United States Patent

Flanagan et al.

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[54] RECLINING CHAIR

[72] Inventors: **Joseph P. Flanagan,** 23 Maple St., Broadalbin, N.Y. 12025; **Allan H. Crawford,** 72 Evelyn Ave., Amsterdam, N.Y. 12010

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[52] **U.S. Cl.** **297/85,** 297/DIG. 7, 297/317

[51] **Int. Cl.**.....**A47c 1/02**

[58] **Field of Search**.....297/85, 271, 69, 88, 89, 83, 297/84, 317, 322

[56] **References Cited**

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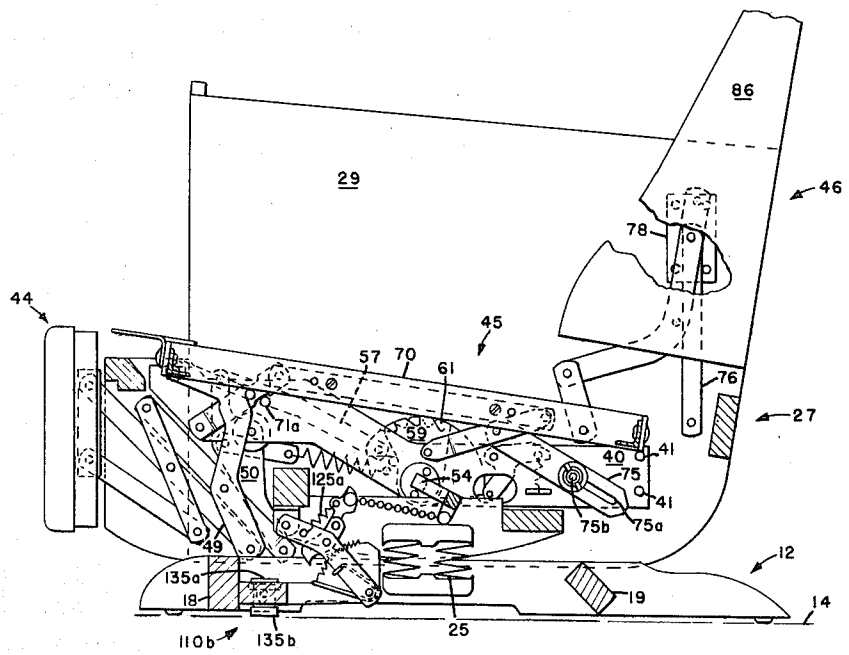
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Primary Examiner—Bobby R. Gay
Assistant Examiner—Garry Moore
Attorney—Joseph P. Flanagan

[57] **ABSTRACT**

A reclining chair having a one-way locking means; the locking means being carried on the movable chair portion and not being dependent on cooperating means on the stationary chair frame.

4 Claims, 5 Drawing Figures



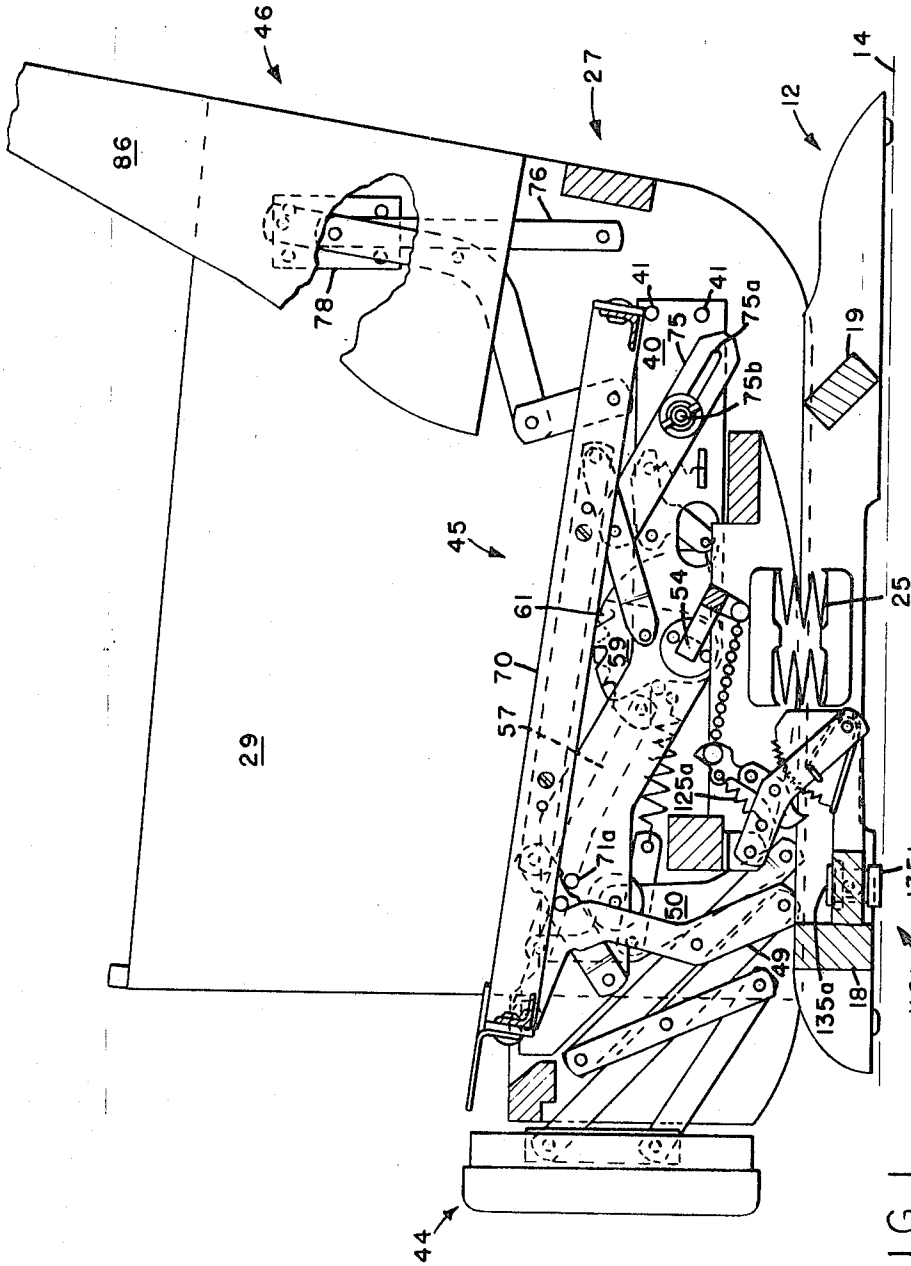


FIG. 1.

INVENTORS
JOSEPH P. FLANAGAN
ALLAN H. CRAWFORD

BY Joseph P. Flanagan
Atty.

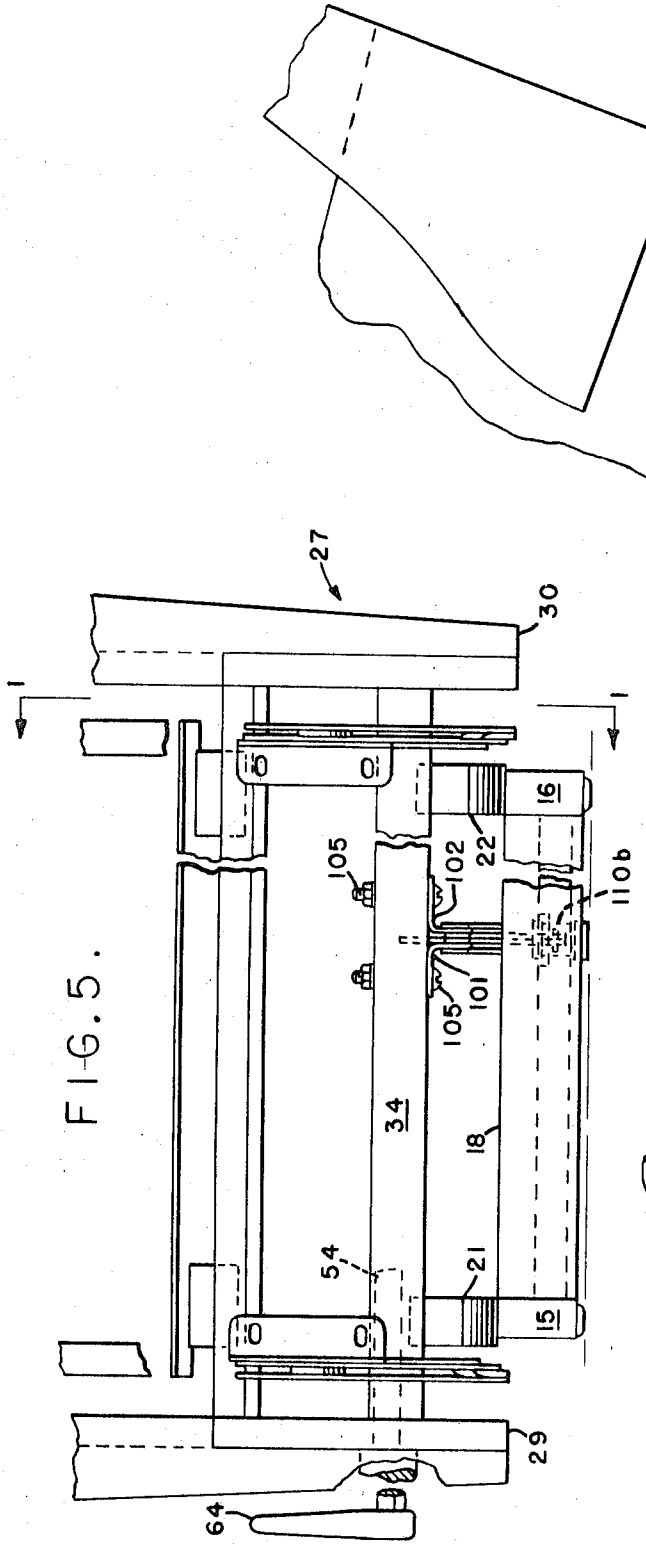


FIG. 5.

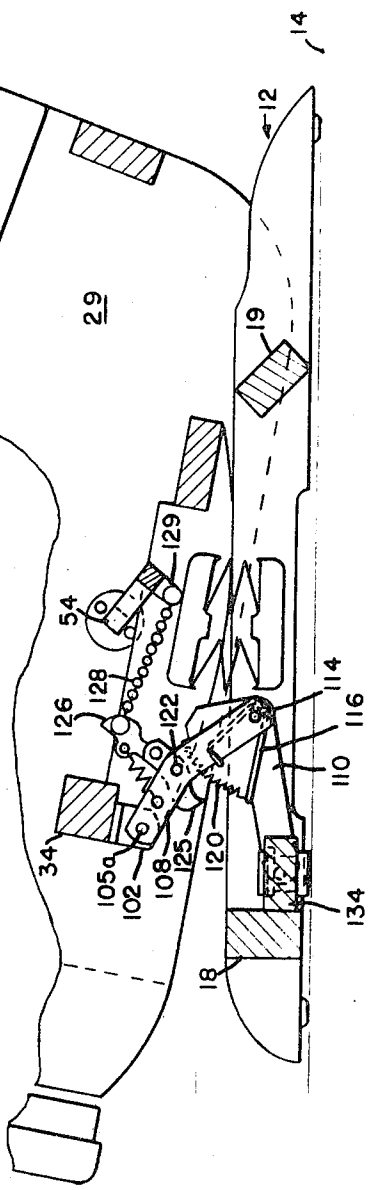


FIG. 2.

INVENTORS
JOSEPH P. FLANAGAN
ALLAN H. CRAWFORD
BY Joseph P. Flanagan
atty.

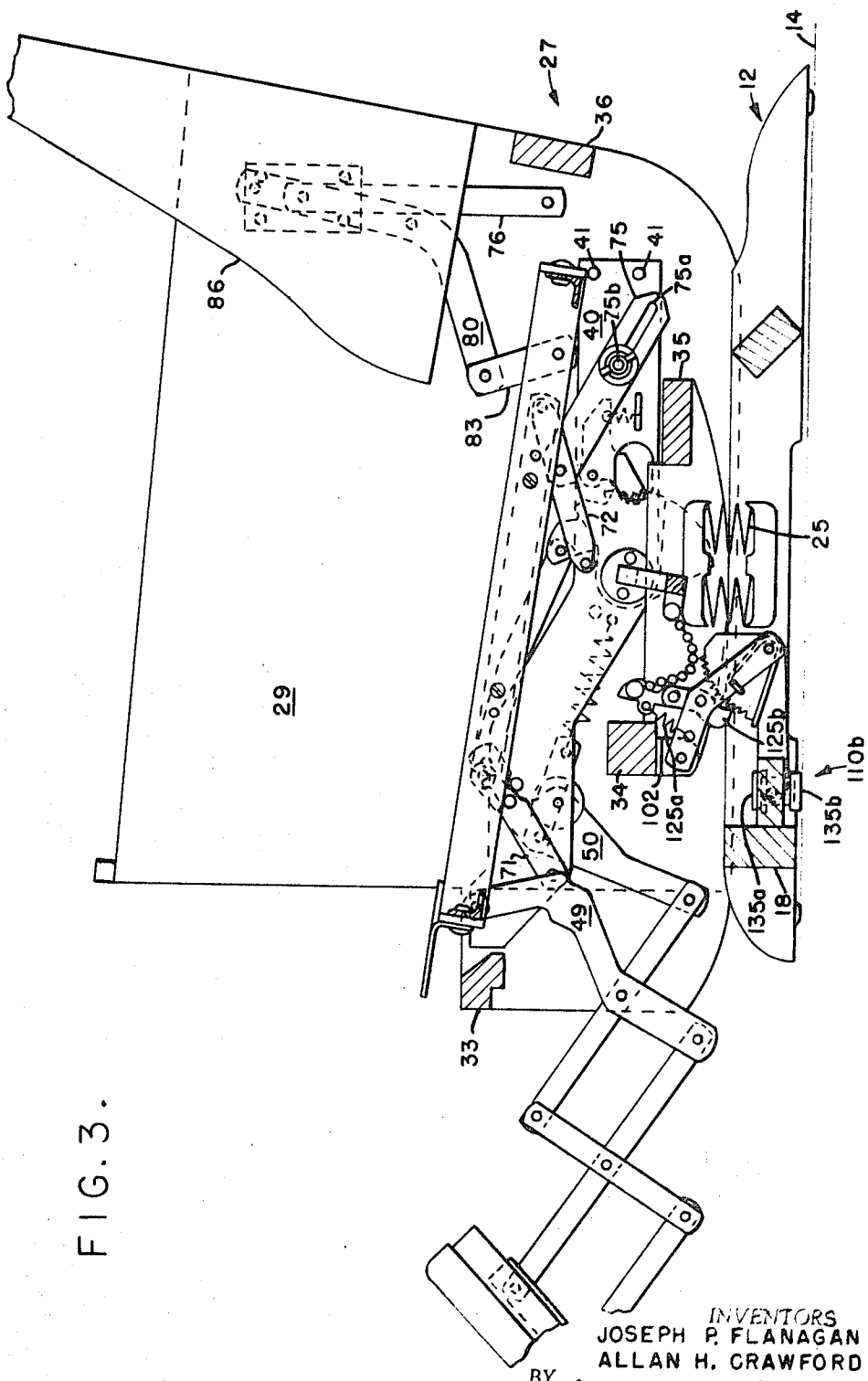


FIG. 3.

INVENTORS
JOSEPH P. FLANAGAN
ALLAN H. CRAWFORD

BY Joseph P. Flanagan
Atty.

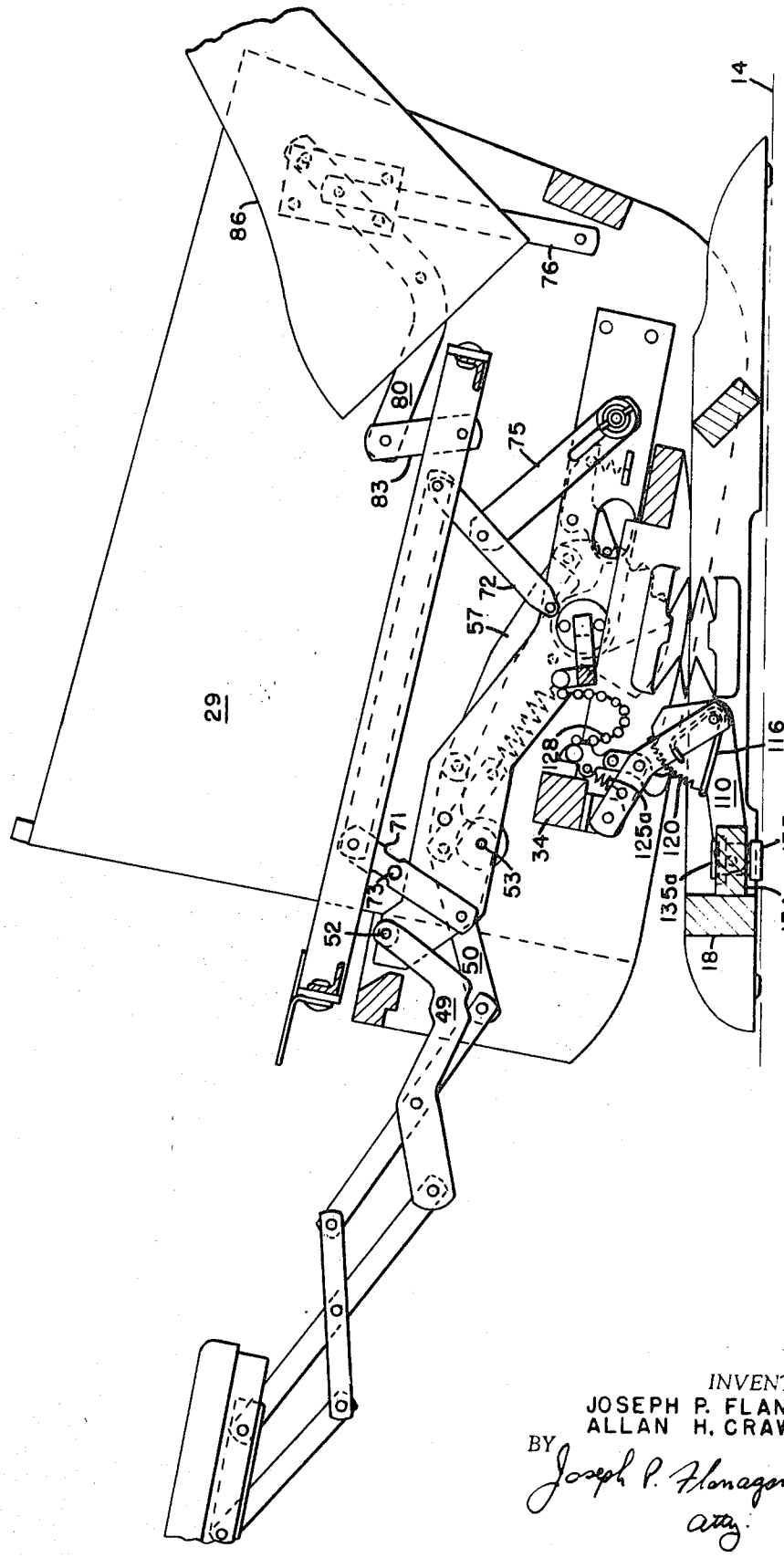


FIG. 4.

INVENTORS
JOSEPH P. FLANAGAN
ALLAN H. CRAWFORD
BY
Joseph P. Flanagan
atty.

RECLINING CHAIR

The present invention relates to reclining chairs and more particularly to reclining chairs of the rocker recliner type wherein a chair frame carries a seat and back assembly for movement thereon and relative thereto, the seat and back carrying chair frame assembly in turn being carried on a floor-supported platform for rocking movement thereon.

Chairs of this type are traditionally constructed so that the chair is capable of various modes of operation, that is to say, the chair may be rocked to and fro in the manner of a conventional platform rocker as well as being reclined to various positions wherein the occupant of the chair may cause the seat and back assembly to move relative to the chair frame in such a manner that the chair assumes a rearwardly tilted or reclined position.

Additionally, at times chairs of this type are capable of other modes of operation wherein both reclining and rocking movements are combined. For example, the chair may be first reclined, as above described and then the entire assembly rocked rearwardly.

When the chair is reclined it is found to be desirable that the forward rocking movement of the chair be precluded to prevent the situation whereby the chair may rock forward causing discomfort to the occupant when the chair is in a reclining position. To accomplish the desired results of blocking forward rocking of a chair that has been both rearwardly rocked and reclined various prior art devices are available. These prior art devices, notwithstanding the fact some of them are quite effective, depend for their operation on proper alignment between the chair frame and the base since the rocker blocking mechanisms comprise cooperative structure carried on both the base and the chair. As will be appreciated, should the chair loosen up in such a manner that the chair frame and the base be out of alignment, the base and chair frame cooperating structure may bind, or otherwise be rendered less satisfactory in operation.

To overcome this possibility, the present invention is directed to a rocker blocking mechanism wherein the entire blocking assembly is carried on the chair frame. By that it is meant that there is no cooperation between chair frame and base carried structure insofar as the blocking mechanism is concerned and, even though the chair frame may be twisted or otherwise disaligned relative to the base, the blocking structure will continue to function without binding or other impairment.

The primary object of this invention, therefore, is the provision of a rocker recliner chair having means to block rocking of the chair when the chair is in a reclined position, wherein the rocker blocking mechanism comprises means carried in the chair frame which means do not depend for their operation on cooperative structure carried on the base structure.

This primary object as well as other objects and advantages of the invention will become more readily apparent from the following detailed description taken in connection with the accompanying drawings wherein:

FIG. 1 is a sectional view of a chair showing the present invention, the chair being shown in upright position and neither rocked nor reclined, the blocking mechanism disengaged.

FIG. 2 is a view similar to FIG. 1 showing the chair in a rearwardly rocked position, the blocker mechanism being disengaged.

FIG. 3 is a view similar to FIG. 1 showing the chair in FIG. 1 position but with the blocker mechanism engaged.

FIG. 4 is a view similar to FIG. 1 showing the chair in a rocked and reclined position with the blocker mechanism engaged.

FIG. 5 is a front view of a portion of the structure of FIG. 1.

Referring to FIG. 1, as is conventional there is shown the blocker mechanism together with the link structure carried on one side of the chair, the side shown being the right side of the chair, that is the side which would normally be on the right side of an occupant sitting in the chair, it being understood that a similar linkage structure is carried on the left side of the chair.

In FIG. 1, a base assembly indicated by the arrow **12** rests on the floor **14**. The base assembly **12** comprises a pair of side members **15, 16** joined together by transverse connecting members **18, 19**. Carried on the side rails **15, 16** for rocking movement are rocker cams **21, 22**, respectively, which rocker cams support a chair assembly **27** and are operatively connected to the side rails **15, 16** by means of rocker springs **25**, all as well known in the art.

The chair frame assembly indicated by the arrow **27**, comprises a pair of side frame members **29, 30** joined together by transverse, frame members **33–36** to provide a rigid frame on which the footrest **44**, seat and back assembly are carried. Considering now the right side structure shown in FIGS. **1** and **4**; affixed to the side frame member **29** is a main mounting bracket **40** which is secured to the frame member **29** by means of screws or the like **41**. The bracket **40** carries a footrest **44**, seat **45**, and back assembly **46**. The footrest assembly **44** is supported on the main bracket **40** by means of two supporting links **49** and **50** which are pivoted to the bracket **40** on pivots **52, 53** respectively. The footrest supporting link **50** is operatively connected to a shaft **54** by means of a footrest actuating link **57**. The actuating link **57** is pivoted at one of its ends to the supporting link **50** and its other end to a drive sector **59** loosely carried on the shaft **54**. The drive sector **59** is coupled to a lost motion cam **61** fixed on the shaft **54**, the cam's arrangement being such that upon rotational of movement of the shaft **54** the cam **61**, being fixed thereto is positively driven and, through a pin and slot connection between the sector **59** and cam **61**, will pick up the sector causing it to rotate in the direction of the rotation of the shaft **54** to move the footrest actuating link **57** in a generally forwardly or rearwardly direction to extend or retract the footrest. The shaft **54** may be rotated manually be means of a handle **64**, pinned or otherwise fixed to such shaft, at one side of the chair.

The footrest may be moved from its nested position of FIG. **1** to its extended position of FIG. **3** independently of reclining or rocking movement of the chair. In order to extend the footrest, an occupant seated in the chair merely grasps the handle **64** and rotates it rearwardly which in turn causes the footrest to move outwardly to extended position, while rotation of the handle forwardly will cause the footrest to collapse.

The seat assembly **45** comprises a seat mounting bracket **70** which is supported on the main mounting bracket **40** by means of a forward carrier link **71** and a rear carrier link **72**, each of which links are pivotally connected to the main mounting bracket **40** and the seat bracket **70**. The forward carrier link **71**, it will be noted, carries a stop **73** intermediate its ends, which stop member **73** lies in close proximity to an indentation formed in the footrest supporting link **50**, the arrangement being such that the stop member **73** will normally block any counterclockwise rotation of the forward carrier link **71** until the footrest supporting link **50** is moved clockwise sufficiently to remove the stop from blocking relationship as hereinafter described.

The backrest assembly **46** comprises a linkage assembly operatively pivotively connected between the seat mounting bracket **70** and the side frame number **29**. This linkage includes a backrest link **76** connected at its lower end to the side frame number **29** and to its upper end to a bracket **78**, which bracket is, in turn, fastened to the side frame number **29**. Pivoted to the upper end of the link **76** is a backrest supporting link **80** which extends downwardly and forwardly and which, at its lower end, is pivotally connected to a backrest carrier link **83**. The backrest carrier link **83**, is, in turn, pivotally connected to the seat mounting bracket **70**. Any suitable upholstered seat or back may be carried on the members **70** and **80** to support the body of an occupant seated therein.

The forward carrier link **71** and the rear carrier link **72** are supported in there at rest position of FIG. **1** by means of a pair of stops as now described.

A stop member **71***a* carried on the bracket **40** provides support for the forward carrier link **71** while the rear carrier link

72 is supported, indirectly, on a stop member 75*b* carried on the bracket 40, which stop member 75*b* engages the upper end of a slot formed in a slotted link 75 pivoted to the aforementioned rear carrier link 72.

Reclinging movement of the chair may be accomplished as now described. First, the footrest is extended by rotating the handle to remove the footrest supporting link from the area of travel of the stop 73. Once the path of the stop is cleared the occupant may recline the chair by merely grasping the arms of the chair and exerting rearward pressure on the back 86. Such action will cause the link 80 to rotate in a clockwise direction about its pivoted connection with the link 76, thus moving the lower forward end of the back mounting link 80 in a forwardly and upwardly direction. The link 80 will thus tend to pull the backrest carrier link 83 upwardly and forwardly to move the seat carrier link 70 in a similar direction. Such movement will continue uninterrupted until movement of the slotted link 75 is arrested by engagement of the end 75*a* of the slot with the pin 75*b*, whereupon the chair is positioned in a reclined state.

If the chair has been reclined, it is possible to then rock the chair rearwardly and lock it in such rearwardly rocked position. This is accomplished by means of a blocking means hereinafter described.

Carried on a transverse frame member 34 are a pair of downwardly extending angled bracket members 101, 102 which members may be secured to the frame member 34 by means of screws 105 or the like. Pivotally carried on the downwardly extending portions of the members 101, 102 on a pin 105*a* are a pair of carrier links 108, 109, which carrier links extend rearwardly and downwardly from the brackets 101, 102. These carrier links support a ratchet and pawl assembly, the ratchet 110 being pivotally supported by the carrier links on a pivot member 114 carried by the lower ends of the carrier links 108, 109. The ratchet 110 is biased in a counterclockwise direction by a spring member 116 which passes above the forwardly extending arm of the ratchet member 110 and thence, on each side of the ratchet member extending in a rearwardly direction thence around the pivot member 114, then in a forwardly direction where the ends of the spring member 116 cup the lower edges of the carrier links 108, 109. The rachet member 110 has a plurality of teeth 120 formed along a portion of one of its edges. There is also carried, on the carrier links 108, 109, on a pin member 122 extending therethrough a pawl 125. The pawl 125 is free to rotate on the pin 122 and is spring biased in a counterclockwise direction by a spring member 125*a* connected between the pawl 125 and a pin 125*b* carried on the carrier links 108, 109. Attached to the upper end 126 of the pawl 125 is a chain 128 which, in turn, is connected to a bracket 129 secured to the aforementioned shaft 54.

The ratchet member 110, at its forward end carries a foot member 110*b*, the foot member resting on the floor 14.

The blocking mechanism just described is shown in its inoperative or nonblocking position in FIGS. 1 and 2 wherein it will be observed that no contact is made between the ratchet 110 and pawl 125. In FIG. 1 the chair is at rest while in FIG. 2 the chair is in a rearwardly rocked position, and it will be appreciated from an examination of these figures that the chair is free to rock to and fro without the ratchet 110 or pawl 125 interferring with each other.

Whenever it is desired to lock the chair against forward rocking movement the occupant of the chair need merely rotate the handle 64 in a clockwise direction, FIGS. 1 and 2 to thus rotate the shaft 54 in a similar direction and slack the tension on the chain 128, to allow the pawl 125 to be urged counterclockwise under action of the spring 125*a*. Such action allows the pawl to move into engagement with the teeth 120 of the ratchet 110. Since the teeth 120 are inclined upwardly, any attempt to rock the chair forwardly will cause the pawl to bear heavily against these teeth and preclude forward rocking movement of chair, yet allowing the chair to be rocked rearwardly as well as reclined.

The foot member 110*b* carried at the forward end of the ratchet 110 may carry a keeper element 134 to prevent unwanted counterclockwise rotation of the ratchet should the chair be lifted from the floor when, for example, the chair is moved about. It will be appreciated that when the chair is in position on the floor, counterclockwise rotation of the ratchet is precluded by the blocking action of the floor 14 against the foot member 110*b*, but when the chair is raised off the floor such blocking action is unavailable; thus, when the chair is lifted the spring member 116 may cause the ratchet to rotate counterclockwise.

As one form keeper mechanism there may be secured to the base cross member 18 and apertured member 134 having an aperture of a diameter less than the diameter of the pads 135, 135*a* formed on the foot member 110*b*. Thus, whenever the chair is lifted from the floor, as the base 12 is lifted it will carry with it the apertured member 134 which, in turn, will engage the pad 135*a* to lift the ratchet 110.

From the above description it will be observed that the instant invention provides a rocker recliner chair having one-way locking means to preclude forward rocking movement of the chair when such is desired by means of a locking means comprised of structure carried on the moveable chair assembly and not dependent for its locking on cooperation of any base carried structure mounted in fixed relation to the rocking chair, thus should the rocking frame assembly become twisted or otherwise disaligned in relation to the base the cooperative ratchet and pawl structure will move as a unit and function properly regardless of the relative alignment of the chair and its platform.

Although a preferred embodiment of the instant invention has been described herein, it will be appreciated that a wide latitude of modification, substitution, and change is intended in the foregoing. Further, instances may arise wherein some features of the invention may be employed although other features will not be used. Thus, it is appropriate and intended that the appended claims be broadly construed keeping in mind the spirit and scope of the invention herein.

Having thus described my invention, I claim:

1. In a reclining-rocker chair the combination of a platform a chair frame carried on said platform for rocking movement relative thereto, locking means supported by said chair frame for movement from an inoperative position to block rocking movement of said chair frame relative to said platform, said locking means comprising carrier link means carried on said movable chair frame and movable with said chair frame during rocking movement thereof, a ratchet member and a pawl member both pivotally mounted on said carrier link means, said ratchet member extending into bearing contact with a floor surface supporting said base and engageable by said pawlto block said rocking movement.

2. The invention of claim 1 including a movable footrest assembly supported on said chair frame, means operable to move said footrest to extended position and simultaneously activate lock means to lock said chair frame against said rocking movement relative to said base.

3. The invention of claim 2 including first and second spring means, said first spring means interconnected between said carrier link means and said ratchet to bias said ratchet towards bearing contact with said floor, said second spring means interconnected between said pawl and said carrier link means to bias said pawl toward bearing contact with said ratchet.

4. The invention of claim 3 including flexible connecting means interconnected between said pawl and said means for moving said footrest.

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