearward portion of said one support link, said thrust link and said guiding link having adjustable mutual connection positions comprising a series of pivot holes in at least one of said links, whereby the position of said leg-rest platform relative to said seat may be varied.

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