June 26, 1962 P. S. FLETCHER 3,041,105

RECLINING CHAIRS

Original Filed Dec. 8, 1955 4 Sheets-Sheet 1

Fig. 1.

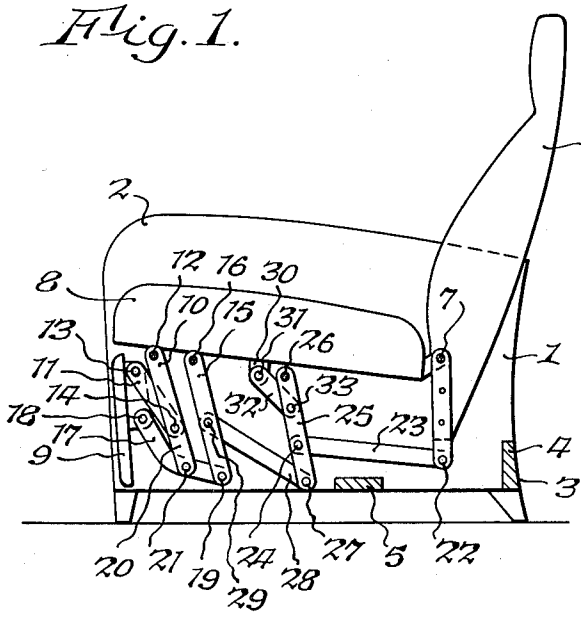

Fig. 1a.

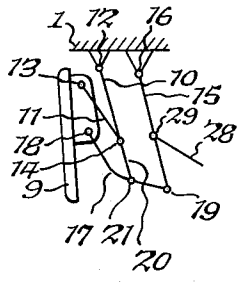

Fig. 2.

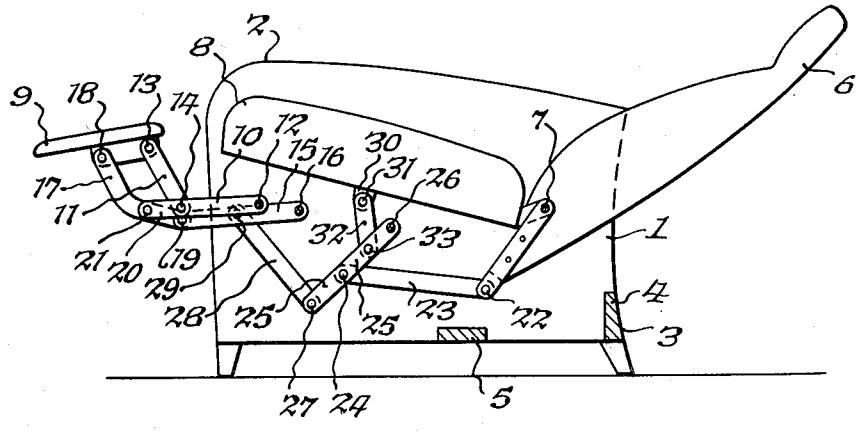

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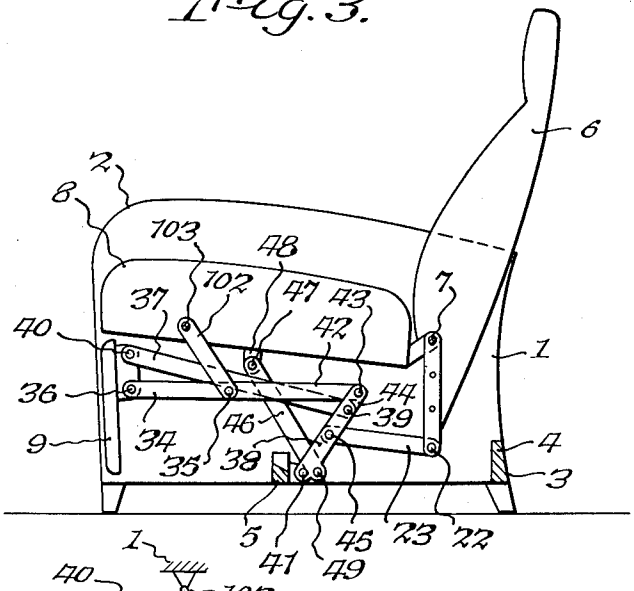
Fig. 3.



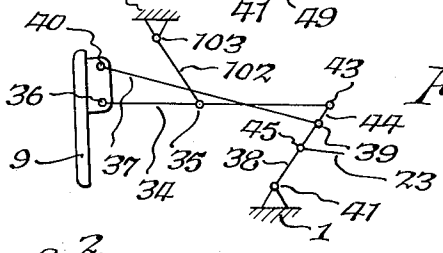


Fig. 3a.

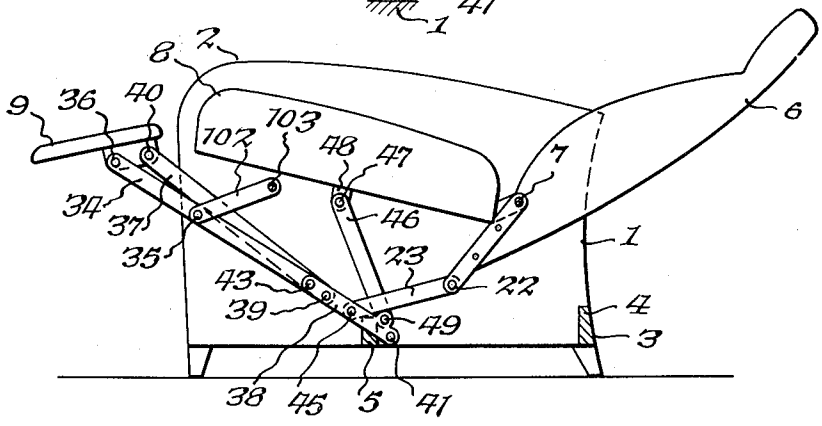


Fig. 4.

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Fig. 5.

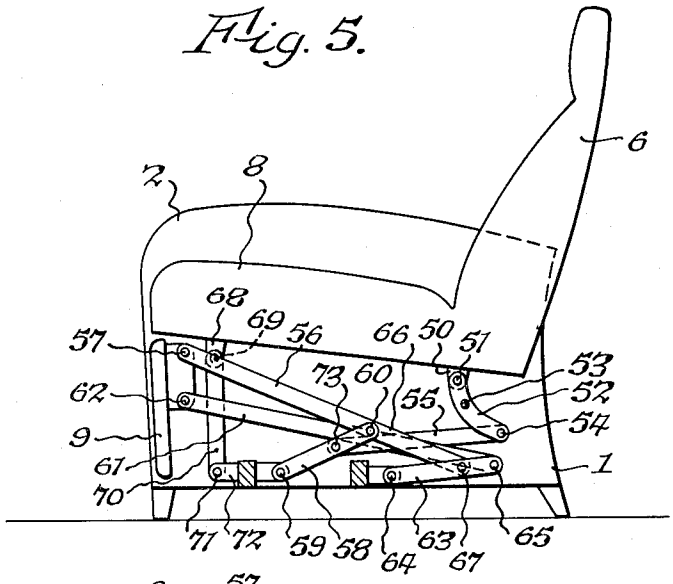
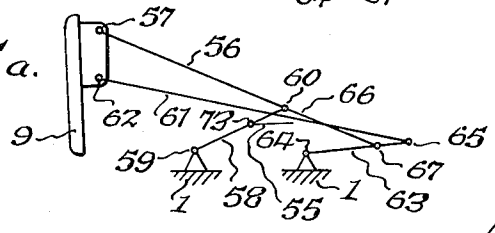


Fig. 5a.



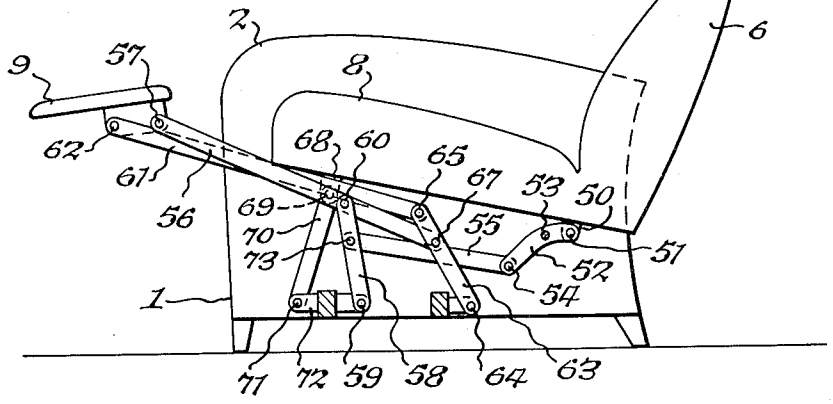


Fig. 6.

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Fig. 7.

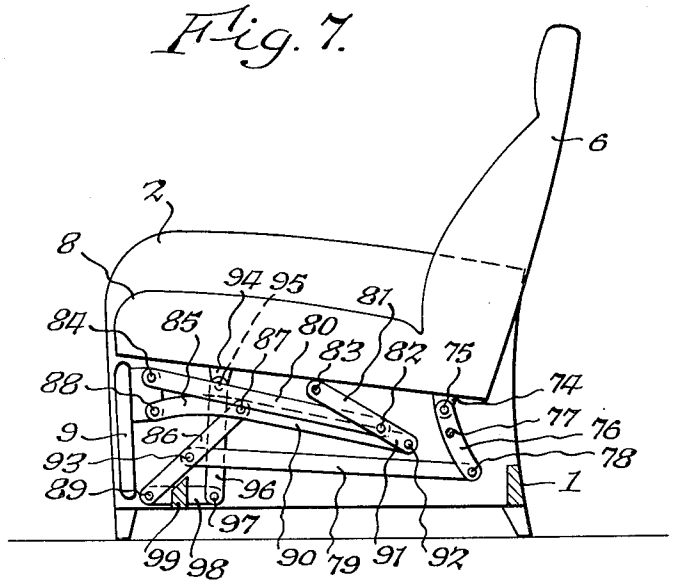

Fig. 7a.

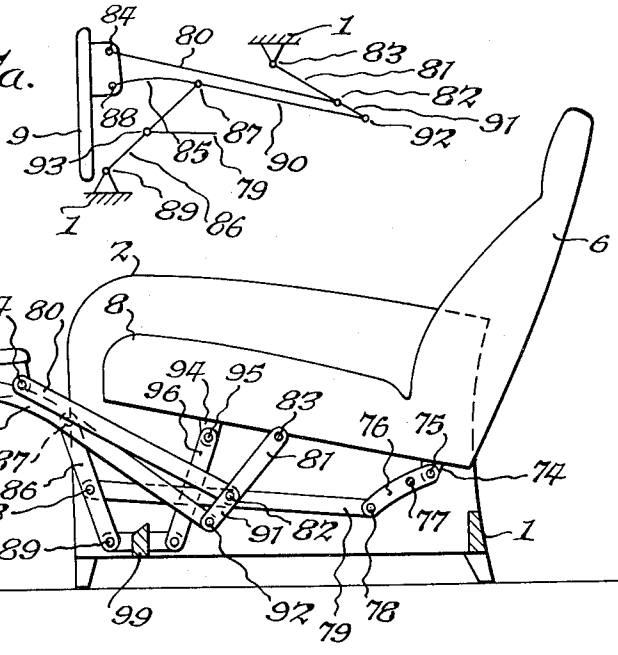

Fig. 8.

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United States Patent Office 3,041,105 Patented June 26, 1962

3,041,105

RECLINING CHAIRS

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Original application Dec. 8, 1955, Ser. No. 551,876. Divided and this application Jan. 21, 1959, Ser. No. 796,189

11 Claims. (Cl. 297—85)

This invention relates to chairs having adjustable leg-supporting rests or platforms, and more particularly to a chair which may be tilted or adjusted into a position in which the person occupying the chair is in different reclining positions, and with which the leg rest is adjustable upwardly into a leg-supporting position automatically when the chair is adjusted into a reclining position.

This application is a division of my application Serial No. 551,876, filed December 8, 1955, which application has now become abandoned.

An object of the invention is to provide a chair with an adjustable leg-supporting rest or platform, wherein the leg-supporting platform will be automatically elevated into leg-supporting position when the chair is operated into a position to support a person in a more or less reclining position; with which the elevation of the leg-supporting platform will be effected automatically without any special action on the part of the person reclining in the chair, and with which the leg-supporting platform or foot rest will be automatically moved into an ineffective position automatically when a person reclining in the chair moves the seat and back into a normal chair position; and which will be relatively simple, dependable, practical and inexpensive.

Other objects and advantages will be apparent from the following description of several embodiments of the invention, and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

FIG. 1 is a side elevation of a chair constructed in accordance with this invention, but having the front side in the view omitted in order to show interior linkages;

FIG. 1*a* is a schematic diagram illustrating the basic linkage which is employed to elevate the leg-supporting platform or rest;

FIG. 2 is a similar view but with the chair in reclining position and the leg rest elevated;

FIG. 3 is a side view similar to FIG. 1, but showing a modification of the novel linkage for elevating the leg-supporting platform;

FIG. 3*a* is a schematic diagram illustrating the basic linkage which is employed in elevating the leg-supporting platform separate from the other linkage employed in the chair;

FIG. 4 is a view similar to FIG. 3, but with the chair in reclining position and the leg rest elevated;

FIG. 5 is a view similar to FIG. 1, but illustrating still another modification thereof;

FIG. 5*a* is a schematic diagram illustrating the basic linkage for elevating the leg-supporting platform separately from the other linkage employed in the chair;

FIG. 6 is a view similar to FIG. 5, except that the chair is in reclining position, with the leg-supporting platform elevated.

FIG. 7 is a view similar to FIG. 1, but illustrating still another embodiment of the invention;

FIG. 7*a* is a schematic diagram illustrating the basic linkage employed in this embodiment for elevating the leg support; and

FIG. 8 is a view similar to FIG. 7, except that the chair is in the reclining position with the leg rest elevated into its effective position.

In the embodiment of the invention illustrated in FIG. 1, 1*a* and 2, the improved chair includes a support **1** having upstanding sides **2** on a base **3**, the base including members **4** and **5** connecting the upright side members **2**. Disposed between the side members and above the base is a back rest **6** which is pivotally supported on pivot pins **7** carried by the upright side members **2** at each side of the back rest. The chair also includes a seat **8** which is pivotally supported at its rear end also on the pivot pins **7** so as to extend forwardly from the lower part of the back rest **6**. A leg-supporting platform or rest **9** is disposed between the upright members **2** below the forward end of the seat **8** while the chair is in its normal or sitting position, with the back rest upright.

The leg-supporting rest or platform **9** is adjustable on the support **1** in the following manner: there are two pairs of links which are separately connected to the leg support **9** and to the support **1**. One pair of links includes links **10** and **11**, the link **10** being pivoted at **12** to the support **1** and the other link **11** being pivoted at **13** to the leg platform or support **9**. These two links **10** and **11** are pivotally connected together at **14**. The other pair of links includes a link **15** which is pivoted at **16** to the support **1** and a link **17** which is pivotally connected at **18** to the leg support or platform **9**. The links **15** and **17** are always pivotally connected together by pin **19**. In this embodiment of the invention the link **10** of the first pair of links is provided with an extension **20** beyond the pivot **24**, and this extension at its free end, is pivoted at **21** to the link **17** at a point on link **17** between the pivotal connection to the leg-supporting platform and the pivot **19** between the links of that pair. The two pairs of links are provided at each side of the seat **8** and the connections **13** and **18** to the leg-supporting platform are arranged approximately directly above one another, as shown in FIGS. 1 and 1*a* when the leg-supporting platform is in its inactive position below the front end of the seat **8**. The pivots **12** and **16** are carried by the adjacent side upright **2**.

To operate this basic linkage, the back rest **6** extends downwardly below its pivotal support **7** and is pivoted at **22** to one end of a connecting link **23**, the other end of the link **23** being pivotally connected at **24** to a guiding link **25** which is generally upright and pivoted at its upper end by a pin **26** to the adjacent upright side member **2** of the support **1**. The link **23** is connected to this guiding link **25** intermediate of the ends of the latter and the lower end of the link **25** is pivoted at **27** to one end of an actuating link **28**, the other end of which is pivoted by pin **29** to one of the links of the pairs of links, such as to an intermediate point on the link **15**. The seat **8** is provided on its lower face with a lug **30** which depends from the seat and is pivoted at **31** to one end of a link **32**, the other end of which is pivotally connected at **33** to the guiding link **25** between the connection of that link to the link **23** and the pivot **26** on the upright support **2**. This link **32** connects the seat **8** well forwardly from the pivot **7** of the seat, and through its connection to the guiding link **25** serves to support the forward part of the seat **8** from descent beyond the normal position shown in FIG. 1.

When the chair is intended to be used in the manner of an ordinary chair, the parts are in the position shown in FIG. 1. If now one desires to recline in the chair, one may tilt backwardly against the back rest **6**, which rocks the back rest from the position shown in FIG. 1 to the position shown in FIG. 2, and during this rocking movement of the back rest **6** the lower end of the back rest acts through the link **23** to rock the guiding link **25** clockwise in FIGS. 1 and 2, which performs two functions, one of which is to push endwise on the link **32** which elevates the forward end of the seat **8** by rocking

it on its pivot 7 so as to be rearwardly and downwardly inclined at its rear edge, and the other of which is to push endwise on the actuating link 28.

Since the actuating link is connected to the link 15 of one of the pairs of links that supports the leg-supporting platform 9, this endwise push on the link 28 which is imparted by the link 25 will serve to rock the links 15 and 17 to the left in FIG. 1. Since the pairs of links are connected together by extensions 20, the action of both pairs of links at each side will shift the rest 9 upwardly and forwardly into an inclined position in front of the forward end of the seat 8. Thus, a person reclining in the chair while in this position will have the leg-supporting platform elevated into a position to support the legs in a comfortable, reclining position. When one desires to return to an upright position where the chair is used in a normal chair position, one merely rocks his body forwardly in the chair which releases the pressure on the back rest 6 and the weight of one's body on the seat returns the mechanism to sitting position at the same time retracting the leg-supporting platform 9 back into the inactive position shown in FIG. 1.

Referring next to the embodiment of the invention shown in FIGS. 3, 3*a* and 4, the back rest 6 is pivoted at 7 to the support 1, as in FIGS. 1 and 2, and the seat 8 is pivoted on the same pivot 7. The back rest 6 descends below its pivot 7, as in FIGS. 1 and 2, and is similarly connected at its lower end by pivot 22 to the connecting link 23. The leg-supporting platform or rest 9 is disposed below the front edge of the seat 8, and it is also supported on two pairs of links at each side thereof, which pairs of links are generally similar to those illustrated in FIGS. 1 and 2. One of these links is link 102, which is pivoted at one end by pivot 103 to the support 1, and the other link 34 of that pair is pivoted by pin 35 to the other end of the link 102. This link 34 is also pivoted at 36 to the leg support 8. The other pair of links is formed of links 37 and 38 which are pivoted together by pin 39. Link 37 is pivotally connected by pin 40 to the leg support 9 in a position above the pin 36, and the link 38 is pivotally connected by pin 41 to the support 1. The link 34 of one pair of links has an extension 42 beyond the pivot 35 that connects the links of that pair together, and this extension 42 is pivotally connected at 43 to an extension 44 of the link 38.

The connecting link 23 is pivotally connected by pin 45 to the lever 38 intermediate of its pivot pins 41 and 39, so that when the back rest 6 is tilted rearwardly, the connecting link 23 will be moved endwise and rock the lever 38 of the second pair of links in a direction to push the leg rest 9 forwardly. A control link 46 is pivoted at 47 to a lug 48 depending from the lower face of the seat 8, and at its other end the link 46 is pivoted at 49 to the link 38. Thus, at the same time that the guiding link 23 rocks the lever 38 forwardly to elevate the leg rest 9 and tilt it into an inclined position, the lever 38 of the second pair of links, acting through link 46, will elevate the seat at its forward end by rocking it on the pivot 7. At the same time that the leg rest is moved forwardly by the rocking of link 38, the link 34 will be pushed forwardly at a faster rate than the pivot 40 because of the fact that the pivot 43 between the link 38 and the first pair of links will move the lower pivot 36 on rest 9 more rapidly than the pivot 40. This is because the pivot pin 43 which is on an extension of the link 34 is farther from the rocking pivot 41 than the pivot 39, which is connected through the link 37 to the upper pivot 40 on the leg rest. Thus, in FIGS. 3, 3*a* and 4, whenever the back rest is tilted backwardly, the leg rest 9 will be moved upwardly and forwardly into the position shown in FIG. 4.

Considering next the embodiment shown in FIGS. 5, 5*a* and 6 the arrangement is generally the same as that of FIGS. 1 to 4. In this embodiment however, the back rest 6 and the seat 8 are rigidly connected together as one unit, so that when the back rest 6 is tilted rearwardly, the rearward edge of the seat 8 will be tilted downwardly. For this purpose the combined seat and back rest have a depending lug 50 which is pivotally connected by pin 51 to one end of an arcuate lever 52 which is, in turn, pivotally mounted on the support 1 by a pin or rod 53. The lever 52 extends downwardly and rearwardly from this connection to the combined seat and back rest, and at its free end is pivotally connected by pin 54 to one end of a connecting link 55.

The leg rest or support 9 is disposed below the front end of the seat 8, as in FIGS. 1 to 4, and it is also mounted by two pairs of links at each side of the rest 9. One pair of links which support the leg rest 9 includes a link 56 which is pivoted by pin 57 to the leg rest 9. The other link 58 of that pair is pivotally connected at one end by pin 59 to the support 1, and the other end of link 58 is pivotally connected by hinge 60 to the link 56. The other pair of links at each side of the seat includes a link 61 which is pivotally connected at one end by the pin 62 to the leg rest 9 below the pivot 57. The other link 63 of that pair is pivotally connected at one end by the pin 64 to the support 1, and at its other end is connected by the pin 65 to the other end of the link 61. The link 56 of the one pair has an extension 66 beyond its hinge connection 60, and at its free end is connected by a pivot pin 67 to the link 63 between its ends.

The forward portion of the seat 8 is provided with a depending lug 68 which is connected by pivot pin 69 to one end of the control link 70, the other end of which is pivotally connected by pin 71 to a lug 72 on the support 1. The end of the connecting link 55 that is opposite from its connection to pin 54 is pivotally connected at 73 to the link 58 of the first pair of links at a point intermediate the ends of that link. With this arrangement, whenever the combined back rest 6 and seat 8 is moved rearwardly, it will rock the lever 52 clockwise in FIGS. 5 and 6 and thus push the connecting link 55 endwise, to the left in FIGS. 5 and 6. When the connecting link 55 is pushed endwise, it acts through its pivot pin 73 on the lever 58 of the first pair to move the link 56 endwise, which pushes the upper edge of the leg rest 9 upwardly and forwardly.

At the same time, the link 61, which is connected to the lower pivot on the leg rest 9, is also pushed forwardly and upwardly in an endwise direction, because of the fact that the link 63 of the second pair of links is rocked in a counterclockwise direction in FIGS. 5 and 6, but since the connection from the link 61 to the link 63, which is at the pivot 65, is farther from the rocking axis 64 than is the extension 66 of the link 56, the lower part of the leg rest 9 will be moved proportionally faster than the pivot pin 57, and thus the leg rest 9 will not only be moved upwardly and forwardly, but will be rocked into an inclined position, as shown in FIGS. 5 and 6. When the combined seat and back rest are rocked or moved forwardly, a reverse action in the linkage takes place, and for the same reasons and by the same mechanisms, the leg rest 9 is moved downwardly and rearwardly into its normal, upright position beneath the front edge of the seat 8.

Considering next the embodiment or modification shown in FIGS. 7, 7*a* and 8, the seat 8 and the back rest 6 are made in one unit, as explained in FIGS. 5 and 6. This unit of seat and back rest is disposed over the support 1 between the side members 2. The seat and back rest unit is provided below the back rest portion with a depending lug 74 which is pivoted by pin 75 to one end of a lever 76, which is pivoted on pin 77 carried by the side members 2. The lower end of this lever 76 is connected by a pin 78 to one end of a connecting link 79. The leg-supporting rest or platform 9 is normally disposed in an upright position beneath the forward edge of the seat 8, and it is supported at each side by two

pairs of links which are shown schematically in FIG. 7a. One pair of links at each side includes links 80 and 81 which are hinged together at 82. The link 81 is also pivoted at one end by pin 83 to the support 1, and the other link 80 is pivotally connected by pin 84 to the leg rest 9. The other pair of links at each side includes a link 85 and a link 86 which are pivotally connected together by a hinge or pin 87. The link 85 is also pivotally connected by pin 88 to the leg rest 9 below the pin 84. The link 86 is pivotally connected by pin 89 to the support 1. The link 85 is extended beyond the hinge 87 to form an extension 90, and the link 81 is also extended beyond its hinge 82 to form an extension 91. The forward part of the seat 8 is provided with a depending lug 94, which is pivotally connected by pin 95 to one end of a link 96, the other end of which is pivoted at 97 to a lug 98 on the support 1.

The connecting link 79 is pivotally connected by pin 93 to the link 86 intermediate of its ends. When one desires to recline in this chair, the combined seat and back rest is pushed rearwardly into the position shown in FIG. 8, which causes a rocking of the lever 76 on its pivot pin 77 to lower the back rest 6 and push the connecting link 79 endwise to the left in FIGS. 7 and 8. This, in turn, rocks the link 86 counterclockwise in FIGS. 7 and 8, into the position shown in FIG. 8, and since this link 86 is hinged to the link 85, it causes the link 85 to move endwise and rock the leg rest 9 forwardly and upwardly into the position shown in FIG. 8. In view of the pivotally connected extensions 90 and 91, this endwise movement of the link 85 will cause a similar endwise movement of the link 80 to also move the leg rest from the normal position of FIG. 7 into the elevated and inclined position of FIG. 8. Since the pivot pin 82 is nearer the rocking axis of pin 83 than the pin 92 for any angular movement of the lever 81 which is caused by the extension 90, the link 80 will not be moved endwise as much as the link 85 with this extension 90, and thus the link 85 will, by its greater linear travel, tilt the leg rest 9 into an inclined position, as shown in FIG. 8.

At the same time that the leg rest is elevated to the position shown in FIG. 8, the seat 8 in moving rearwardly with the back rest will rock the link 96 clockwise in FIGS. 7 and 8, which slightly lowers the forward end of the seat 8 and continues to support the forward part of the seat 8. Since the link 96 is nearly vertical when the seat and back rest are in their normal chair position for sitting upright, any movement of the link 96 clockwise in FIGS. 7 and 8 will slightly lower the forward part of the seat 8, but as will be observed by a comparison of FIGS. 7 and 8, the pivot hinge 75 will move downwardly to a much greater distance than the pivot pin 95, so that the rear of the seat 8 as well as the back rest will be lowered more than the forward end of the seat 8, which will give the seat and back rest the desired reclining position. To move the seat and back rest back into the normal chair position, one merely pulls the seat and back rest forwardly into the FIG. 7 position.

It will be noted that the pivot pin 75 has moved past a vertical plane through the pivot 77 as the chair moved into its upright sitting position and, therefore, the weight of a person sitting in the chair will urge the lever 76 in a counterclockwise direction in FIG. 7, but this farther movement counterclockwise is limited by the engagement of the link 86 with a bar 99 on the base of the support 1. Thus, the seat and back rest remain in a stable position while one is sitting in the chair. It will be noted that when the seat and back rest are moved into their reclining positions, the pivot pin 75 will have passed through a vertical plane containing the axis of the pivot pin 77, so that the weight of a person in the chair will urge the lever 76 in a clockwise direction.

Stops and friction devices, known in the art and not shown, are used to limit the end positions of the seat and back rest and hold the linkage in any desired position.

It will be understood that various changes in the details and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat piovted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connection to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an intermediate part of one of said wo links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said further link being disposed forwardly of said one link.

2. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat pivoted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connection to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an intermediate part of one of said two links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating, when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said two links extending rearwardly nearly horizontally when the leg rest is in its retracted position below the seat.

3. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat pivoted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connection to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an

intermediate part of one of said two links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said two links crossing each other and said one link that is pivoted to said support extending somewhat rearwardly from its pivotal connections to said support while said leg rest is retracted beneath said seat.

4. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat pivoted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connecting to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an intermediate part of one of said two links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said links that are pivoted to said support both extending rearwardly from vertical positions while said leg rest is retracted beneath said seat.

5. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat pivoted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connection to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an intermediate part of one of said two links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said further link being disposed forwardly of said one link and both of said links that are pivoted to said support extending rearwardly from vertical positions while said leg rest is retracted beneath said seat.

6. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat pivoted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connection to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an intermediate part of one of said two links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said links extending nearly horizontally while the leg rest is retracted below said seat.

7. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between their sitting and tilted positions, a leg rest having a supporting face disposed adjacent and below the front of the seat when said seat is in its sitting position and with said supporting face facing forwardly, one guide link at each side of said seat pivoted at one end to said support, two links at each side of said seat pivoted to the free end of said one guide link at that same side of the seat at different distances from said one end of said one link, that one of said two links which is pivoted nearest to the pivoted end of said one guide link being pivoted at its other end to said leg rest near its upper edge, and the other of said two links being pivoted to the leg rest at a point below and spaced from the pivotal connection to the leg rest of the other of said two links, a further guide link pivoted at one of its ends to said support and at its other end to an intermediate part of one of said two links, and an actuating connection between one of said back rest and said seat and one of said links which is pivoted to said support, operating when said back rest and seat are moved into their said tilted positions, said links to advance said leg rest upwardly and forwardly to a position forwardly of and near the forward edge of said seat, with its supporting face uppermost, said one guide link that being pivoted to the support is pivoted at its lower end to said support and extending from its pivot to the support somewhat rearwardly therefrom while said leg rest is retracted to its position beneath said seat, and swinging in an upward and forward arc when the leg rest is advanced and elevated to a position in front of said seat.

8. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between upright and reclining positions, a leg rest disposed adjacent and below the front of said seat, two pairs of links at each side of said seat, the links of each pair being hinged together, one link of each pair being pivotally connected to the leg rest and the other link of each pair being pivotally connected directly to said support, said two pairs of links at each side of the seat being operatively interconnected through extensions of a link of each pair beyond its hinge to the other link of that pair, which extensions are pivotally connected together, and means operable automatically when the back rest is tilted and connected to said linkage for causing an operation of it to advance and elevate said leg rest when the back rest is moved into reclining position, and retracting it when the back rest returns to its upright position.

9. An adjustable chair comprising a support, a back rest and a seat mounted on said support to tilt between a sitting position and a tilted position in which the back rest moves rearwardly at its upper end and the front part of the seat is elevated relatively to its rear part, a leg rest disposed in an upright position beneath the front of the seat when the seat is in its sitting position, said chair having adjacent each side of said seat, two links pivoted to the leg rest by pivots that are at different levels when the leg rest is upright beneath the seat, and extending rearwardly from

the leg rest nearly horizontally, but crossing one another, one guide link pivoted at one end to said support and extending in a rearward direction therefrom, the free end of said guide link being pivoted to both of said two links at their rear ends and at different radial distances from the end of said guide link that is pivoted to said support, another guide link pivoted at one end to said support and at its other end to one of said two links at a part of the latter intermediate of its ends, and means connecting one of said seat and back rest with one of said links and operating the links to advance and elevate said leg rest to a position in front of said seat when the back rest and seat are moved into their tilted positions.

10. The chair as set forth in claim 9, wherein said another guide link also extends somewhat rearwardly from its pivotal connection to said support while said leg rest is retracted beneath said seat.

11. An adjustable chair comprising a support member, a seat member and back rest, said seat member and said back rest mounted on said support member to tilt between sitting and tilted positions, a leg rest disposed adjacent and below the front of said seat, a leg rest linkage including two pairs of links at each side of said seat, the links of each pair being hinged together, one link of each pair being operatively connected to said leg rest and the other link of each pair being pivotally connected to one of said members, the pivotal connection of one of said other links to a member being at the lower end of that said other link, the pairs of links at each side of said seat being operatively interconnected by a pivotal connection between one link of one pair and one link of the other pair to form two quadric linkages, one of said quadric linkages having said one of said members as one link thereof, and at least two opposite links in one of said quadric linkages crossing each other, and means connected to said linkage operable automatically when the back rest is tilted for causing an operation of said linkage to advance and elevate said leg rest when said back rest is moved into said tilted position.

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