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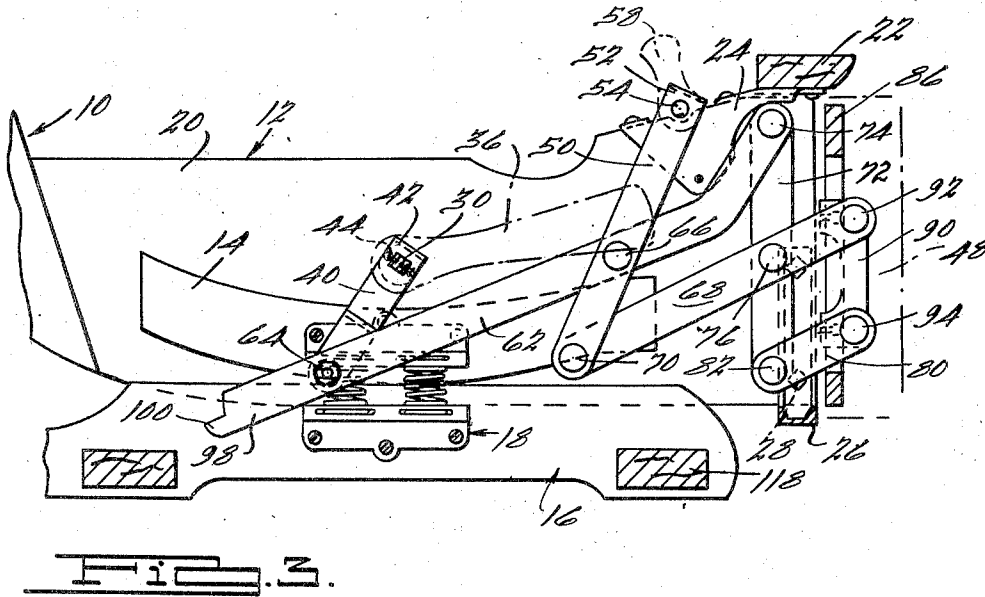
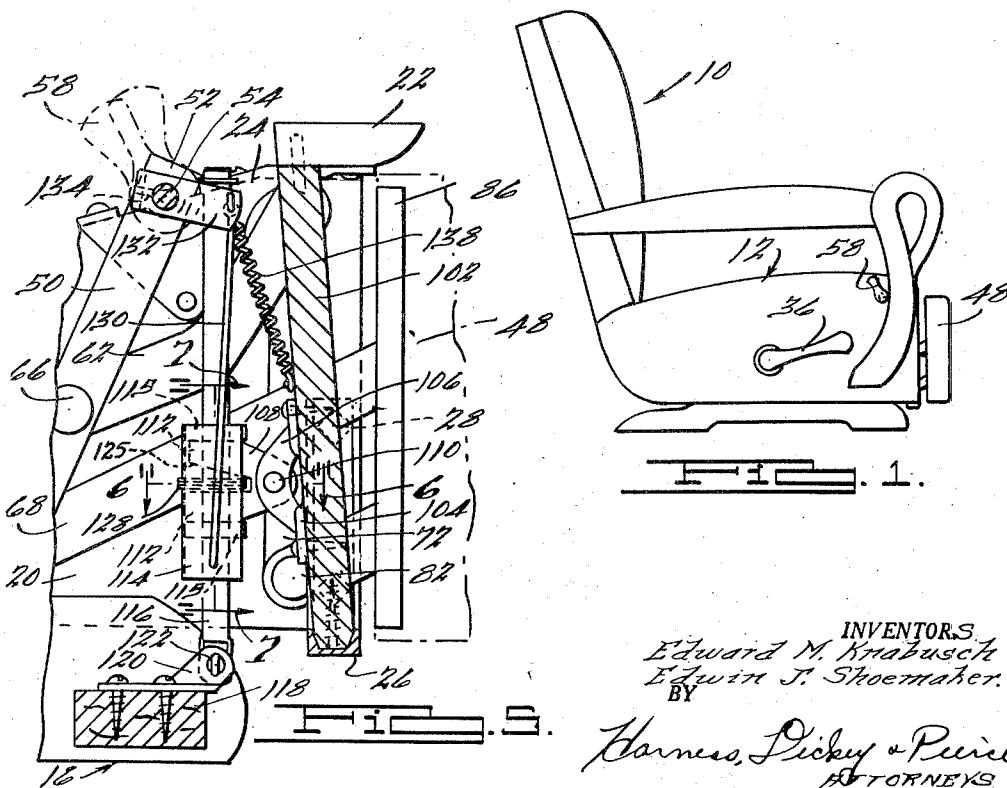
E. M. KNABUSCH ET AL

2,817,388

PLATFORM ROCKER

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3 Sheets-Sheet 1



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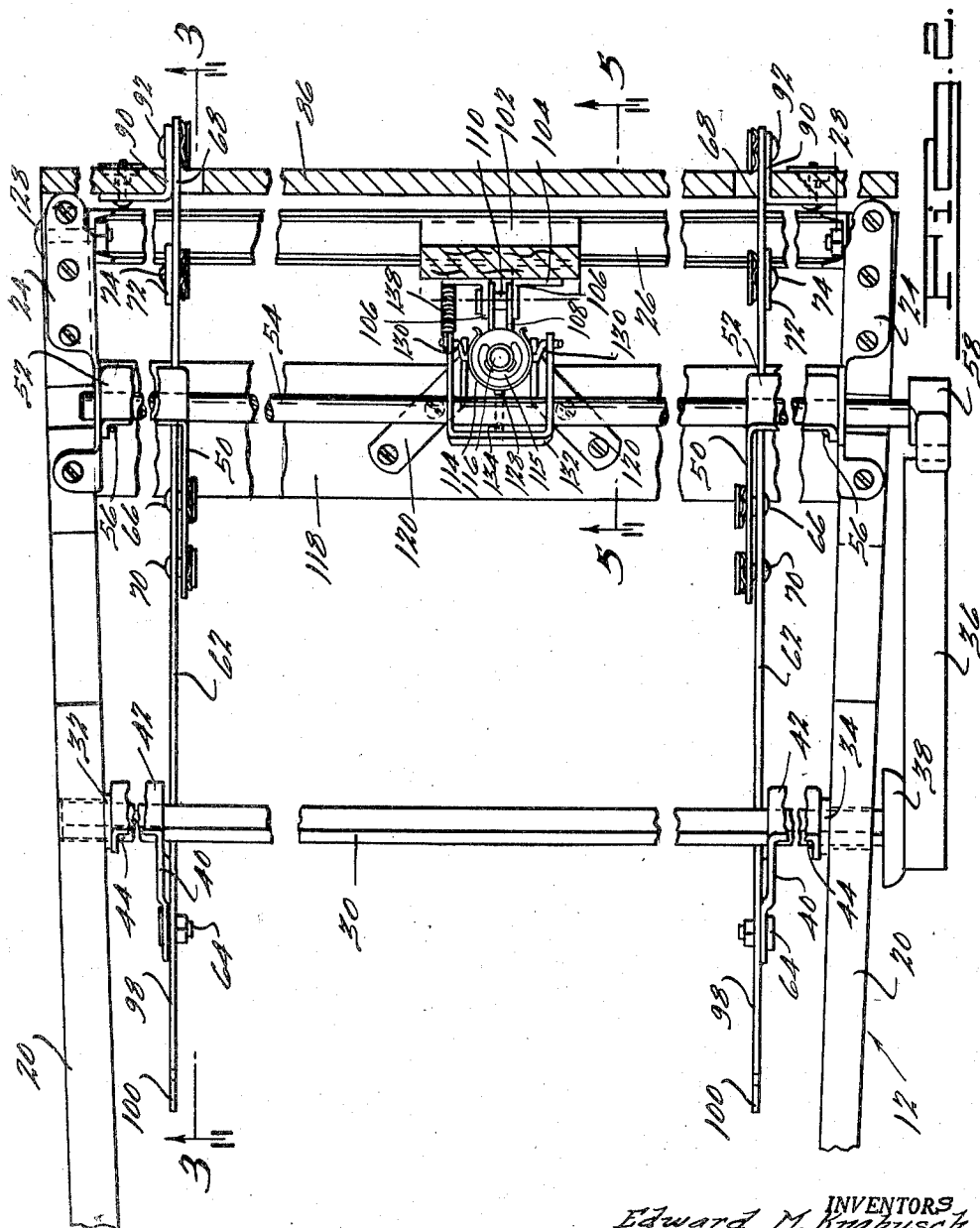
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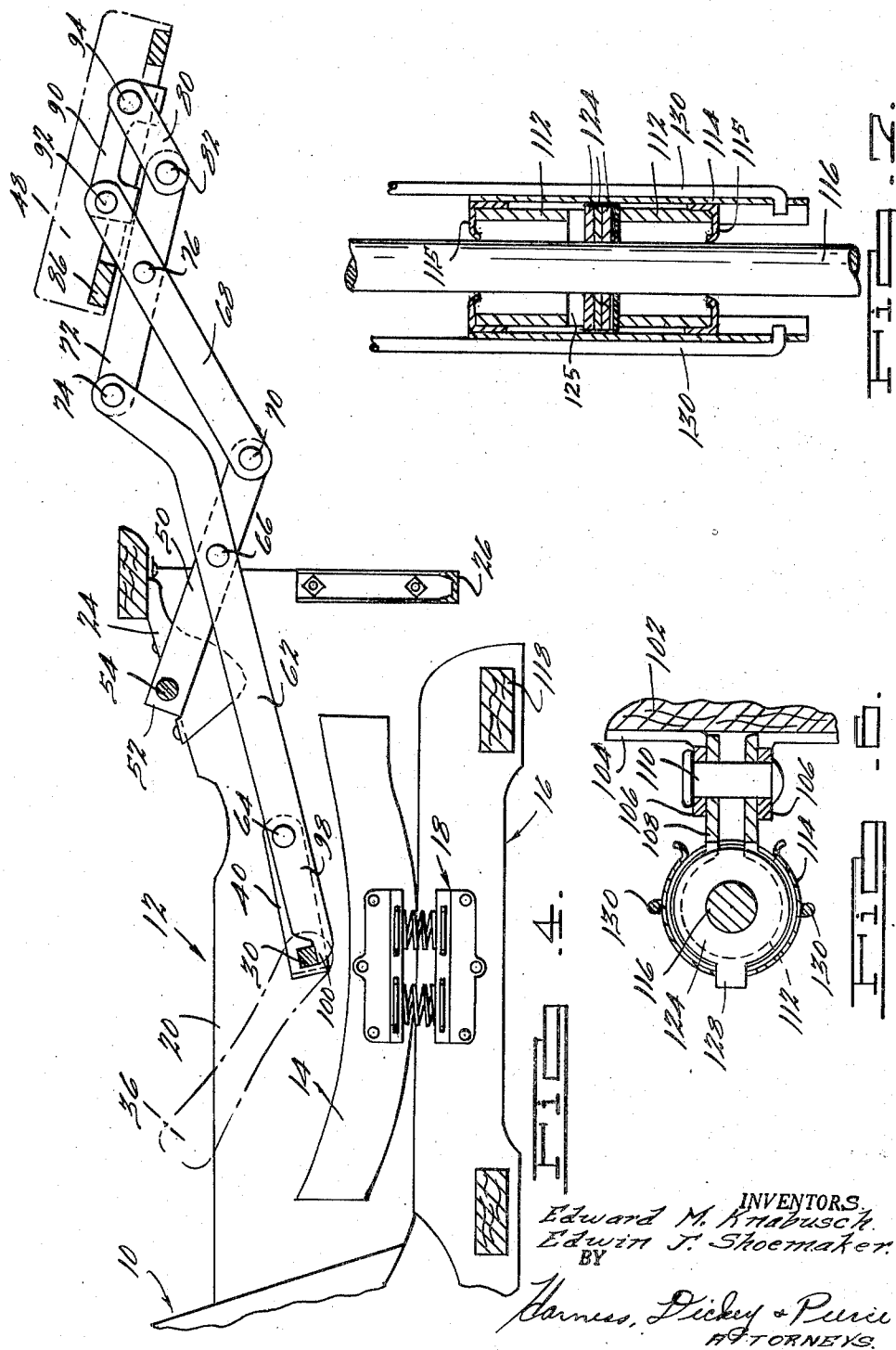
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2,817,388

PLATFORM ROCKER

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10 Claims. (Cl. 155—72)

This invention relates to chairs and more particularly to chairs of the rockable type.

The provision of a footstool or hassock auxiliary to a rocking chair can substantially increase the comfort of a sitter who desires to lean back to a relatively immobile, reclining position. However, the height of footstools is normally fixed and thereby serves effectively to establish the degree of the sitter's reclination, apart from the individual's preferences. Further, the maintenance of a reclining position by pressing downwardly on a footstool with the sitter's legs outstretched is not fully conducive to relaxation. On the other hand, it is somewhat difficult for a person to establish a rocking motion with his legs extended and his knees unreflexed, so that preparatory to rocking the sitter will normally find it desirable to move the footstool aside.

These difficulties may be alleviated by the practice of the principles of the present invention. In general, a footstool is formed as an element of the rocking chair and moves therewith. The footrest is supported by a modified compound parallellogrammatic mechanism designed to produce the requisite combinational motion in translation and rotation to shift the position and attitude of the footrest from a retracted position, abutting the front of the chair and out of the way of the sitter's legs, to an extended position in which the upper surface thereof is spaced from the seat and disposed in parallelism with or at a preselected angle to the plane of the upper seat surface. Means are also provided, cooperatively associated with the aforesaid footrest support mechanism, for selectively locking the chair against rocking motion in any preselected position within the range of possible motion of the chair. As a result, the user may employ the chair as a rocker with the footrest retracted, he may extend the footrest and recline in the chair to a position established by his and the chair's weight distribution, or he may tilt the chair to any position of reclination which he finds most comfortable and lock the chair in that position with the footrest either extended or retracted.

The object of this invention is to improve the comfortableness of rocking chairs.

A feature of this invention is an improved selectively extensible and retractable footrest.

Another feature of this invention is an improved mechanism for selectively locking a rocking chair in any selected position.

A further feature of this invention is an improved unitary operating and control mechanism for positioning both a rocking chair and a footrest therefor.

The manner of accomplishment of the foregoing object, the nature of the foregoing features, and other objects and features of the invention, may be understood

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from the following detailed description of an embodiment of the invention when read with reference to the accompanying drawings in which:

Figure 1 is a side elevational view of a fully assembled and upholstered chair embodying the principles of the invention;

Fig. 2 is a fragmentary horizontal sectional view taken below the upper level of the seat but with the seat and upholstery removed;

Fig. 3 is a vertical sectional view taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a view similar to that of Fig. 3 except that the footrest has been moved to its extended position;

Fig. 5 is a vertical sectional view taken substantially along the line 5—5 of Fig. 2;

Fig. 6 is a sectional view taken substantially along the line 6—6 of Fig. 5; and

Fig. 7 is a sectional view taken substantially along the line 7—7 of Fig. 5.

The chair constituting the disclosed embodiment of the invention comprises a back portion 10 (Fig. 1) integral with a seat portion 12 on either side of which there is affixed an arcuate rocker 14 (Fig. 3) rockable upon surfaces of a base portion 16. The rockers 14 and the base 16 are interassociated by a double-compression spring mechanism 18 in the normal platform-rocker manner.

The two parallel side rails 20, constituent elements of the seat portion 12, are interjoined at their rear by a rail (not shown), and are interjoined at their forwardmost ends by a front rail 22 affixed thereto through a pair of brackets 24. The side rails 20 are further interjoined by a generally U-shaped channel-section member 26 (Figs. 2 and 3) the legs of which abut the inner faces of the side rails 20 and are affixed thereto by bolts 23 or similar attaching means.

An actuating shaft 30 extends transversely of the chair and is roughly centered on the side rails 20, although the precise location thereof may be varied. Elongated actuating shaft 30, which is representatively shown as being of square cross-section, is rotatively mounted in a pair of flanged bushings 32 and 34 which are nonrotatively affixed in apertures in the side rails 20. One end of actuating shaft 30 extends beyond the aperture in one of the side rails 20 and an actuating lever 36 is mounted thereon, a collar 38 preferably being interposed between the actuating lever 36 and the outside surface of the side rail 20.

A pair of arms 40 is mounted near opposite ends of the actuating shaft 30 but inboard of the side rails 20. To establish a nonrotative relationship between the actuating shaft 30 and the arms 40, each arm 40 is provided with an upper U-shaped bracket portion 42 having a pair of parallel faces each provided with an aperture conformed to and engaging the actuating shaft 30. Each bracket 42 preferably abuts the corresponding flanged bushing 32 and one or both may be retained in such abutment by means of a pin 44 extending through an aperture in the actuating shaft 30, as may best be seen in Figs. 2 and 3 of the drawings.

The actuating lever 36 is rotatable from the position represented in Fig. 3 of the drawings to the position represented in Fig. 4 of the drawings to correspondingly rotate the actuating shaft 30. This rotation operates a linkage mechanism to translate and rotate the footrest 48 from a retracted position, in which it lies adjacent to the front end of the seat portion 12 with its face surface extending substantially perpendicularly to the general

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plane of the upper surface of the seat portion 12 (Fig. 3), to an extended position in which it is substantially spaced from the front edge of the seat portion 12, with its face surface disposed at a reduced angle to the general plane of the upper surface of the seat portion 12 (Fig. 4).

The linkage mechanism is a compound parallelogrammatic mechanism adapted to produce the desirable translational motion, modified so as to produce the desirable rotational motion. The mechanism is pivotally mounted with respect to the seat portion 12 at two points, and is pivotally mounted to the footrest 48 at two points. The first pivotal connection between the linkage mechanism and the seat portion 12 is that previously described: the arms 40 are pivotally related to the side rails 20 by means of the actuating shaft 30. The second pivotal relationship between the linkage mechanism and the seat portion 12 is that existing between a pair of arms 50 and the side rails 20. Each of the arms 50 is formed similarly to the corresponding arm 40 in that it is provided with a re-entrant flange 52 to define a pair of spaced-apart portions apertured to engage a cross shaft 54. A pair of pins 56 may be inserted through the cross shaft 54 (Fig. 2) in abutment with faces of the flanges 52, so as to prevent motion of the cross shaft 54 along its longitudinal axis relative to the seat portion 12, but these pins 56 should not inhibit relative rotational motion between the cross shaft 54 and the arms 50 nor should the engagement be so tight as to impede rotation of the cross shaft 54 relative to the seat portion 12.

Cross shaft 54 extends transversely of the chair and passes through apertures in upstanding lugs on the brackets 24. A locking handle 58 is pinned to one end of the cross shaft and is rotatable through a selected angle to correspondingly rotate the cross shaft 54, for a purpose hereinafter to be described.

At each side of the chair, a link 62 is pivotally associated with the arm 40 by means of a pin 64 and is pivotally associated with arm 50 by means of a pivot pin 66. Obviously, for true parallelogrammatic operation, the length of arms 40 between pivotal axes 64 and 30 should equal the length of the arms 50 between pivotal axes 54 and 66, and the length of links 62 between pivotal axes 64 and 66 should equal the distance between the actuating shaft 30 and the cross shaft 54. While such an arrangement may be employed, in the disclosed embodiment of the invention the linkage departs from true parallelogrammatic action to produce a desired motion of the footrest 48.

Each of the arms 50 is further connected to the rear portion of a link 68 by means of a pivot pin 70. The forwardmost end of each of the links 62 is connected to a link 72 by means of a pivot pin 74, and links 68 and 72 are interconnected by a pivot pin 76. Again, these elements 62, 68, 50 and 72 may, but in the disclosed embodiment do not exactly, constitute a parallelogrammatic linkage.

The lowermost end of each of the links 72 is pivotally connected to a short link 80 by means of a pivot pin 82. The forwardmost ends of each pair of the links 68 and 80 extend forwardly through slots in a bottom plate 86 which forms the base of the footrest 48. A pair of mounting brackets 90 are affixed to the bottom plate 86 and each is provided with a forwardly extending (Fig. 3) flange to which the links 68 and 80 are pivotally connected by means of pivot pins 92 and 94. Again, the distance between pins 76 and 92 is or may be substantially equal to the distance between pins 82 and 94, and the distance between pins 76 and 82 is or may be substantially equal to that between pins 92 and 94.

Each of the links 62 is provided with a rearwardly extending arm portion 98 having a further rearwardly extending lip 100. Each lip 100 is spaced from the pivot pin 64 by a distance substantially equal to the distance between that pivot pin and actuating shaft 30 (Fig. 3). When actuating lever 36 is rotated from the position shown

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in Fig. 3 to the position shown in Fig. 4, links 62 are so moved that lips 100 engage a face of actuating shaft 30, thereby serving as a limit stop and effectively locking the footrest 48 in its extended position. Thus, as may best be seen in Fig. 4, to move the footrest 48 to its retracted position, pivot pin 64 must be rotated about the longitudinal axis of actuating shaft 30; yet, since the center lines of links 62 and arms 40 are substantially parallel with one another when the footrest 48 is extended, the weight of the sitter's legs will produce no forces tending to produce that rotational motion of pivot pin 64.

It will be noted that actuating shaft 30 is properly oriented with respect to pins 64 so that the faces of lips 100 will properly engage a face of that shaft when the footrest is extended.

The cross shaft 54 also serves an element of the locking mechanism for selectively preventing rocking motion of the chair, the details of this mechanism being shown in Figs. 2 and 5 to 7. A support member 102 is located centrally of the chair, in a lateral sense (Fig. 2), and extends between the bottom of the channel member 26 and the front rail 22 (Fig. 5), being screwed, doweled or otherwise affixed to each. A plate 104, provided with a pair of parallel flanges 106, is affixed to support member 102. A bracket 108 is pivotally mounted with respect to the support member 102 by a pivot pin 110 engaging aligned apertures in the bracket 108 and the flanges 106. Bracket 108 includes a pair of spaced apart, coaxial, tubular arms 112 (Figs. 5, 6 and 7). A sleeve 114 is slidably mounted upon and end caps 115 are affixed to the arms 112 (Fig. 7). Centrally disposed within the bracket arms 112, the sleeve 114, and the end caps 115 is a rod 116 which is pivotally affixed to a cross piece 118, a constituent element of the base 16, by means of brackets 120 and a pivot pin 122 (Fig. 5).

A series of washers 124 are positioned on the rod 116, within the sleeve 114, and are disposed in a notch or space 125 which separates the bracket arms 112. When the faces of these washers 124 are normal to the longitudinal axis of rod 116, the rod 116 may freely slide relative thereto, permitting rocking motion of the chair, the rod 116 pivoting through a small arc about pivot 122 and the bracket 108 and sleeve 114 pivoting through a small arc about pivot 110 as the chair rocks.

When, however, the faces of washers 124 are tilted relative to the longitudinal axis of the rod 116 (as hereinafter described) with the left-hand edges (Fig. 5) being tilted upwardly, downward movement of the washers 124 relative to the rod 116 is prevented thereby to prevent downward motion of the bracket 108 and hence of the forward portion of the chair on its base. Thus, if the washers 124 are moved to their tilted positions while the chair is rocked back, return of the chair to its normal attitude is prevented.

The position of the washers 124 is controlled by the sleeve 114, one or both of the ends of a longitudinal slot in that sleeve being engageable with tongues 128 on washers 124 so that upward motion of the sleeve 114 relative to the washers 124 will produce tilting of those washers and downward motion will restore, or permit restoration of, the washers 124 to their depicted orientation in Fig. 5. The position of sleeve 114 is in turn controlled by a pair of hangers 130. The lower end of each hanger 130 is turned inwardly to extend through an aperture in the sleeve 114 (Fig. 7) and the upper end is turned outwardly to engage an aperture near the ends of one of the legs of a U-shaped bracket 132 which is mounted upon the cross shaft 54 and fixed against rotation relative thereto by means such as pin 134 (Figs. 2 and 5).

As was before indicated, rotational motion may be imparted to cross shaft 54 through the locking handle 58. This rotation will cause bracket 132 to turn about the longitudinal axis of shaft 54 to move the hangers 130, and hence the sleeve 114, up or down along the rod 116, thereby to straighten or tilt the washers 124. Hence, if

the locking handle 58 is in its forwardmost position (Figs. 1 and 5), the chair may be rocked in the normal fashion, but the chair may be locked against restoration to the shown attitude by moving the locking handle 58 to its rearmost position (Fig. 5). The sitter may therefore assume a substantially reclined position, with the chair immobilized to rock, and, at his election, with the footrest 48 extended to support his legs. It will be noted that handle 58 is biased to its forwardmost (unlocked) position by means of a tension spring 138 connected to the upper end of one of the hangers 130 and anchored to the support member 102.

While it will be apparent that the embodiment of the invention herein disclosed is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, and means including one of said shafts for locking said seat portion against rocking motion with respect to said base portion.

2. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, and means including one of said shafts for locking said seat portion against rocking motion with respect to said base portion, said means comprising a rod pivotally mounted on said base, a sleeve supported by said seat portion and slidably disposed on said rod, and means for selectively preventing translational motion of said sleeve relative to said rod.

3. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, and means including one of said shafts for locking said seat portion against rocking motion with respect to said base portion, said means comprising a rod pivotally mounted on said base, a sleeve supported by said seat portion and slidably disposed on said rod, means for moving said sleeve a preselected distance in one direction along said rod, and means effective when said sleeve has been moved said preselected distance in one direction for effectively preventing movement of said sleeve in the other direction along said rod.

4. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, and means including one of said shafts for locking said seat portion against rocking motion with respect to said base portion, said means comprising a rod pivotally mounted on said base, a sleeve slidably disposed on said rod, support means for pivotally mounting said sleeve on said seat portion, means for moving said sleeve between a first and a second position relative to said support means, and means effective when said sleeve is in one of

said positions for preventing motion of said support means in one direction along said rod.

5. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, and means including one of said shafts for locking said seat portion against rocking motion with respect to said base portion, said means comprising a rod pivotally mounted on said base, a sleeve slidably disposed on said rod, support means for pivotally mounting said sleeve on said seat portion, a bracket affixed to said one shaft and rotatable therewith, means interconnecting said bracket and said sleeve for converting rotational motion of said bracket into sliding motion of said sleeve with respect to said support means, and means effective when said sleeve has been moved to a preselected position with respect to said support means for preventing motion of said support means in one direction along said rod.

6. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, a handle mounted on said first shaft rotatable to rotate said first shaft to control said linkage mechanism, a handle mounted on the said second shaft rotatable to rotate said second shaft, and means responsive to rotation of said second shaft for preventing rocking of said seat portion on said base portion.

7. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a footrest, first and second shafts supported on and extending transversely of said seat portion, one of said shafts being rotatable about its longitudinal axis with respect to said seat portion, a linkage mechanism supported on said shafts for movably supporting said footrest relative to said seat portion, a rod pivotally mounted on said base portion, a bracket pivotally mounted on said seat portion and normally movable with respect to said rod, a locking mechanism disposed on and movable between two positions relative to said bracket and effective when in one of said positions to lock said bracket against movement in one direction with respect to said rod, and connecting means interconnecting said locking mechanism and said second shaft for moving said locking mechanism between said two positions as a result of rotation of said second shaft.

8. In a chair, a seat portion, a footrest, a rotatable shaft supported on and extending transversely of said seat portion, said shaft having a flat portion, and a linkage mechanism for movably supporting said footrest relative to said seat portion, said mechanism including an arm rigidly connected to said shaft, a link pivotally connected to said arm, and a lip on said link selectively engageable with said flat portion of said shaft.

9. In a chair, a seat portion, a footrest, a rotatable shaft supported on and extending transversely of said seat portion, said shaft having a flat portion, and a linkage mechanism for movably supporting said footrest relative to said seat portion, said mechanism including an arm rigidly connected to said shaft, a link pivotally connected to said arm, and a lip on said link engageable with said flat portion of said shaft when said shaft has been rotated to a position to move said link substantially into alignment with said arm.

10. In a platform rocking chair, a base portion, a seat portion rockably mounted on said base portion, a shaft supported on and extending transversely of said seat portion, and means including said shaft for locking said seat portion against rocking motion with respect to said base

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portion, said means comprising a rod pivotally mounted on said base, a sleeve slidably disposed on said rod, support means for pivotally mounting said sleeve on said seat portion, a bracket affixed to said shaft and rotatable therewith, means interconnecting said bracket and said sleeve for converting rotational motion of said bracket into sliding motion of said sleeve with respect to said support means, and means effective when said sleeve has been moved to a preselected position with respect to said support means for preventing motion of said support means in one direction along said rod.

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