Sept. 11, 1951 W. C. MARTIN 2,567,341

FOLDING DECK CHAIR

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Fig. 6

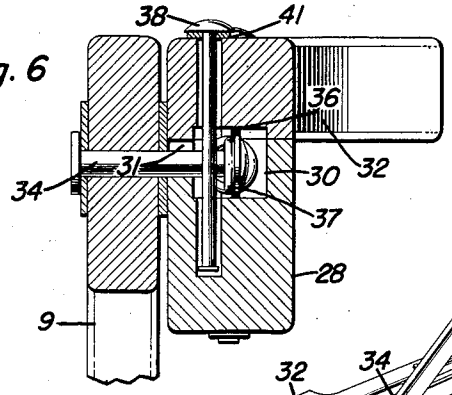


Fig. 1

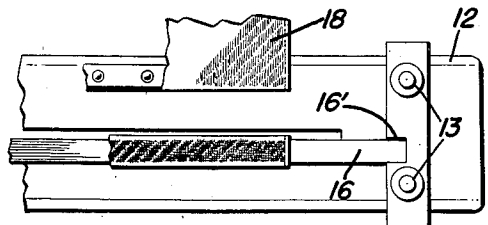


Fig. 8

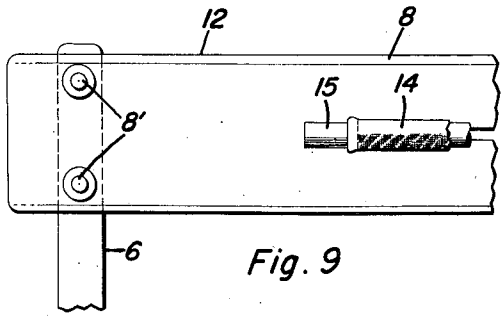
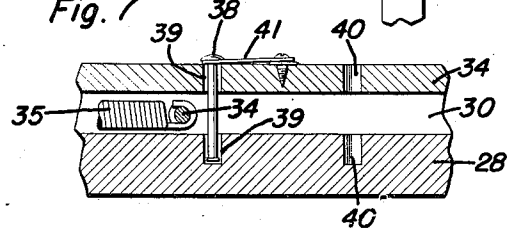


Fig. 9

Fig. 7



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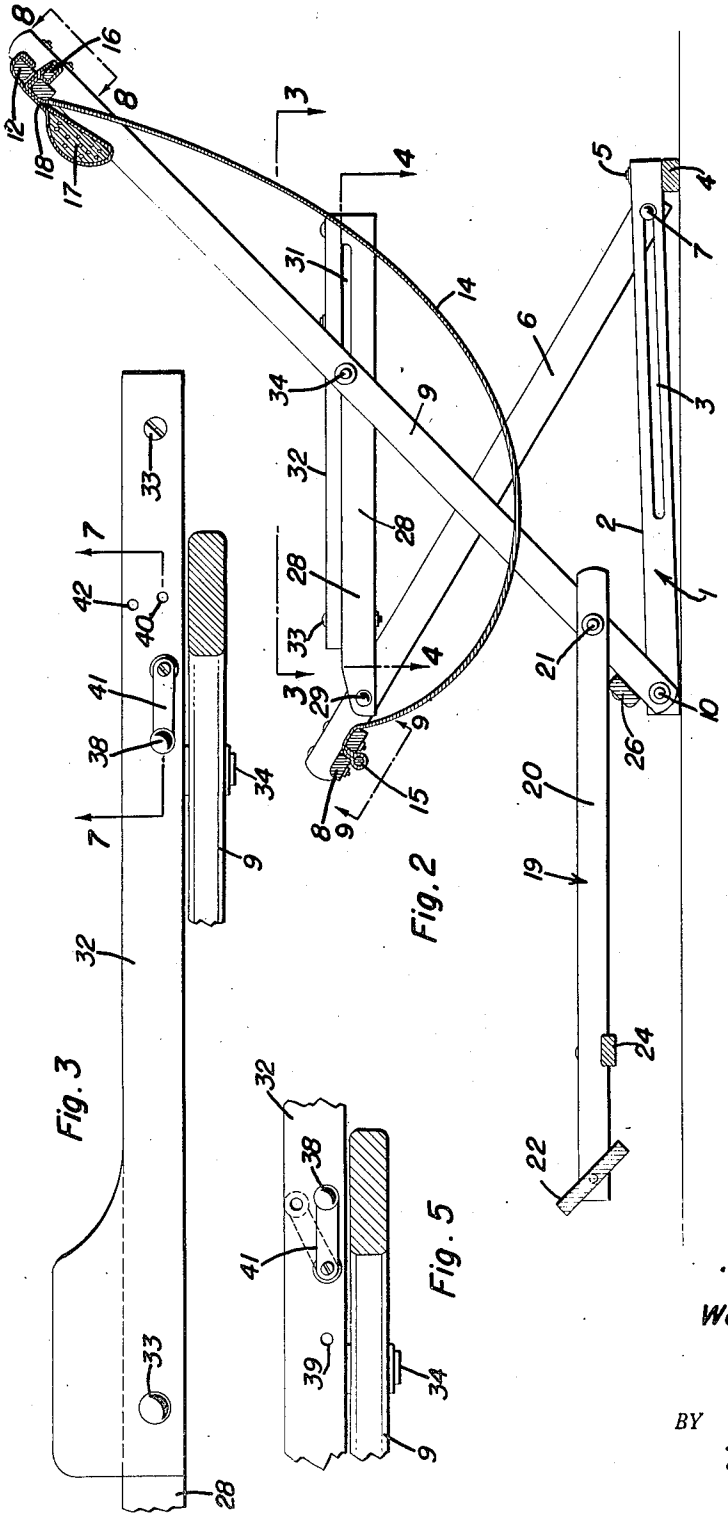


Fig. 2

Fig. 3

Fig. 5

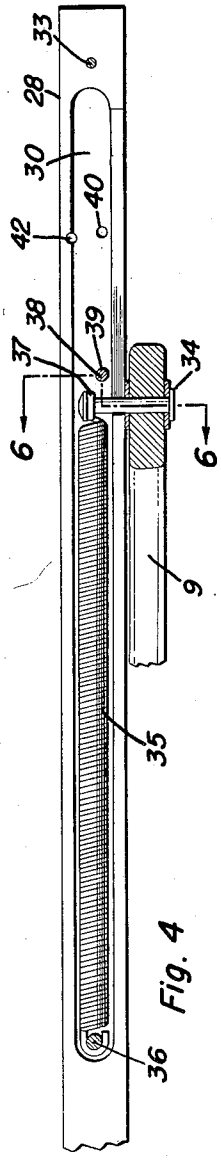


Fig. 4

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FOLDING DECK CHAIR

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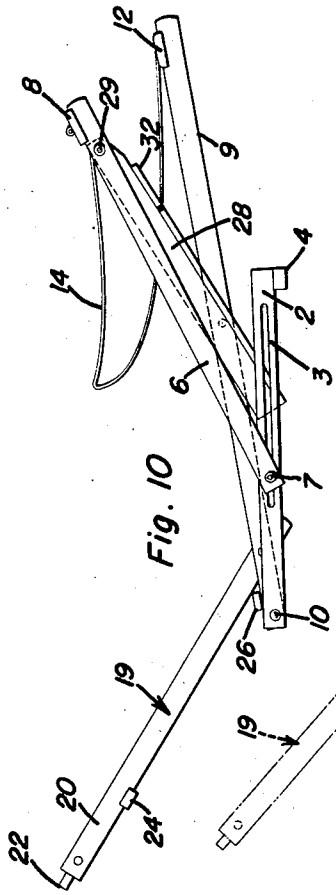


Fig. 10

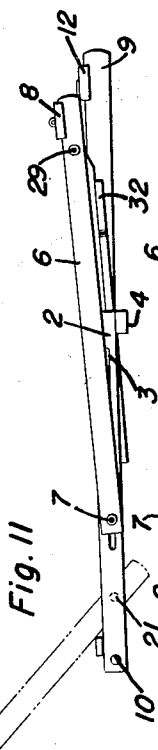


Fig. 11

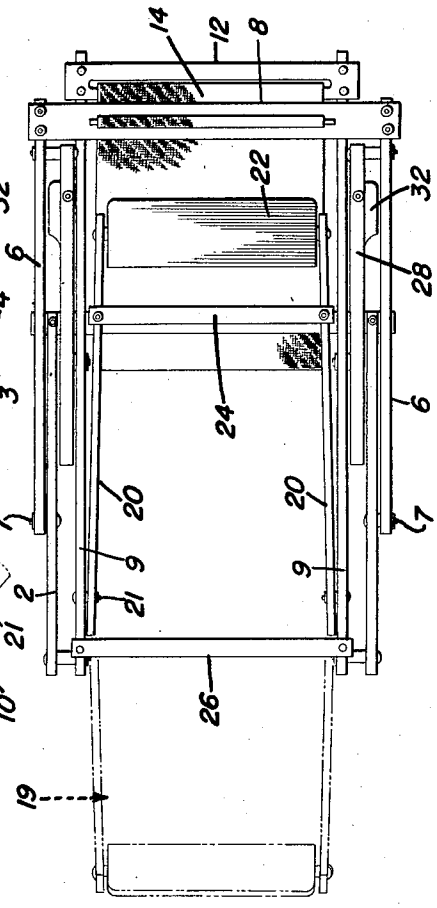


Fig. 12

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FOLDING DECK CHAIR

Walter C. Martin, Hinsdale, Ill.

Application February 24, 1950, Serial No. 146,118

6 Claims. (Cl. 155—56)

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My invention relates to improvements in folding deck chairs of the crossed leg hammock seat type.

The primary object of my invention is to adapt such a chair for use as a rocker and for adjustment of the same under the weight of the occupant into different reclining positions selectively.

Another object is to provide in such a chair for spring suspension of the occupant if desired.

Still another object is to provide such a chair with a leg rest vertically adjustable by adjustment of the chair into different reclining positions to elevate or lower the legs of the occupant in accordance with lowering or raising of the body of the occupant.

Another object is to accomplish the above in a chair of the type specified by means of simple construction and few parts which will not materially increase the cost of manufacture of such chairs.

Other and subordinate objects, within the purview of my invention, together with the precise nature of my improvements will be readily understood when the succeeding description and claims are read with reference to the accompanying drawings.

In said drawings:

Figure 1 is a view in perspective of my improved chair unfolded;

Figure 2 is a view in vertical longitudinal section taken on the line 2—2 of Figure 1;

Figure 3 is a fragmentary view in horizontal section taken on the line 3—3 of Figure 2 and drawn to a larger scale;

Figure 4 is a similar view taken on the line 4—4 of Figure 2;

Figure 5 is a fragmentary view similar to Figure 3 illustrating the use of the stop pins;

Figure 6 is a view in vertical transverse section taken on the line 6—6 of Figure 4 and drawn to a still larger scale;

Figure 7 is a view in longitudinal section taken on the line 7—7 of Figure 3 and drawn to the same scale;

Figure 8 is a fragmentary view in rear elevation illustrating the manner in which one end of the seat and back forming sheet is secured in place;

Figure 9 is a fragmentary view in bottom plan taken on the line 9—9 of Figure 2 and illustrating the manner in which the other end of the seat and back forming sheet is secured in place;

Figure 10 is a view drawn to a reduced scale

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and illustrating the chair partly folded and in side elevation;

Figure 11 is a similar view illustrating, in full lines, the chair completely folded;

Figure 12 is a view in plan illustrating the chair completely folded in full lines with the seat and back forming sheet illustrated in folded position.

Referring to the drawings, by numerals, my improved chair, as illustrated, comprises a base frame 1 including a pair of side base bars 2 with longitudinal slots 3 therein, for a purpose presently seen, and a rear base bar 4 underlying and bolted, as at 5, to the rear ends of said side bars 2 for rigidly connecting the same.

A pair of side leg bars 6, at opposite sides of the base frame 1 are pivotally and slidably connected at lower ends thereof to said side base bars 2, for folding and unfolding, by bolts 7 extending through said ends and the slots 3, said leg bars 6 being cross-connected at upper ends thereof by a longitudinally slit cross bar 8 suitably fixed thereto, as at 8'.

A pair of side leg bars 9, relatively longer than the side leg bars 6 are pivotally connected at lower ends thereof to the front ends of the side base bars 2, for folding and unfolding, in between the same, and by means of lateral pivot bolts 10 with spacing collars 11 thereon between said bars 2 and 9. A longitudinally slit cross bar 12 bolted in place, as at 13, cross connects the upper ends of the side leg bars 9.

The side leg bars 6, 9, when the chair is unfolded, cross in the usual oppositely inclined manner with the shorter side leg bars 6 inclining forwardly and upwardly from the side base bars 2 and the pivot bolts 7 in the rear ends of the slots 3, with the cross bar 8 at the front of the chair, while the longer side leg bars 9 incline upwardly and rearwardly from the side base bars 2 with the cross bar 12 at the back of the chair.

The usual hammock type seat and back forming fabric sheet 14 has one end inserted through the slit cross bar 8 with a rod 15 hemmed therein to prevent the sheet from pulling out of said bar 8, the other end of said sheet 14 being similarly extended through the slit cross bar 12 with a rod 16 hemmed therein for the same purpose as rod 15. The ends of the rod 16 are seated in notches 16' in the side leg bars 9 to fasten said rod in place. A cushioned head rest 17 is suitably attached to the cross bar 12 by a flap 18.

A folding leg rest frame 19 is provided on the side leg bars 9 to extend, when the same is unfolded, forwardly of the rest of the chair. The leg rest frame 19 comprises a pair of side bars

20 pivoted at rear ends thereof by pivot bolts 21, to the side leg bars 9 adjacent the lower ends of said bars 9. As will be seen, when the leg rest frame 19 is unfolded, the same is positioned substantially above the floor. A foot rest panel 22 is pivoted, as at 23, between the front ends of said bars 20 for adjustment under foot pressure about a horizontal axis. A cross bar 24 is bolted, as at 25, to the side bars 20 and connects the same for folding and unfolding in unison. A supporting bar 26 for the leg rest frame 19 extends across and is bolted, as at 27, to the side leg bars 9 below the pivot bolts 21 of said side bars 20, to support said bars 20 and consequently the leg rest frame, when said frame is unfolded.

Means is provided for yieldingly connecting the side leg bars 6 and 9 at opposite sides of the chair for adjustment of the chair into different reclining positions and which will now be described.

A pair of arm bars 28 are pivoted, by bolts 29, at the front ends thereof to the upper ends of the side leg bars 6 for folding alongside said bars 6 when the chair is folded, and for unfolding to extend horizontally across the side leg bars 9. A longitudinal top groove 30 is formed in each arm bar 28 and a shorter longitudinal slot 31 in the inner side thereof communicating with the groove 30 for a distance from the rear end of said groove suitable for a purpose presently seen. An arm rest panel 32 is bolted, as at 33, on each arm 28 and closes the groove 30. A lateral washer-equipped, stud 34 extends from each side leg bar 9 through the slot 31 and into the groove 30 of the adjacent arm bar 28. A helical retractile spring 35 in the groove 30 of each arm bar 28 is anchored at its front end in the front end of said groove by a pin 36 with its rear anchored, as at 37, to the stud 34 extending into the groove.

As will be seen, upon reference particularly to Figures 1, 2 and 7, since the helical springs 35 extend forwardly of the studs 34, said studs 34 are normally pulled forwardly by said springs 35 against the front ends of the slots 31 so that when the chair is unfolded, and unoccupied, the side leg bars 9 are swung forwardly on the pivot bolts 10 and the chair is thus adjusted into a normal reclining position in which the slots 31 extend rearwardly of the side leg bars 9. Thus, under the weight of an occupant of the chair, the studs 34 may slide rearwardly in the slots 31 in opposition to the helical springs 35, the side leg bars 9 swinging downwardly and rearwardly on the pivot bolts 10 and the side leg bars 6 swinging downwardly and forwardly on the pivot bolts 7 so that the chair is adjusted into other, lower reclining positions until the studs 34 engage the rear ends of the slots 31 and establish the lowest reclining position of the chair.

A pair of stop pins 38 are provided for insertion in pairs of vertically aligned openings in the arm rest panels 32 and arm bars 28, for controlling adjustment of the chair into different reclining positions, the pairs being designated 39, 40, respectively. The pins 38 are vertically slidable in pivoted pin carrying cranks 41 on the arm rest panels 32 for swinging adjustment into vertical alignment with the pairs of openings 39, 40 selectively.

As will be observed in Figures 4 and 7, the pairs of openings 39, 40 are positioned in the line of the grooves 30, the pair 39 being adjacent the front ends of the slots 31 and so that when the pins 38 are inserted in the pair 39, as shown in Figures 3, 4, and 7, rearward movement of the studs 34 in the slots 31 and grooves 30 is blocked by the pins and the chair locked against being adjusted out of normal reclining position. The pair of openings 40 is located rearwardly of the pair 39, substantially midway between said openings 39 and the rear ends of the grooves 30, so that when the pins 38 are inserted in said pair 40, said studs 34 may move rearwardly in the slots 31 and grooves 30 and the chair may be adjusted into a lower reclining position.

A third pair of vertically aligned openings 42 is provided in the arm rest panels 32 and arm bars 28 and offset laterally from the path of movement of the studs 34, and with which the pins 38 may be vertically aligned, by swinging of the pin carrying cranks 41, as shown in dotted lines in Figure 5. When the pins 38 are inserted in the pair of openings 42, said pins are positioned in an idle out-of-the-way position so that the studs 34 may move, if the weight of the occupant of the chair is sufficient, rearwardly in the slots 31 and grooves 30 into engagement with the rear end of said slots 31, so that the chair may be thus adjusted into lowest reclining position. On the other hand, if the weight of the occupant of the chair is not sufficient, the chair may assume different reclining positions, with the occupant spring suspended in floating position, in a manner which will be apparent. In this connection, it is to be understood that the helical springs 35 are constructed and arranged to sustain occupants of different weight within a wide range of variations, and the lowest reclining position of the chair is principally a safety provision.

The operation of my improved chair will be readily understood from the foregoing and the following description. The chair being unfolded, the studs 34 are pulled forwardly in the slots 31 and grooves 30, which is to say, in the arm bars 28, against the front ends of said slots 31 so that the chair is adjusted into its normal slightly reclining position. This position of the chair may be established, selectively, for one about to occupy the chair, by inserting the stop pins 38 in the pair of openings 39 whereby the chair will be locked in normal slightly reclining position. If a lower reclining position is desired, the occupant of the chair may insert the pins in the pair of openings 40 and the chair, under the weight of the occupant, will assume a lower reclining position in the manner described. If a still lower reclining position is desired, the pins 38 may be inserted in the pair of openings 42 so that the studs 34 may play freely back and forth in the slots 30 and grooves 31. The chair will then be adjusted according to the weight of the occupant into a further, lower reclining position, with the occupant spring suspended and floatingly sustained, in the manner previously set forth. Obviously, in any position in which the chair is adjusted it may be rocked by foot pressure on the leg rest frame 19, the side leg bars 6 and 9 pivoting on the pivot bolts 7, 10, 29 and on the studs 34 to permit such rocking. Also, as will be obvious, the leg rest frame 19 will be tilted upwardly as the chair is adjusted into successively lower reclining positions since, under such adjustment, the side leg bars 9 are lowered on the pivot bolts 10 whereby the rest bar 26 will swing said frame 19 upwardly. The advantage is providing for easy comfortable posture as will be clear.

Referring now particularly to Figures 10 to 12, to fold the chair, the side leg bars 6 are swung

upwardly and rearwardly by means of the bar 8 which causes the pivot bolts 7 to slide forwardly in the slots 3, the side leg bars 9 to swing downwardly and rearwardly, and the arm bars 28 to swing downwardly and rearwardly between the side base bars 2 and also between said bars 6 and 9 all as shown in Figure 10 in which the chair is shown partly folded. When the pivot bolts 7 reach the front ends of the slots 3, the side leg bars 6, 9 and the arm bars 28 will fold substantially flat as shown in Figure 11. The leg rest frame 19 may then be swung upwardly and rearwardly in between the folded side leg bars 9, as shown in Figure 12.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention, without further explanation.

Manifestly, the invention, as described, is susceptible of modification, without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a deck chair, a base frame including a pair of horizontal side frame bars, rigidly connected, a first pair of side leg bars at opposite sides of said frame inclining upwardly and forwardly therefrom, a second pair of relatively longer side leg bars at opposite sides of said frame inclining upwardly and rearwardly therefrom across said first pair of side leg bars, a pair of arm bars extending across the side leg bars at opposite sides of the frame, a flexible seat and back forming sheet suspended from said pairs of side leg bars, said side leg bars being pivotally connected to said side frame bars and to said arm bars for rocking movement of said side leg bars and arm bars relatively to form a rocking chair, and a leg supporting frame extending forwardly from said second pair of side leg bars for vertical rocking adjustment by rocking movement of said second pair of side leg bars, the pivotal connections between said second pair of side leg bars and arm bars being slidable rearwardly along said arm bars for swinging of said second pair of leg forming bars rearwardly to adjust the chair into different reclining positions, and spring means in said arm bars for opposing rearward sliding of said slidable connections and resiliently suspending an occupant of said seat.

2. In a deck chair, a base frame including a pair of horizontal side frame bars, rigidly connected, a first pair of side leg bars at opposite sides of said frame inclining upwardly and forwardly therefrom, a second pair of relatively longer side leg bars at opposite sides of said frame inclining upwardly and rearwardly therefrom across the first pair of side leg bars, a pair of arm bars extending across the side leg bars at opposite sides of said frame, a flexible seat and back forming sheet suspended from said pairs of side leg bars, said leg bars being pivotally connected to said side frame bars and to said arm bars for rocking movement of said side leg bars and arm bars relatively to form a rocking chair, the pivotal connections between said second pair of side leg bars and said arm bars being slidable rearwardly along said arm bars for swinging of the second pair of side leg bars rearwardly to adjust the chair into different reclining positions, and spring means in said arm bars for opposing rearward sliding of said slidable connections and resiliently suspending an occupant of said seat.

3. In a deck chair, a base frame including

a pair of horizontal side frame bars, rigidly connected, a first pair of side leg bars at opposite sides of said frame inclining upwardly and forwardly therefrom, a second pair of relatively longer side leg bars at opposite sides of said frame inclining upwardly and rearwardly therefrom across the first pair of side leg bars, a pair of arm bars extending across the side leg bars at opposite sides of said frame, a flexible seat and back forming sheet suspended from said pairs of side leg bars, said leg bars being pivotally connected to said side frame bars and to said arm bars for rocking movement of said side leg bars and arm bars relatively to form a rocking chair, the pivotal connections between said second pair of side leg bars and said arm bars being slidable rearwardly along said arm bars for swinging of the second pair of side leg bars rearwardly to adjust the chair into different reclining positions, spring means in said arm bars for opposing rearward sliding of said slidable connections and resiliently suspending an occupant of said seat, and means for selectively establishing different limits of rearward sliding movement of said slidable connections to predetermine the reclining position into which said chair shall be adjusted.

4. In a deck chair, a base frame including a pair of horizontal side frame bars, rigidly connected, a first pair of side leg bars at opposite sides of said frame inclining upwardly and forwardly therefrom, a second pair of relatively longer side leg bars at opposite sides of said frame inclining upwardly and rearwardly therefrom across the first pair of side leg bars, a pair of arm bars extending across the side leg bars at opposite sides of said frame, a flexible seat and back forming sheet suspended from said pairs of side leg bars, said leg bars being pivotally connected to said side frame bars and to said arm bars for rocking movement of said side leg bars and arm bars relatively to form a rocking chair, the pivotal connections between said second pair of side leg bars and said arm bars being slidable rearwardly along said arm bars for swinging of the second pair of side leg bars rearwardly to adjust the chair into different reclining positions, spring means in said arm bars for opposing rearward sliding of said slidable connections and resiliently suspending an occupant of said seat, and means insertable into said arm bars into the path of movement of said slidable connections to limit rearward sliding thereof and predetermine the reclining position in which said chair shall be adjusted.

5. In a deck chair, a base frame including a pair of horizontal side frame bars, rigidly connected, a first pair of side leg bars at opposite sides of said frame inclining upwardly and forwardly therefrom, a second pair of relatively longer side leg bars at opposite sides of said frame inclining upwardly and rearwardly therefrom across the first pair of side leg bars, a pair of arm bars extending across the side leg bars at opposite sides of said frame, a flexible seat and back forming sheet suspended from said pairs of side leg bars, said leg bars being pivotally connected to said side frame bars and to said arm bars for rocking movement of said side leg bars and arm bars relatively to form a rocking chair, the pivotal connections between said second pair of side leg bars and said arm bars being slidable rearwardly along said arm bars for swinging of the second pair of side leg bars rearwardly to

adjust the chair into different reclining positions, spring means in said arm bars for opposing rearward sliding of said slidable connections and resiliently suspending an occupant of said seat, and means for locking said slidable connections against rearward movement to prevent adjustment of said chair.

6. In a deck chair, a base frame including a pair of horizontal side frame bars, rigidly connected, a first pair of side leg bars at opposite sides of said frame inclining upwardly and forwardly therefrom, a second pair of relatively longer side leg bars at opposite sides of said frame inclining upwardly and rearwardly therefrom across the first pair of side leg bars, a pair of arms bars extending across the side leg bars at opposite sides of said frame, a flexible seat and back forming sheet suspended from said pairs of side leg bars, said leg bars being pivotally connected to said side frame bars and to said arm bars for rocking movement of said side leg bars and arm bars relatively to form a rocking chair, the pivotal connections between said second pair

of side leg bars and said arm bars being slibable rearwardly along said arm bars for swinging of the second pair of side leg bars rearwardly to adjust the chair into different reclining positions, spring means in said arm bars for opposing rearward sliding of said slidable connections and resiliently suspending an occupant of said seat, and means for locking said slidable connections against rearward movement to prevent adjustment of said chair including stop pins insertable in said arm bars into the path of rearward movement of said sliding connections.

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