March 11, 1941. H. LUCKHARDT ET AL 2,234,266

ADJUSTABLE RECLINING CHAIR

Filed April 1, 1939

Fig. 1

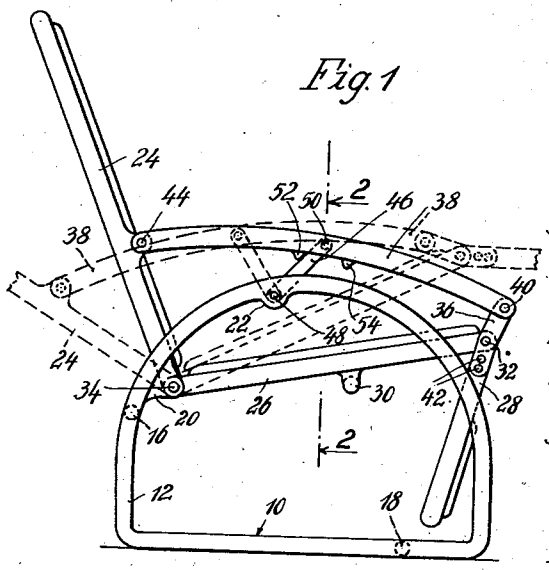



Fig. 2

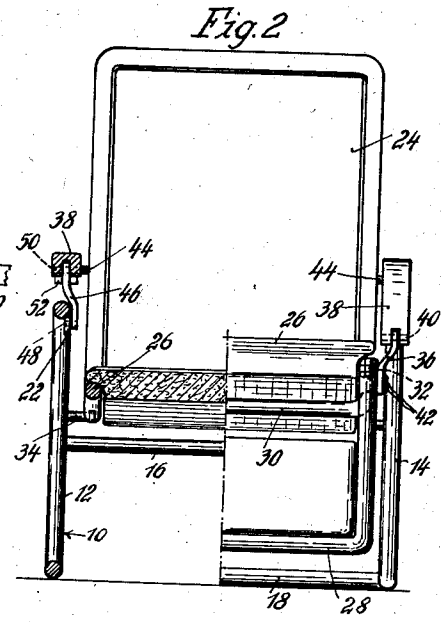



Fig. 3

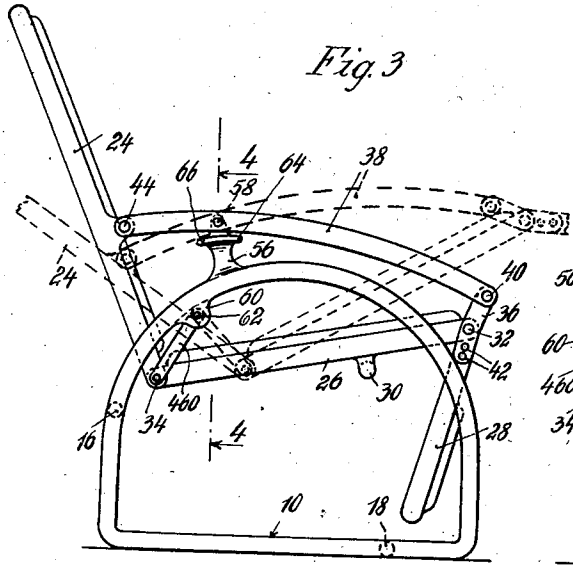
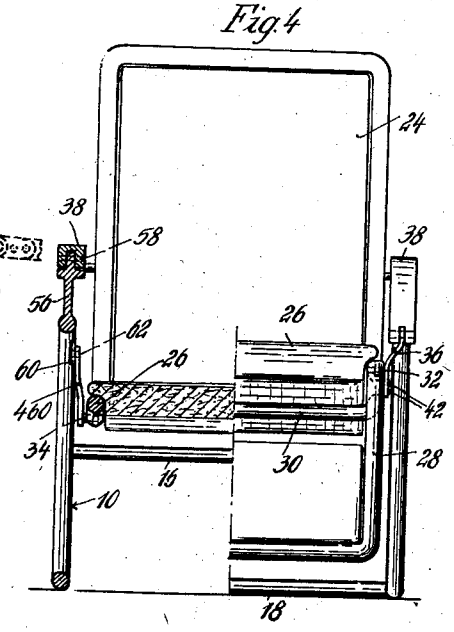



Fig. 4




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Patented Mar. 11, 1941 2,234,266

# UNITED STATES PATENT OFFICE

2,234,266

## ADJUSTABLE RECLINING CHAIR

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Application April 1, 1939, Serial No. 265,386
In Yugoslavia and Egypt April 9, 1938

10 Claims. (Cl. 155—166)

Our invention relates to an adjustable reclining chair, and more particularly to an adjustable reclining chair, in which a back-rest, a seat, and connecting link-means are pivotally interconnected with each other to form a polygonal structure with unequal sides, and wherein one point of the polygonal structure is pivoted to a support.

In our copending patent application Serial No. 253,410, filed on January 28, 1939, we describe an adjustable reclining chair, in which the movement of the members of the polygonal structure is controlled by at least one guiding link one end of which being pivoted to the support and the other end thereof being hinged to the long link of the connecting link-means being arranged below the seat.

One object of our invention is to provide a reclining chair of the above described type with controlling guiding links, in which, however, the connecting link-means are arranged above the seat, so that the space below the seat is free from any mechanism.

In order to carry out our invention into practice, we provide an adjustable reclining chair comprising: a support, a back-rest, a seat, a leg-rest, said seat extending between said back-rest and said leg-rest and being pivoted thereto, connecting link-means, one connecting link-means being arranged on each side of the chair, each of said connecting link-means including a short extension of the leg-rest and a long link hingedly connected with each other, the free end of said long link being pivoted to an intermediate point of the back-rest above the pivot point between the back-rest and the seat, said back-rest said seat and said connecting link-means forming a polygonal structure having unequal sides, one point of said polygonal structure being pivoted to said support, and guiding links, one guiding link being arranged on each side of the chair, one end of each of said guiding links being pivoted to said support at a point above the seat, the other end of each of said guiding links being pivoted to said polygonal structure.

The above mentioned objects and advantages as well as other objects and advantages will be more fully disclosed in the following specification reference being had to the accompanying drawing forming part of this specification, in which:

Fig. 1 is a side elevational view of a reclining chair according to our invention,

Fig. 2 is partly a front elevational view and partly a sectional view of the reclining chair, taken on line 2—2 of Fig. 1,

Fig. 3 is a side elevational view of a different embodiment of a reclining chair, and

Fig. 4 is partly a front elevational view and partly a sectional view of the reclining chair shown in Fig. 3, taken on line 4—4 of Fig. 3.

Referring now to Figs. 1 and 2, 10 generally indicates the support of the reclining chair comprising the two side frames 12 and 14 connected with each other by the two transverse rods 16 and 18. Each side frame has two lugs 20 and 22.

24 indicates a back-rest, 26 indicates a seat, and 28 indicates a leg-rest. The seat 26 extends between the back-rest 24 and the leg-rest 28 and is reinforced by a transverse rod 30. The front end of the seat is pivoted to the upper end of the leg-rest at 32, the rear end of the seat is pivoted to the back-rest at 34. Connecting link-means comprising a pair of a short extension 36 of the leg-rest and a long link 38 hingedly connected with each other at 40 are arranged on either side of the chair. The short extension 36 is rigidly connected to the leg-rest 28 by means of screws 42 or the like. The free end of the long link 38 being arranged above the seat 26 is pivoted to an intermediate point 44 of the back-rest 24. The back-rest 24, the seat 26, the leg-rest 28 and the connecting link-means 36, 38 form a polygonal structure having unequal sides, the shortest side being the short extension 36 of the connecting link-means.

One point of the polygonal structure 24, 26, 36, 38 is pivoted to the support 10. In the embodiment shown in Figs. 1 and 2, this point is coaxial with the pivot point 34 between the back-rest 24 and the seat 26. The pin 34 rotatably connecting the back-rest and the seat with each other is secured to the lug 20 of the support. If desired, however, the pivot point connecting the polygonal structure with the support may be spaced from the pivot point 34 and may be positioned either in the back-rest or in the seat.

In order to obtain the various positions of the members of the polygonal structure swingably mounted at 34, the movement of the members of said polygonal structure must be controlled. For this purpose we provide a guiding link 46 on each side of the chair. One end of said guiding link 46 is pivoted to the lug 22 of the support at the point 48 above the seat 26, the other end of said guiding link 46 is pivoted to an intermediate point of the long link 38 at 50. When the user of the chair moves the back-rest 24 to the left (as seen in Fig. 1), the polygonal structure swings

about the pivot 34. During this swinging movement, the guiding link 46 controls the movement of the long link 38 and the members of the polygonal structure connected therewith. The guiding link 46 swings about the pivot 48 and guides the pivot point 50 of the long link 38 along a circular path. Thus, the leg-rest 28 is lifted and rotated about the pivot 32 and at the same time the front end of the seat 26 is lifted when the back-rest 24 is swung about the pivot 34 and is lowered. The dash lines illustrate the extreme reclining position of the polygonal structure. The sitting position of the polygonal structure is limited by the stop 52 cooperating with one edge of the guiding link 46, while the extreme reclining position of the polygonal structure is limited by the stop 54 cooperating with the other edge of the guiding link 46. The stops 52 and 54 are secured to the connecting link 38 by suitable means or may form an integral part thereof.

When the parts of the chair are in sitting position as shown in full lines in Fig. 1, the guiding link 46 is forwardly inclined, i. e. its end pivoted to the long link 38 is nearer to the front of the chair than its end pivoted to the support 10, so that the load of the user tends to swing the leg-rest 28 into the backwardly inclined position, as the user leaves the chair.

Figs. 3 and 4 illustrate another embodiment of our reclining chair, according to which an intermediate point of the long link 38 of the polygonal structure is pivoted to a lug 56 of the support 10 at 58, while the pivot point 34 between the seat 26 and the back-rest 24 is hingedly connected to one end of the guiding link 460, the other end of which being pivoted to a lug 60 of the support at the point 62 above the seat. When the user of the chair moves the back-rest 24 to the left, the polygonal structure swings about the pivot 58 and the guiding link 460 rotating about the pivot 62 guides the pivot point 34 along a circular path, so that the parts of the chair are brought into the reclining position shown in dash lines. The lug 56 has two projections 64 and 66 cooperating with the lower edge of the connecting link 38. The projection 64 forms a stop for arresting the polygonal structure in its sitting position, and the projection 66 forms a stop for the extreme reclining position.

The chair according to Figs. 1 and 2 as well as the chair according to Figs. 3 and 4 may be equipped with locking means for holding the members of the polygonal structure in any adjusted position, if desired.

The long links 38 of the chairs shown in the drawings form the arm-rests.

Instead of the rigid supports shown in the figures, supports of the foldable type may be used, if desired, so that the chair may be used as a deck-chair or garden chair, for example.

According to the embodiments shown in Figs. 1 and 2 and Figs. 3 and 4, the short extension 36 is rigidly secured to the leg-rest 28 by screws 42 or the like. If desired, however, the short extension 36 may form an integral part of the leg-rest. Moreover, instead of a rigid connection between the short extension and the leg-rest, an additional link hinged to the short extension and to the leg-rest could be arranged between the short extension and the leg-rest.

As will be apparent from the description of the various embodiments of our chair, in every embodiment of the chair one point of the polygonal structure is pivoted to the support and another point of the polygonal structure is hinged to one end of a guiding link which has its other end pivoted to the support, and always one of said points, i. e. either the pivotal connection of the polygonal structure to the support or the pivotal connection of the polygonal structure to the guiding link is positioned in the connecting link. Furthermore, the guiding link and the connecting link means are arranged above the seat.

While we have shown only chairs, we do not wish that the invention be limited to chairs only. The polygonal structure and its pivotal connections to the support may also be arranged in other articles of furniture, such as couches or the like.

We have described preferred embodiments of our invention, but it is clear that numerous changes and omissions may be made without departing from the spirit of our invention.

What we claim is:

1. An adjustable reclining chair comprising: a support, a back-rest, a seat, a leg-rest, said seat extending between said back-rest and said leg-rest and being pivoted thereto, connecting link-means, one connecting link-means being arranged on each side of the chair, each of said connecting link-means including a short extension of the leg-rest; and a long link hingedly connected with each other, the free end of said long link being pivoted to an intermediate point of the back-rest above the pivot point between the back-rest and the seat, said back-rest said seat and said connecting link-means forming a polygonal structure having unequal sides, one point of said polygonal structure being pivoted to said support, and guiding links, one guiding link being arranged on each side of the chair, one end of each of said guiding links being pivoted to said support at a point above the seat, the other end of each of said guiding links being pivoted to said polygonal structure.

2. An adjustable reclining chair as claimed in claim 1, in which said short extension of the leg-rest is rigidly connected to said leg-rest.

3. An adjustable reclining chair as claimed in claim 1, in which said short extension of the leg-rest is an integral part of the leg-rest.

4. An adjustable reclining chair as claimed in claim 1, in which the long links of said connecting link-means form the arm-rests of the chair.

5. An adjustable reclining chair as claimed in claim 1, in which stop means are arranged for limiting the extreme positions of the polygonal structure.

6. Adjustable reclining chair comprising: a support, a back-rest, a seat, a leg-rest, said seat extending between said back-rest and said leg-rest and being pivoted thereto, connecting link-means, one connecting link-means being arranged on each side of the chair, each of said connecting link means including a short extension of the leg-rest; and a long link hingedly connected with each other, the free end of said long link being pivoted to an intermediate point of the back-rest above the pivot point between the back-rest and the seat, said back-rest said seat and said connecting link-means forming a polygonal structure having unequal sides, one point of said polygonal structure being pivoted to said support, and guiding links, one guiding link being arranged on each side of the chair, one end of each of said guiding links being pivoted to said support at a point above the seat, the other end of each of said guiding links being pivoted to an intermediate point of said long link.

7. An adjustable reclining chair as claimed in

claim 6, the guiding links being in an inclined position with their ends pivoted to the long links nearer to the front of the chair than their ends pivoted to the support, when the parts of the chair are in sitting position.

8. An adjustable reclining chair as claimed in claim 6, in which the pivot point between the back-rest and the seat is pivoted to the support.

9. An adjustable reclining chair comprising: a support, a back-rest, a seat, a leg-rest, said seat extending between said back-rest and said leg-rest and being pivoted thereto, connecting link-means, one connecting link-means being arranged on each side of the chair, each of said connecting link-means including a short extension of the leg-rest; and a long link hingedly connected with each other, the free end of said long link being pivoted to an intermediate point of the back-rest above the pivot point between the back-rest and the seat, said back-rest said seat and said connecting link-means forming a polygonal structure having unequal sides, an intermediate point of each of said long links being pivoted to said support, and guiding links, one guiding link being arranged on each side of the chair, one end of each of said guiding links being pivoted to said support at a point above the seat, the other end of each of said guiding links being pivoted to said polygonal structure.

10. An adjustable reclining chair as claimed in claim 9, in which said other end of each of said guiding links is pivoted to the pivot point between the back-rest and the seat.

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