United States Patent [19]

Caldemeyer

[11] **3,826,532**

[45] **July 30, 1974**

[54] **ROCKING RECLINER WITH ROCKER LOCK AND ANTI-OVERTURN SHOCK ABSORBER**

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[22] Filed: **Nov. 16, 1972**

[21] Appl. No.: **307,087**

[52] **U.S. Cl.** **297/270,** 297/DIG. 7, 297/267, 297/310

[51] **Int. Cl.** **A47c 3/02**

[58] **Field of Search** ..... 297/355, 332, 342, 208, 297/210, 310, 211, 267, 269, 270, 271, DIG. 7

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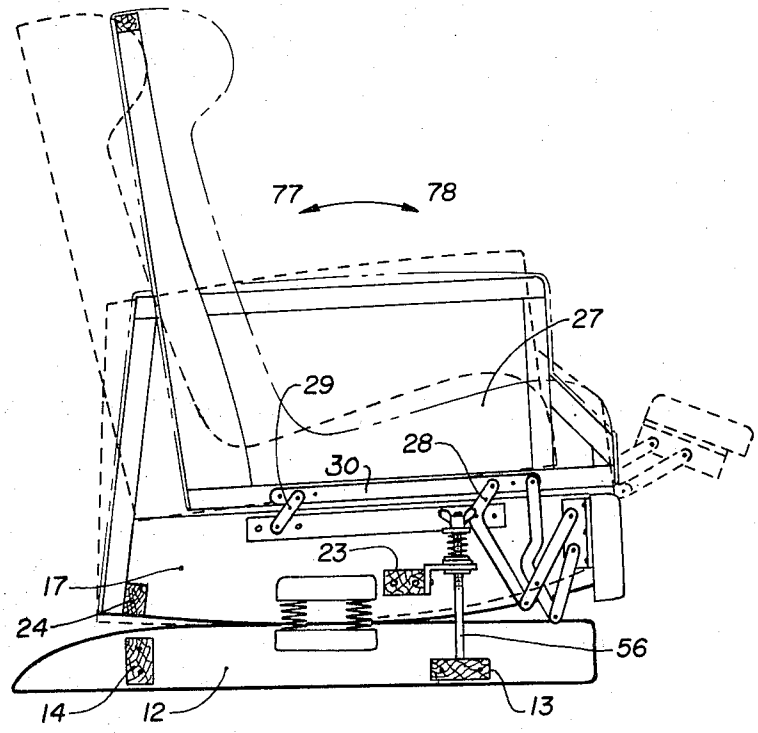
Primary Examiner—James T. McCall

Attorney, Agent, or Firm—Woodard, Weikart, Emhardt & Naughton

[57] **ABSTRACT**

A rocking recliner chair includes a lock for locking the chair with respect to the base at any of a number of possible attitudes, and has a shock absorber associated with the chair and base to limit the extent of travel during rocking of the chair. It is a simplified footrest mechanism and a simplified full bed mechanism.

13 Claims, 9 Drawing Figures



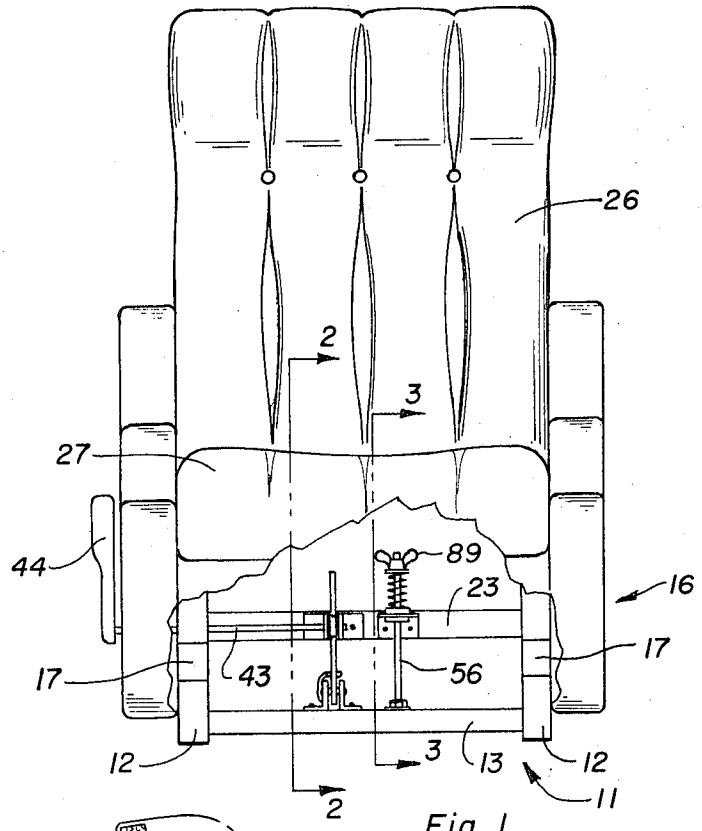

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Fig. 1

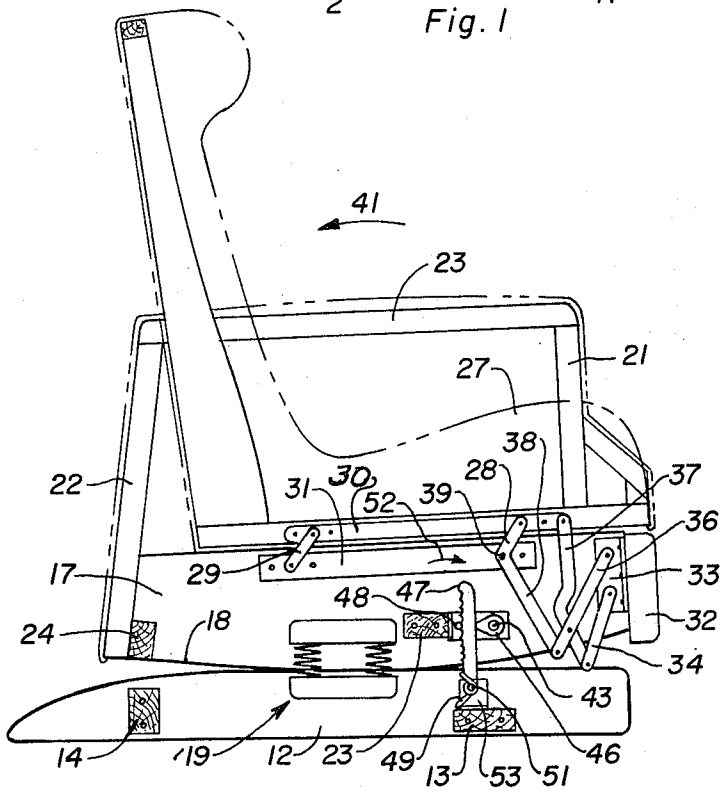

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Fig. 2

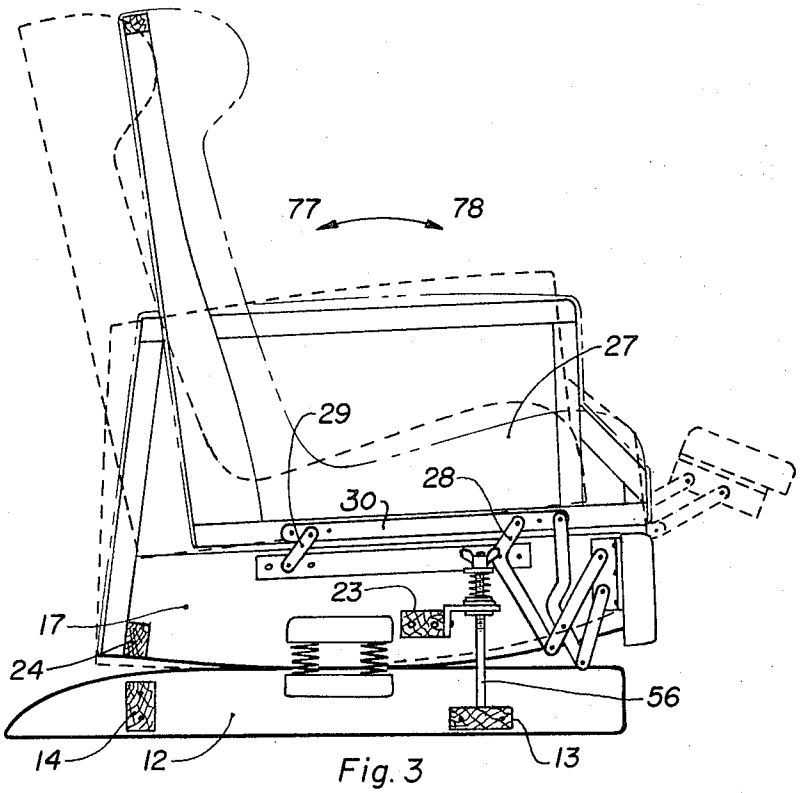


Fig. 3

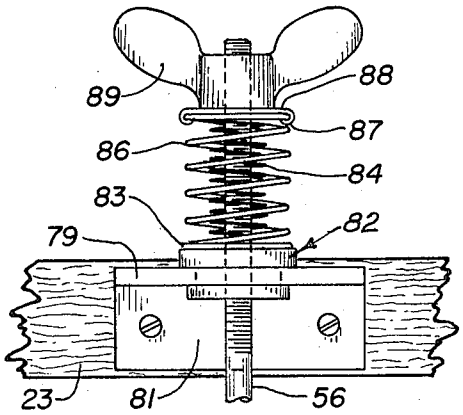


Fig. 4

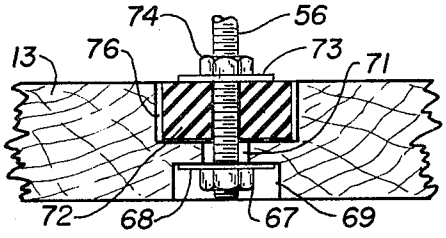


Fig. 5

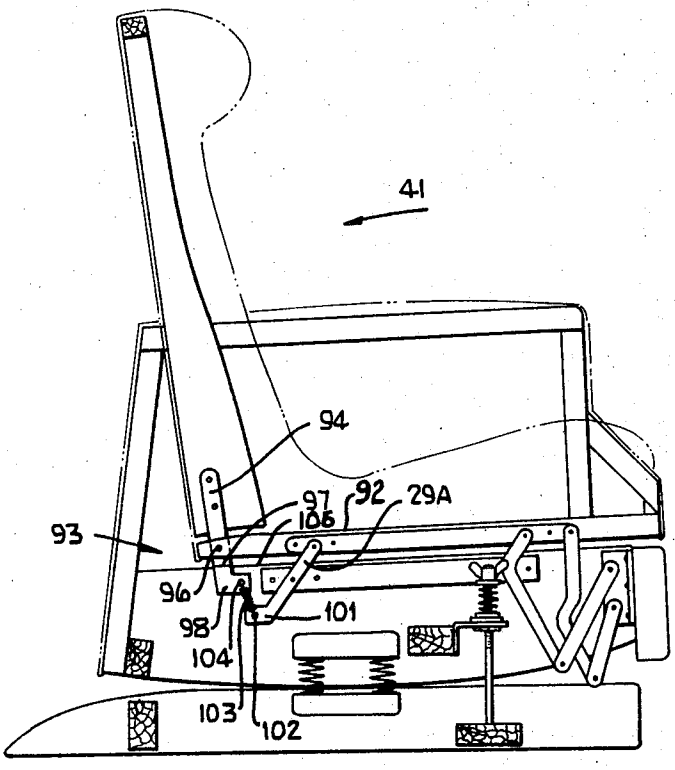

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Fig.6

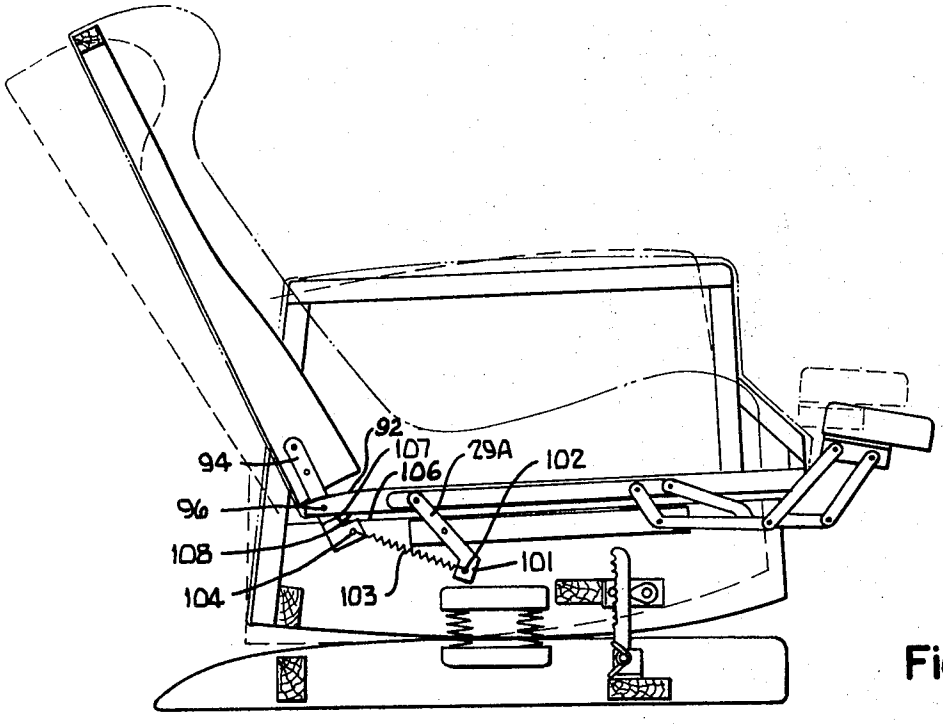

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Fig.7

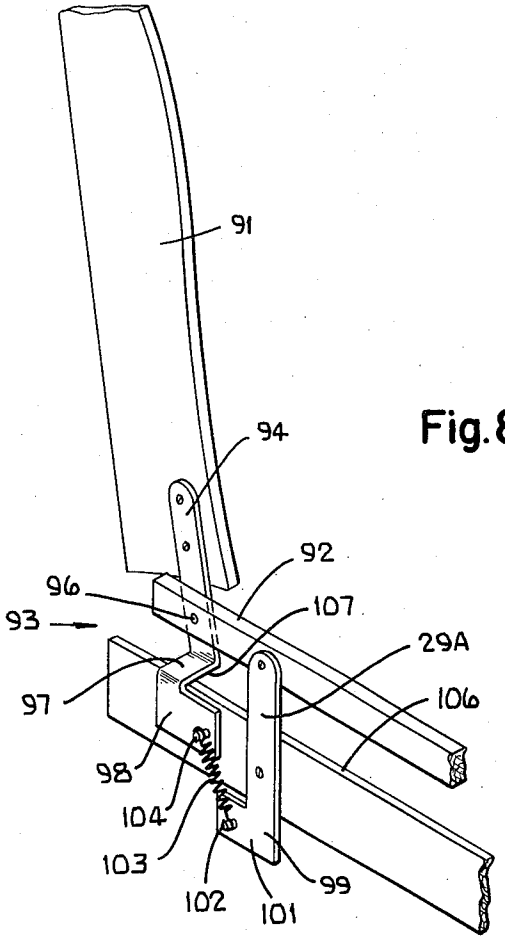

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Fig.8

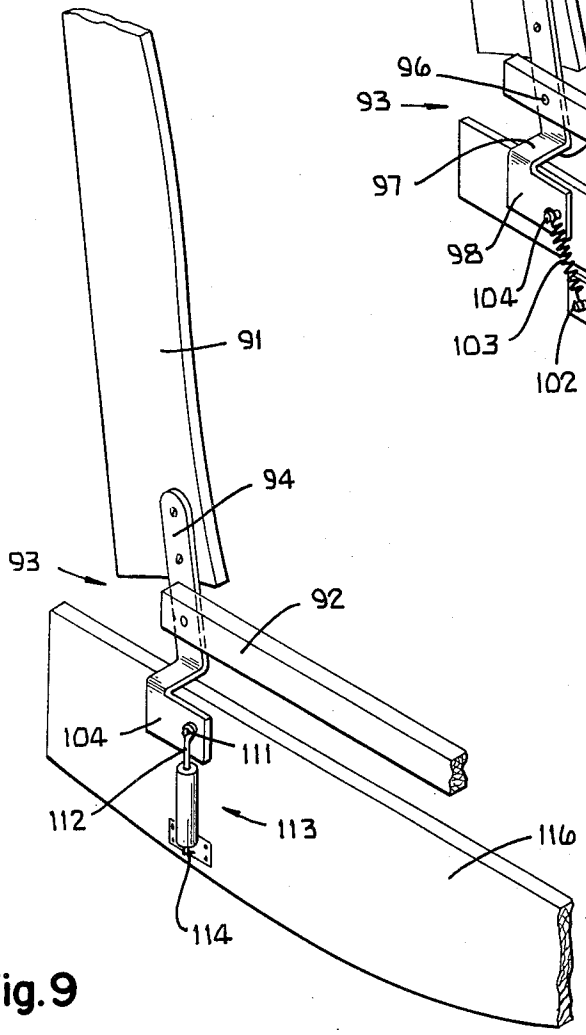

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Fig.9

ROCKING RECLINER WITH ROCKER LOCK AND ANTI-OVERTURN SHOCK ABSORBER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to rocking reclining chairs, and more particularly to a chair having a lock and an anti-overturn shock absorber. It enables elimination of a separate seat angle adjustment, and provides a simplified three way full bed reclining fixture.

2. Description of the Prior Art

Locking devices for tiltable or rocking chairs have been known for many years. Two examples of early patents showing such devices are U.S. Pat. No. 135,465 issued Feb. 4, 1873 to Chichester, and U.S. Pat. No. 296,931 issued Apr. 15, 1884 to Cupp. More recent patents showing locking mechanisms for platform rockers are U.S. Pat. No. 2,541,744 issued Feb. 13, 1951 to Burton and U.S. Pat. No. 2,907,373 issued Oct. 6, 1959 to Katz and U.S. Pat. No. 2,804,124 issued Aug. 27, 1957 to Belisle and U.S. Pat. No. 3,379,473 issued Apr. 23, 1968 to Mizelle and U.S. Pat. No. 3,096,121 issued July 2, 1963 to Knabusch et al.

Additional U.S. Pats. have been issued to me and which illustrates a locking mechanism including a serrated or detented pivoted locking bar and various means for activating the locking bar against a detent to lock the chair in a desired attitude. These patents are as follows:

U.S. Pat. No. 2,606,594 Caldemeyer Aug. 12, 1952, U.S. Pat. No. 3,065,828 Caldemeyer Nov. 27, 1962, U.S. Pat. No. 3,371,958 Caldemeyer et al. Mar. 5, 1968, U.S. Pat. No. 3,434,755 Caldemeyer et al. Mar. 25, 1969.

Most rocker locking mechanisms use the "landing gear" lock, which prevents rock in T.V. position. Some chairs have been devised wherein the extension of the footrest is controllable by a handle which, at the same time, locks the chairs so that it cannot be rocked. I believe my patents are the only ones successfully employing a true rocking recliner. A patent of which I am aware and wherein there is cooperation of the reclining and legrest extension mechanisms and a rock arresting means, is U.S. Pat. No. 3,493,264 issued Feb. 3, 1970 to Frank M. Re. This is the "landing gear" arrangement.

Despite the many advances which have been made in rocking recliners, further improvement has been needed in the respect of simplifying a true rocking recliner in terms of structure and expense, while at the same time accommodating a rocking motion while the chair is in the reclined condition, without the hazard of the chair overturning.

In my U.S. Pat. No. 3,368,843 issued Feb. 13, 1968, a parabolic curvature is provided on the top of the chair base runner (i.e., the floor engaging runner) on which the rocker runner is supported, to limit the full rock of the chair, to thereby avoid overturning when the chair is reclined. However, for such a feature to be employed, it is preferable that the top of the base runner be comparatively close to the floor, to keep the overall height of the chair, and particularly the seat, at a reasonable level. On the other hand, with such a low runner height, a problem can be encountered and which involves striking of the footrest on the floor during a forward rock with the footrest in the folded condition. To minimize or avoid this problem, chairs have been employed using a so-called "tuck-under" footrest. However this involves additional parts and mechanism of the sort which should be avoided in a low-cost chair. With my present invention, a single footrest is now practical whereas heretofore in my opinion it was not marketable on a true rocking recliner, i.e., a recliner which can be rocked while in the recline condition.

Prior to my present invention, an effort has been made to avoid the necessity of the low-runner construction, by employing a web strap securable between a front rail of the chair and a front rail of the base to limit the amount of rearward rocking. If the strap fails, then the rocker springs of the chair, and interengagement of the side rail of the arm and the side rail of the base, will restrain the rock, but the spread of the rocker springs is not positive and requires a longer side rail to prevent the chair from turning over. My new device is positive, as well as fully adjustable, if so desired.

Implicit in reliance on interengagement of the arm side rail and base side rail, is a low runner height, together with the attendant problem discussed above with reference to footrest interference with the floor on the forward rock. Thus some improvement has been needed and the present invention solves the problem.

SUMMARY OF THE INVENTION

Described briefly, in a typical embodiment of the present invention, a rocking recliner with a comparatively high runner base height is provided with a shock absorber including a resilient mount in a lower cross member, typically a front rail of the base, and a rod extending through an aperture in a cross rail of the chair and having a spring thereon disposed between a stop on the rod and the chair cross rail. This serves to limit the backward travel of the chair during rocking motion.

In one embodiment, a breaking back is employed for a "full bed recline" condition in the rocking recliner. The back mounting is simple in construction, involving a single bracket on each side, serving as both a pivot for the back, and as a back pivot stop, and as a back balance and return spring connector.

In another embodiment, the back mounting bracket has a connection to the chair frame through a fluid-containing, spring-return, shock absorber.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of a basic chair structure incorporating a typical embodiment of the present invention.

FIG. 2 is a section therethrough taken at line 2—2 in FIG. 1 and viewed in the direction of the arrows, and showing the typical seat and leg rest mounting structure, and rocker lock.

FIG. 3 is a cross section similar to that of FIG. 2, but showing the shock absorber installation.

FIG. 4 is an enlarged detail of the upper connection of the shock absorber to the rocker.

FIG. 5 is an enlarged detail cross section through the lower mount of the shock absorber in the base cross member.

FIG. 6 is a section similar to FIG. 3 but showing a modification employing a breakaway back on the chair.

FIG. 7 is a section like FIG. 2, showing the chair of FIG. 6 with the footrest fully extended and the back fully reclined.

FIG. 8 is an enlarged perspective view of the back mounting bracket of the embodiment of FIGS. 6 and 7.

FIG. 9 is an enlarged perspective view showing the back mounting bracket of FIG. 8 but connected to a spring loaded fluid containing shock absorber.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, the rocking recliner includes a base 11 having a pair of floor engaging runners 12 with front and rear cross members 13 and 14 (FIG. 2). The chair 16 includes a pair of chair runners 17 engaging the floor runners 12 and rockable thereon in view of the generally arcuate conventional contour of the lower face 18 of the chair runners, with a pair of springs 19 at each side providing the normal resilient resistance to rocking to and fro about a generally neutral balanced position. Arm frames including front and rear uprights 21 and 22, respectively, and arms 23 secured thereto are affixed to the runners 17. A cross member 23 is affixed between the runners 17 near the front of the chair, and another cross member 24 is affixed between the members 17 near the rear of the chair.

In the illustrated embodiment of the chair, the back 26 and seat 27 are affixed together and supported on a pair of rails of the metal fixture, one of which identified by reference numeral 30 is shown in FIG. 2. This is connected by a front and rear link 28 and 29, respectively, to a bracket or side rail fixture 31 affixed to the runner 17. A wrap-around footrest 32 is affixed to bracket 33 pinned at one side to the ends of links 34 and 36 of the footrest operating mechanism. The opposite ends of links 34 and 36 are connected to ends of links 37 and 38, respectively, the latter being pinned at 39 to the front end of bracket 31. Therefore, as the chair occupant pushes the seat and back 27 and 26, respectively, rearwardly in the direction of arrow 41 as a unit, the links 28 and 29 pivot with respect to the bracket 31 in a counterclockwise direction and the footrest is extended. This type of construction and operation is largely conventional and more fully described in U.S. Pat. No. 3,162,482 issued Dec. 22, 1964 to A. J. Katz. It should be understood, of course that in the above patent the bellcrank for T.V. positions is eliminated, this simplifying the mechanism and lowering the cost. In my construction, a bracket such as 31 is fastened to each of the chair runners so that the associated linkage and seat supporting rail such as 30 is provided at each side of the seat.

The rocker lock is provided to include a cross shaft 43 operated by a handle 44 (FIG. 1) and having a cam thereon at 46 (FIG. 2) engageable with a rod 47 having serrations on the rear edge thereof engageable with a pin 48 mounted in a bracket affixed to the cross member 23. A spring 49 wrapped around a pin 51 in a bracket connected to the front cross member 13 of the base, urges the rod 47 in the direction of arrow 52 so that when the cam is away from the locking position shown, the rod will be moved forwardly so that it is away from the pin 48 and permits free rocking of the chair to and fro on the base runners. A rocker lock of this general type of construction is shown in the above mentioned Caldemeyer U.S. Pat. No. 3,371,958. The mounting of the bracket 53 thereof as shown herein atop the front cross member 13 is an improvement in that it prevents the twisting action of the wood rail and prevents dowel pins from breaking and the base from falling apart.

Referring now particularly to FIGS. 1, 3, 4 and 5, the shock absorber assembly includes a rod 56 having a nut 67 at the lower end engaging a washer 68 received in a recess 69 (FIG. 5) in cross member 13. The rod extends up through the aperture 71 in the cross member and through a flexible insert 72 which has a washer 73 engaging the upper face thereof and a nut 74 threadedly received on rod 56 engaging the washer. Thus the flexible insert is firmly seated in the bottom of the upper recess 76 in the cross member. Because the aperture 71 and recess 76 are somewhat larger in diameter than the rod and insert, respectively, the rod does have some freedom of movement in a generally pivotal sense about the center of the two apertures to accommodate some movement back and forth in the direction of arrows 77 and 78 in FIG. 3, as the chair rocks back and forth.

The upper portion of the rod passes up through an aperture in the forwardly projecting flange 79 of the bracket 81 affixed to the cross member 23. A slide insert 82 is received in the aperture in flange 79, and it is actually through the central aperture in this insert that the rod extends. A washer 83 is mounted atop the insert and serves as the lower abuttment against which two concentric coil springs 84 and 86 abut. The upper ends of these two springs are clamped by inwardly turned tabs 87 on the under side of the washer 88 retained on the rod by a wingnut 89. It should be understood that these springs are an added feature to control the rock of the chair and add a cushion to the shock.

The materials employed in the shock absorber assembly are typically metal, except for the flexible insert at the bottom, which is typically rubber, and the guide insert at the top which may be polyethylene or polypropylene. The wingnut can be adjusted to provide the limitation on the extent of rocking and the inner spring, which is typically one of a longer free length and smaller wire diameter, is used for the regular shock absorbing action during a normal rock. However the heavy outer spring having a shorter free length serves to better control the rock when the chair is reclined in the T.V. viewing position indicated by the dotted lines in FIG. 3. By attaching the upper ends of the springs to the upper wingnut assembly, noise can be minimized and, as a matter of fact, the washer 88 can be integral with the wingnut, which is the preferable construction.

It should be recognized that the present invention is applicable not only to the chair having the integral seat and back, but can also be applied to chairs wherein the back operates independently of the seat for reclining action. It will also be readily recognized that the present invention, by providing the rocker lock, can obtain a large degree of effective recline such as that shown in FIG. 4 of the above mentioned Katz U.S. Pat. No. 3,162,482, but without necessity of additional linkage shown in that patent. However, since it avoids the necessity of the additional linkage and the extra height in the chair which is necessitated by the nature of operation of that linkage, the rocker runners themselves can

be higher and thus enable use of a conventional footrest construction without the tuck-under feature and without engagement thereof with the floor during forward rocking of the chair when the footrest is folded. Thus the combination of the present invention is well suited toward the achievement of the objectives thereof and overcoming the above noted shortcomings of the prior art. Of course it should be understood that the present invention does not preclude use of a tuck-under footrest, nor does it preclude use of a two-angle seat linkage as in the above mentioned Katz U.S. Pat. No. 3,162,482 (FIG. 4).

Referring now to FIGS. **6, 7** and **8,** there is illustrated some structure providing a "breakaway back" on the chair. In this instance, the basic chair construction is the same as in FIGS. **2** and **3,** but the back post **91** is pivotally connected to the seat frame side member **92** by a back mounting bracket **93.** The upper portion **94** of this bracket is affixed to the inside face of the back post **91** by a pair of screws or other fasteners, and is pivotally mounted to the seat frame side member **92** to pivot on a horizontal axis at **96.** The intermediate portion of the bracket at **97** is horizontal and extends inwardly where it then projects downwardly to the lower forwarding extending portion **98.** The link **29**A is located much like link **29** of FIGS. **2** and **3,** but Is extended downwardly at **99** and rearwardly at **101.** A pin or hook **102** on the lower rear end portion **101** of link **29**A serves as a connection for the lower end of return spring **103,** the upper end of which is connected to a pin or hook at **104** on the forward end of the lower portion **98** of the back mounting bracket.

When the chair is in the upright condition as shown in FIG. **6,** with the seat and back forward, the horizontal portion **97** abuts the upper edge **106** of runner **17,** thus serving as a stop for the forward motion of the chair back. Spring **103** retains it securely in this "returned" position.

When the chair back is tilted to the rear, either simultaneously with pushing the seat to the rear in the direction of arrow **41** for extension of the leg rest, or without pushing the seat rearwardly, the rearward tilting will terminate upon engagement of the front edge **107** of the horizontal stop portion **97** of the bracket with the underside **108** of the chair seat frame side member **92** as shown in FIG. **7.** Of course the spring **103** is extended during this operation and thus resists precipitous or a falling sensation of the back as it is pushed into the reclining position. Also it will aid in return of the chairback as the occupant leans forward.

It will be recognized that when the footrest is fully extended, and the chairback is fully reclined, and the chair is rocked to the rear and locked in that position, one has, in effect, a full bed recline of the chair. When the chair is unlocked, it can be rocked back and forth even though the footrest is fully extended and the chairback fully reclined. The shock absorber assembly previously described, will limit the rocking travel to prevent overturn of the recliner when rocked in this fully reclined condition.

Referring now to FIG. **9,** there is shown an alternate construction which can be employed when the seat frame is movable as in the previously described embodiments, or if the seat frame is fixed as in some chairs for economy or other reasons. In this embodiment, the forwardly projecting lower portion **104** of the chair back mounting bracket **93** is pivotally connected at **111** to the upper end of the piston rod **112** of a conventional pneumatic door closer assembly **113** having an internal spring normally acting in a direction tending to retract the piston rod **112.** The lower end of the door closer assembly cylinder is pivotally connected at **114** to the side rail **116** of the chair. This side rail can be a runner such as **17** in the event the chair is a rocking chair. The shock absorber assembly **113** can be, as mentioned above, a conventional door closer of the pneumatic type, or it could be a hydraulic type of shock absorber. The pneumatic type is believed preferable.

The embodiment of FIG. **9** also provides the advantage of resisting precipitous movement of the chair back, either in the forward or reverse direction, and employs the spring action to normally retract the piston rod. This tends to keep the back in the upright condition and also it aids in a heavier person in resuming an erect attitude to get out of the chair.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as other modifications may readily suggest themselves to persons skilled in this art and within the broad scope of the invention.

1. In a rocking recliner, the combination comprising:
a base;
a seating unit having rocking contact with said base;
a pair of generally vertically spaced members, one member being secured to said seating unit and the other secured to said base;
an elongated rod extending between said members and having means thereon limiting the attainable separation between said members and thereby limiting rocking of said seating unit on said base;
said limiting means including resilient means associated with said rod and disposed between one of said members and a stop on said rod;
said resilient means including a pair of concentric coil springs having different spring rates, and disposed between a bracket affixed to the upper one of said members and an adjustable nut threadedly received near the upper end of said rod.

2. In a rocking recliner, the combination comprising:
a base;
a seating unit having rocking contact with said base;
a pair of generally vertically spaced members, one member being secured to said seating unit and the other secured to said base;
an elongated rod extending between said members and having means thereon limiting the attainable separation between said members and thereby limiting rocking of said seating unit on said base;
said rod including generally pivotal mounting means near the lower end thereof securing said rod to the lower one of said members but accommodating swivel action of said rod with respect to said lower member for freedom of movement of said rod during rocking action of said seating unit.

3. The combination of claim **2** wherein:
a bracket and slide mounted therein is secured to the upper one of said members, said rod being guidingly received through said slide and having a retainer thereon near the upper end thereof.

4. A rocker recliner comprising:
a base;

a seating unit having side runners in rocking contact with said base;

a pair of generally vertically spaced members, one member being secured to said seating unit and the other secured to said base;

means for locking said seating unit at various attitudes of rock with respect to said base;

a combination seat and back;

a footrest;

an operating linkage associated with said seat and back combination, and with said footrest, and pivotally mounted to said runners, and operable upon movement rearwardly of said seat and back combination to extend said footrest;

said seating unit being rockable on said base with said seat and back combination moved rearwardly and footrest extended, as well as with said footrest retracted and said seat and back combination moved forwardly;

and limiting means extending between said vertically spaced members and limiting the attainable separation between said members and thereby limiting the extent of rocking of said seating unit on said base.

5. The combination of claim **4** whrein: said footrest extends down to the level of the lower front margin of the bottom of the side runners of said seating unit.

6. The combination of claim **4** and further comprising:

a first pair of metal brackets affixed to each of said runners, and a pair of seat supporting rails affixed to the seat of said seat and back combination, each of said brackets being linked to one of said rails by said linkage, to accommodate said rearward and forward movement of said seat and back combination.

7. The combination of claim **6** and further comprising:

a second pair of brackets pivotally connecting said back to said seat of said seat and back combination, for pivoting said back rearward and forward with respect to said seat,

said brackets of said second pair having transversely extending stop portions normally spaced below said seat, and abuttingly engageable with the underside of said seat during rearward pivoting of said back, to limit said rearward pivoting.

8. The combination of claim **7** and further comprising:

spring return means connected between forwardly projecting portions of said brackets of said second pair, and rearwardly projecting portions of said linkage, and constantly urging said back in a forward direction.

9. The combination of claim **4** and further comprising:

a pair of brackets pivotally mounting said back to said seat,

and fluid containing shock absorbers connected between said brackets and said side runners to control pivoting of said back.

10. The combination of claim **9** wherein each of said brackets includes:

an upper portion affixed to the side of said back and pivoted to said seat on a horizontal axis,

a horizontal intermediate portion extending under said seat and engageable therewith during pivoting said back to limit rearward pivoting of said back, and

a forwardly extending lower portion connected to one of said shock absorbers.

11. The combination of claim **10** wherein:

said shock absorbers are pivotally connected to said brackets and said support means.

12. In a reclining seating apparatus, the combination comprising:

a seating unit having a seat and a back and support means for said seat;

a pair of brackets pivotally mounting said back to said seat, each of said brackets including an upper portion affixed to the side of said back and pivoted to said seat on a horizontal axis, a horizontal intermediate portion extending under said seat and engageable therewith during pivoting said back to limit rearward pivoting of said back, and a forwardly extending lower portion;

and a spring connected between said at least one of said brackets and said support means to control pivoting of said back.

13. The combination of claim **12** wherein:

said spring is pivotally connected to said forwardly extending portion of at least one of said brackets and to said support means, and is disposed to normally urge said back toward a forward upright condition.

* * * * *