Dec. 28, 1965 G. C. WHITEFORD 3,226,155

COMBINATION ROCKING AND RECLINING CHAIR

Filed July 1, 1964 3 Sheets-Sheet 1

Fig. 1

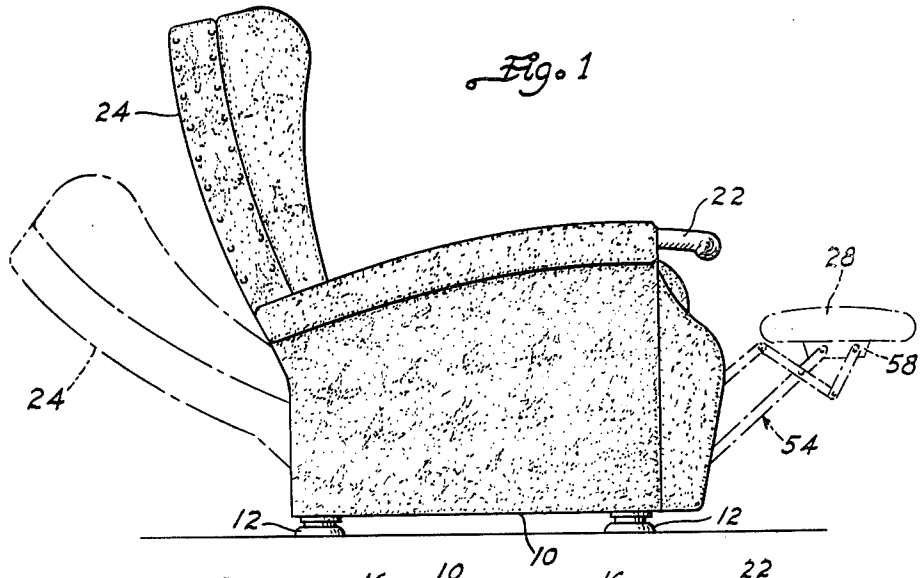
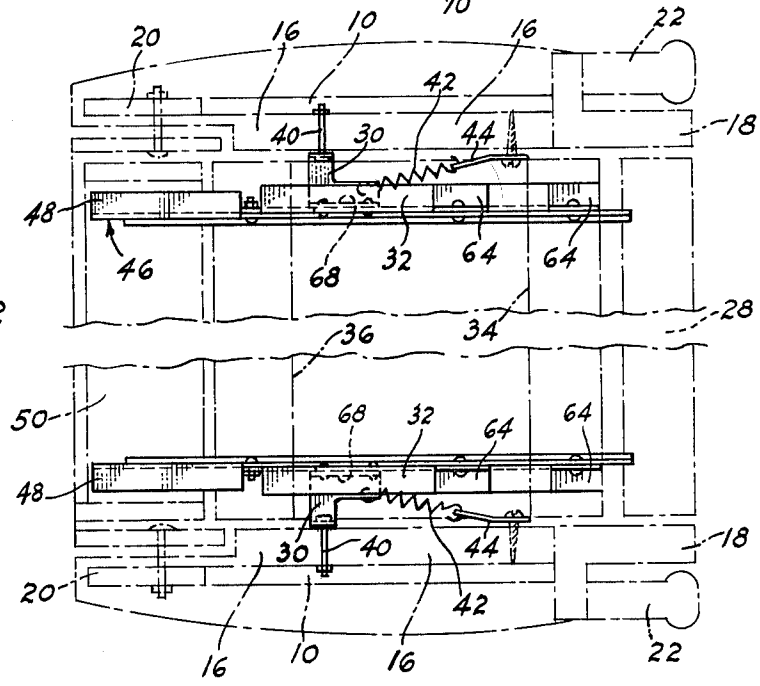


Fig. 2



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COMBINATION ROCKING AND RECLINING CHAIR

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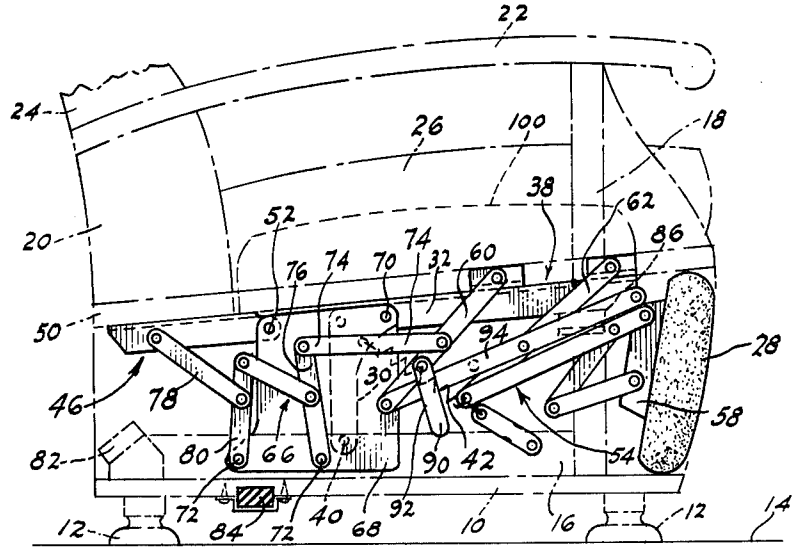


Fig. 3

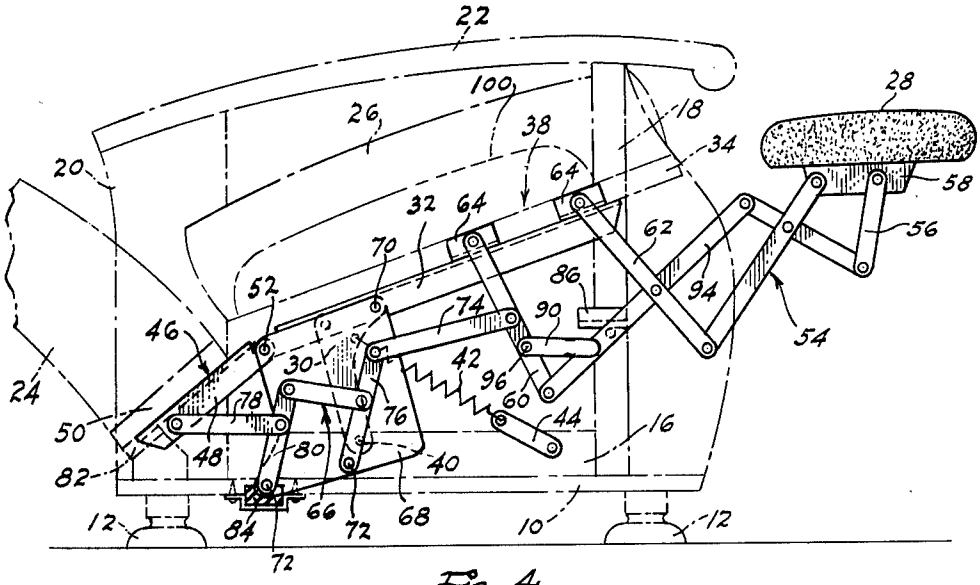


Fig. 4

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COMBINATION ROCKING AND RECLINING CHAIR

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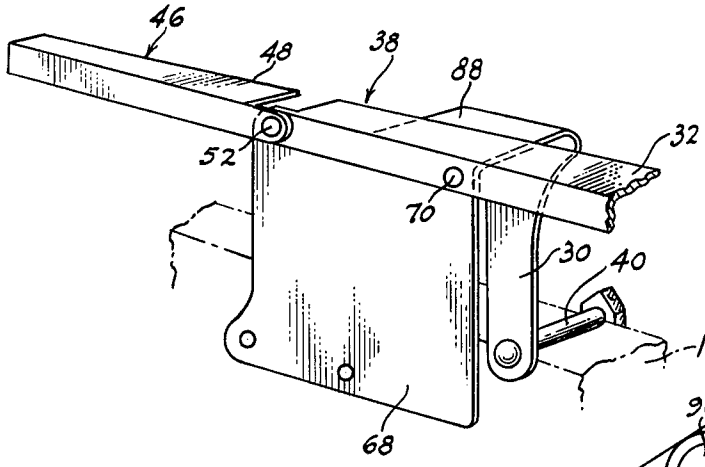


Fig. 5

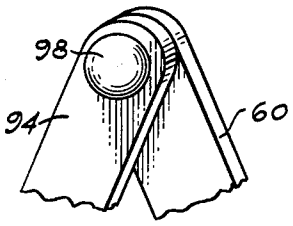


Fig. 7

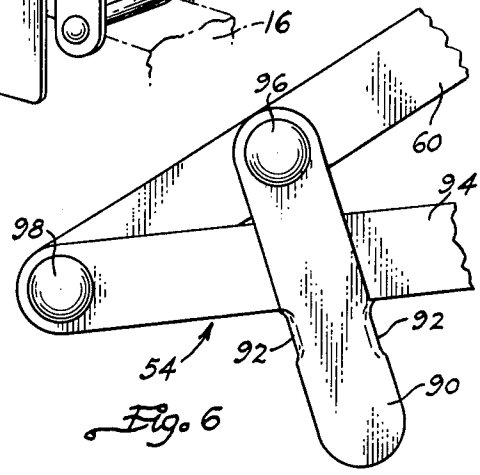


Fig. 6

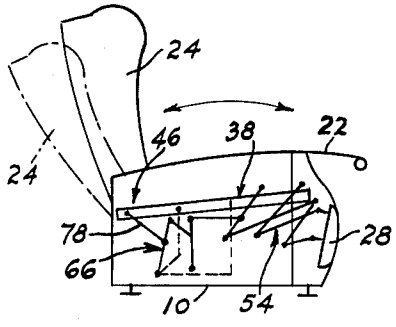


Fig. 8

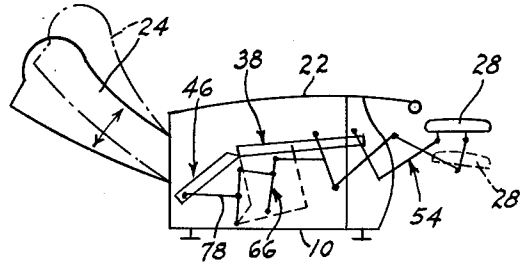


Fig. 9

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United States Patent Office 3,226,155 Patented Dec. 28, 1965

3,226,155

COMBINATION ROCKING AND RECLINING CHAIR

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Filed July 1, 1964, Ser. No. 379,603
7 Claims. (Cl. 297—85)

This invention pertains to a combination rocking and reclining chair and, more particularly, a chair of such type having a footrest or ottoman also combined with the chair and movable between retracted and extended positions relative to the seat of the chair.

Various types of so-called "easy" chairs of a reclining nature have been developed heretofore. Some of these have included projectable footrests of various types. Still others also have provided a seat and back capable of being rocked relative to a stationary base, these being the well-known platform-type rockers which include actual curved rockers supported by strips upon which said curved rockers are movable.

It is the principal object of the present invention to provide a combination rocking and reclining chair in which a seat frame is pivotally supported relative to a stationary base and a chair back is pivotally connected to the rear end of the seat frame for movement between a substantially vertical position and an inclined rearward position relative to said seat frame, said seat frame also supporting linkage means operable to support and movably position a footrest between a retracted, inoperative position and an extended, operative position forwardly of the front end of the seat frame, the supporting and actuating linkage for the footrest being controlled and actuated by movement of the chair back relative to the seat frame.

Another object of the invention is to so arrange the pivot means for the seat frame relative to the base that the seat unit comprising the chair back and footrest, which are directly supported by said chair base, is capable of being rocked through a restricted, predetermined arc in all permitted positions of the back and footrest relative to the seat frame and cushion supported thereby.

Still another object of the invention is to support the chair back by means of an auxiliary frame pivotally connected to the rear end of the seat frame and also provide actuating means connected to said auxiliary frame and also connected to the linkage for the footrest so as to effect actuation of the latter linkage when said auxiliary frame and the chair back connected thereto is moved relative to the seat frame and cushion thereon.

A further object of the invention is to locate the pivot means for the unit comprising the chair seat to which the chair back and footrest are connected for support so that when a person of average weight, approximately 180 lbs., for example, is seated in the chair, said pivot means will be substantially vertically in line with the center of gravity of the total weight supported by said pivot means, whereby rocking of the aforementioned seat unit with respect to the stationary base when supported upon a floor, for example, readily may occur in either direction with a minimum amount of effort exerted by the occupant.

A still further object of the invention ancillary to the foregoing object is to provide stationary arm means which project upwardly from the stationary base and are rigidly supported thereby, the upper ends of the arm means terminating in armrests or rails which readily may be engaged by the occupant for purposes of assisting in effecting a pleasant rocking movement, whether the chair back and footrest respectively are in reclining and projected positions, or otherwise.

Still another object of the invention is to provide cushion positioning or retainer means upon the seat frame, whereby a cushion may accurately be positioned upon the seat frame and remain in operative position regardless of the extent to which the seat back may be inclined relative to the seat cushion and seat frame, said cushion retainer comprising plate-like means extending upward from the opposite sides of the seat frame, whereby they prevent the sides of the cushion adjacent the arm means from contacting the latter.

One further object of the invention is to provide clutch means operable preferably with respect to the linkage associated with the seat and auxiliary frames and operable to restrain the seat back against pivotal movement relative to the seat frame, such as when only light pressure is exerted against the back, but readily yields when more than light pressure is exerted in order that the seat back may be inclined relative to the seat means and the footrest incidentally be projected.

Details of the foregoing objects and of the invention are set forth in the following specification and illustrated in the drawings comprising a part thereof.

In the drawings:

FIG. 1 is a side elevation of an exemplary chair embodying the principles of the present invention, said figure illustrating, in full lines, the chair in upright position, and, in broken lines, the back being shown in reclining position and the footrest extended for use.

FIG. 2 is a plan view showing in solid lines several frame arrangements of the chair in related position relative to base means and stationary side arms, the latter being illustrated in broken lines for purposes of simplifying the illustration.

FIG. 3 is a fragmentary side elevation of the chair shown in FIG. 1, but illustrated on a larger scale, said figure primarily being for purposes of illustrating the frame means of FIG. 2 in association with linkage means connected to the frame means, said linkage means occupying the position it assumes when the various parts of the chair are in the upright position shown in full lines in FIG. 1.

FIG. 4 is another fragmentary view of the chair illustrating in full lines the same frame and linkage mechanisms as illustrated in FIG. 3, but showing the same in the position they occupy when the various parts of the chair are disposed in the reclining positions thereof, as illustrated in broken lines in FIG. 1.

FIG. 5 is a fragmentary perspective view of certain details of the frame means and a supporting bracket portion thereon.

FIG. 6 is a fragmentary side elevation of clutch means associated with the linkage and engaging a portion of the same to hold it in temporarily restrained position.

FIG. 7 is a perspective fragmentary view of pivot means connecting certain of the linkage mechanism.

FIG. 8 is a diagrammatic side elevation of the chair shown in the preceding figures and employing a simplified illustration of the linkage mechanism, the chair back being illustrated in two different positions respectively shown in full and broken lines to indicate substantially the limits of rocking movement when the back is positioned in upright position relative to the seat.

FIG. 9 is a diagrammatic view similar to the type of drawing in FIG. 8 to provide a simplified illustration of the linkage mechanism in the position it occupies when the chair back is fully reclined and the footrest is projected, and further showing the chair seat unit in lowermost rocking position.

Referring to the drawings, the essential components of the chair embodying the present invention comprises a base **10** which may be made of wood, or otherwise, and be provided with suitable supporting feet **12**, which are engageable with the floor **14**. Extending at least a limited distance upwardly from the base **10** and comprising

part of the base at opposite sides thereof, are vertical blocks or rails **16**, which are for purposes to be described. Also extending upwardly from the base **10** are front and back posts **18** and **20**, which, at the upper ends thereof, support armrests or rails **22** stationarily with respect to the base **10** at opposite sides of the chair. The arm rails **22** may be upholstered, as generally indicated in FIG. 1, if so desired. The elements of the chair thus far described are stationary during normal operation thereof.

One of the essential features of the chair comprising the present invention resides in the fact that it not only is provided with a chair back **24** which is movable between substantially upright and rearwardly inclined positions with respect to the chair seat **26**, but such pivotally connected chair back and chair seat, together with a footrest **28**, are pivotally supported as a unit for rocking movement relative to base **10**, regardless of the relative positions of the chair back and footrest relative to the chair seat.

The pivotal support of the chair seat unit described above, including chair back **24** and footrest **28**, together with the seat **26**, comprises a pair of brackets **30** respectively connected rigidly at the upper ends thereof to side rails **32**, which are parallel to each other and adjacent opposite sides of the seat cushion **26**. The opposite ends of the rails **32** are connected by transversely extending front and rear frame members **34** and **36**, which extend transversely of the chair between said side rails. If desired, the frame members **34** and **36** may be formed from wood, while the side rails **12** preferably are metal and in the form of angle irons of suitable size and gauge. When connected together as described above, the side rails and frame members comprise a seat frame **38**.

The lower ends of the pivot bracket **30** are provided with bearing holes which receive pivot bolts **40** which extend through any suitable portion of the stationary base **10**, such as the rails **16**, as clearly shown in FIGS. 2–4. The location of the brackets **30** with respect to the side rails **32** of the seat frame **38** in an axial direction extending from front to rear of the chair, is such that the axes of the transversely aligned pivot bolts **40** will be substantially directly below the center of gravity of the aforementioned seat unit when an occupant of average weight, of the order of 180 lbs., for example, is seated in the chair, the computation of the center of gravity including such weight of the occupant. Particularly when such an occupant is rocking in the chair, however, with respect to the axes of the bolts **40**, and especially when extending to the rearward limit of the rocking movement, such as shown in the broken line position of the back as shown in FIG. 8, concerning the upright position of the chair, or the lower limit or rocking movement when the back is fully inclined, as shown in FIG. 9, aid in restoring the seat unit to midway or forward rocking position is provided by the use of means such as a pair of tension springs **42** respectively disposed adjacent the opposite sides of the base and connected at one end, by links **44** fixed to rail **16**, for example, and at the other end being fixed to the upper portions of brackets **30**, as clearly shown in FIG. 4.

Pivotally connected to the rearward end of the side rails **32** of the seat frame **38** are auxiliary frame means **46**, which include short angle iron rails, **48**, for example, interconnected transversely by a board **50**, or any other suitable means, comprising part of the lower end of the chair back **24**, for example. The adjacent ends of the rails **32** and **48** are pivotally connected by rivets **52** or the like, thereby permanently pivotally connecting the chair back **24** to the seat frame **32**.

The footrest **28**, which somewhat resembles an ottoman in operation, at least, preferably is upholstered and is movable between a retracted, inoperative position shown in FIGS. 3 and 8, and a projected, operative position such as shown in FIGS. 1, 4 and 9. Support and movement of the footrest **28** is accomplished by linkage means **54** which, generally, is of the so-called lazy-tong type. The various links thereof have been so proportioned and interconnected by the usual pivot means as to result in movement of the footrest **28** from a substantially vertical, retracted or storage position beneath the forward end of seat cushion **26**, as shown in FIGS. 3 and 8, and a projected, operative and substantially horizontal position shown in FIGS. 4 and 9. The linkage means **54** actually departs from the conventional lazy-tong arrangement by the inclusion of an additional short link **56** in each of the linkage means **54** respectively provided at opposite sides of the chair, the outer ends of the links **56** being pivotally connected to depending flanges **58** on the footrest **28**, as clearly shown in FIGS. 3 and 4 particularly. The linkage means **54** also include an additional supporting link **60** in each set thereof respectively at opposite sides of the chair, but, otherwise, the linkage means **54** are substantially of the lazy-tong type.

The additional supporting links **60** cooperate with the links **62** for purposes of supporting the linkage means **54** relative to the seat frame **38** to which the upper ends of the links **60** and **62** of each set respectively are connected through the employment of angular flanges **64** carried by said seat frame **38**. Control and actuation of the linkage means **54** which supports and positions the footrest **28** is effected by means of an additional set of linkage **66** at each side of the frame of the chair, said additional linkage means being pivotally supported by downwardly extending bracket means **68** which, in simplest form, preferably comprises a metal plate, the upper edges of which respectively are connected to the side rails **32** of the seat frame **38**, such as by rivets **70** and the rivets **52** by which the auxiliary frame rails **48** are pivotally connected to the rails **32** of the seat frame **38**.

Adjacent the lower edges of the bracket means **68** at opposite sides of the seat frame **38** are pairs of longitudinally spaced rivets **72** which comprise pivots for certain links of the additional linkage means **66** at opposite sides of the seat frame **38**, whereby said additional linkage means **66**, the same as linkage means **54**, is supported by the seat frame **38** and is movable therewith during all rocking movement thereof. Said additional linkage means **66** is connected to the footrest linkage means **54** by means of intermediate links **74**, which, at one end, are pivotally connected to supporting links **60** intermediately of the ends thereof and the opposite ends of links **74** are pivotally connected to the outer ends of link **76** of the linkage means **66**. Actuation of linkage means **66**, and consequent actuation of footrest linkage means **54**, is effected by means of additional connecting links **78**, which are connected at the outer ends to rails **48** of auxiliary frame means **46** and the inner ends thereof are connected to links **80** of additional linkage means **66**.

From the foregoing explanation of the various interconnected links and linkage means, it will be seen that when an occupant is seated upon the chair cushion **26**, for example, in the normal position thereof as viewed in FIG. 1 in full lines, and in FIG. 3 with the chair back **24** substantially perpendicular with respect to the seat cushion **26**, and it is desired to dispose the seat back **24** in the reclined position thereof shown in FIG. 4, for example, and simultaneously project the footrest **28** to its extended, operative position as also shown in FIG. 4, the occupant need merely either lean back somewhat forcefully upon the chair back **24** while firmly seated upon the cushion **26**, grasping the armrests **22** with his hands to aid in such movement, if desired, and this will cause the auxiliary frame **46** to be pivotally moved with respect to the chair seat frame **38**, thereby projecting the connecting links **78** forwardly to actuate the additional sets of linkage **66** which, in turn, through the medium of intermediate links **74**, will actuate the footrest supporting and actuating linkage means **54** to dispose the footrest **28** in the projected, operative position thereof shown in FIG. 4, and also in broken lines in FIG. 1. This takes place

entirely while the chair back **24**, all of the linkage means, and footrest **28** are supported solely by the chair frame **38** which, in turn, is pivotally supported for rocking movement about the axes of the axially aligned pivot bolts **40**, which are pivotally supported relative to the base **10**.

It will further be seen from the foregoing that, regardless of whether or not the chair back **24** is positioned in reclined condition with respect to the seat cushion **26** and seat frame **38** with the footrest **28** also projected, or the seat back **24** is in the upright position with respect to the seat cushion and seat frame **38** with the footrest **28** retracted, the seat unit comprising the seat frame and cushion, seat back, and footrest, may be rocked about the pivots **40**, through a reasonable arc, such as indicated in diagrammatic manner in FIGS. 8 and 9, in which the views respectively show the back in upright and inclined or reclining position relative to the chair seat. Rocking movement in opposite directions is restricted respectively in rearward direction by engagement of the lower end **50** of the chair back with a rubber bumper **82**, for example, and, further, if desired, by engagement of the lower, rearward corner of the bracket means **68** with additional rubber bumpers **84** supported, for example, by a base **10** adjacent opposite sides thereof, such engagement of the chair seat unit with said bumpers **82** and **84** being illustrated in exemplary manner in FIG. 4.

Forward rocking movement of the chair seat unit is limited by engagement, for example, of the side rails **32** of the seat frame **38** with rubber bumper means **86** which are supported by appropriate brackets fixed respectively to the front posts **18** of the stationary base means which support the arm rails **22**, as shown in exemplary manner in FIG. 3, wherein the chair seat unit is shown in its forwardmost position at one end of the rocking excursion.

If desired, especially for purposes of facilitating assembly and also providing rigidity, the bracket means **68**, which can comprise a sheet metal plate for both rigidity as well as simplicity, as shown in FIG. 5, can be formed integrally with the brackets **30** which are pivotally connected at the lower ends thereof to the pivot bolts **40**. Such connection is made quite simply by a horizontal upper web **88**, whereby an initial sheet metal blank is formed comprising bracket means **68**, web **88** and one of the brackets **30**, disposed in planar arrangement, and subsequently bent into the substantially U-shaped configuration shown in FIG. 5. One of the upper corners of the composite bracket means **30**, **68** is then disposed within the corner of the side rail **32** of the seat frame **38** and secured thereto by the rivets **52** and **70**, the latter also pivotally connecting the inner end of the rails **48** of auxiliary frame means **46** to the seat frame **38**, all as clearly shown in FIG. 5.

Particularly under conditions where it is desired, for example, to rock while the chair back **24** is substantially in perpendicular position relative to the seat cushion **26**, as shown in FIG. 3, for example, or to sit upright in said position without rocking, clutch means are provided to prevent pivotal movement of the chair back **24** relative to seat cushion **26** until a predetermined, limited amount of pressure is exerted by the occupant, such as by pushing his back against the chair back **24** while seated firmly on the cushion **26** and possibly while engaging the arm rails **22** with his hands to steady himself and also add additional force to such pushing movement against the back **24**. One form of exemplary clutch means is illustrated in FIG. 6, it being understood that one of such clutch means will be mounted at each of the two opposite sides of the chair so as to cooperate with each other. The clutch means illustrated in FIG. 6 and also as shown in smaller scale in FIG. 3, is quite simple and need only comprise a somewhat flexible but relatively rigid spring leaf **90**, the opposite edges of which are pinched toward each other so as to provide rounded projections, both projecting laterally outward from one face of the leaf **90**, such as that face which is nearest link **94** of linkage means **54**, for example, as shown in FIG. 6. The clutch leaf **90** is rigidly secured to supporting link **60** intermediately of the ends thereof by any appropriate means, such as a rivet **96** of suitable size and strength.

To facilitate the operation of the clutch means comprising the somewhat stiffly flexible spring leaf **90** and the projections **92** thereon, it is preferred that the rivet **98** by which the outer ends of links **60** and **94** are pivotally connected be affixed thereto so as to be somewhat loose and thus permit a limited amount of flexing of the link **94**, whereby all of the flexing for purposes of releasing the clutch will not have to be performed by the spring leaf **90**. If desired, a nut and bolt with a suitable compression spring surrounding the bolt may be used in lieu of the rivet **98** and thus exert limited pressure between the links **60** and **94** to further facilitate the operation of the clutch means comprising leaf **90** and the projections **92** thereon. Thus it will be seen that said clutch means will serve to retain the linkage mechanism illustrated in compact, retracted condition in FIG. 3 in such condition, and even until a reasonable amount of pressure is exerted by the occupant upon the chair back **24**. When a certain predeterimned amount of force is exerted, however, said clutch means will yield, thereby permitting the chair back **24** to be pivotally moved to the reclined position shown in FIG. 4 and such pivotal movement also will project the footrest **28** to the extended position likewise shown in said figure.

Preferably, the clutch means described above is reversible, whereby after the chair back **24** has been reclined, such as illustrated in FIG. 4, and it is desired to restore the same to upright position, the retracting movement of the linkage **54**, for example, at opposite sieds of the frame, respectively will cause the clutch leaf **90**, and especially the projections **92** thereon, to re-engage the link **94**, as illustrated in FIG. 3, and thereby retain the footrest **28** in retracted, inoperative position and also hold the chair back **24** in upright or substantially perpendicular position relative to the seat cushion **26** and seat frame **38**.

To restore the chair back **24** from reclined to substantially upright position with respect to the seat cushion **26** and seat frame **38**, it is only necessary for the occupant to lean forwardly while sitting upon the cushion **26** and tend to press downwardly upon the footrest **28**, thereby activating the linkage **54** in reverse direction from that in which it is moved when pressing against the chair back **24** for purposes of extending the footrest **28**. The operation of the counter-balancing tension springs **42** also will somewhat aid in such forward tilting movement which is somewhat involved with respect to restoring the chair back **24** to upright position and the footrest **28** to its retracted position.

In the preferred construction of the invention, the upholstered portion of the chair back **24** is fixedly secured thereto and movable therewith at all times. However, especially for purposes of dusting and cleaning, it is preferred that the seat cushion **26** be removable with respect to the supporting seat frame **38** and in order to accurately position the seat cushion upon the seat frame, retaining means **100**, which may be in the form of stiff sheet metal plates of reasonable gauge, may be fixed to opposite sides of the portion of the seat frame **38** which directly supports the seat cushion **26**, and extend respectively at least part way up the height of the seat cushion **26** at opposite sides thereof, as illustrated in dotted lines in FIGS. 3 and 4.

While the invention has been described and illustrated in its several preferred embodiments, it should be understood that the invention is not to be limited to the precise details herein illustrated and described since the same may be carried out in other ways falling within the scope of the invention as claimed.

I claim:

1. A combination rocking and reclining chair comprising in combination, a base arranged to rest stationarily on a floor surface, support means rigid with and extending

upward from opposite sides of said base, a seat frame, rigid brackets extending downward from opposite sides of said seat frame, means pivotally connecting the lower ends of said brackets to said support means for pivotal rocking movement of said seat frame relative to said support means and about an axis appreciably below said seat means, said support means extending to a level above said seat frame and engageable by the hands of the occupant, an auxiliary frame pivotally connected to and supported by the rear end of said seat frame, a chair back connected at its lower end to said auxiliary frame to render said back pivotally connected solely to said seat frame for limited movement between substantially vertical and rearwardly inclined positions relative to said seat frame, a footrest, interconnected linkage means movably supported solely by said seat frame and connected to said footrest for movable support thereof between a retracted position substantially beneath said seat frame to an extended horizontal position forwardly of said seat frame, and additional linkage interconnecting said auxiliary frame and linkage means and operable to position said footrest as desired incident to pivotally moving said chair back relative to said seat frame, said seat frame and chair back and foot rest supported thereby being rockable as a unit relative to said base about the pivot means for said chair seat in all positions of said back and footrest relative to said seat frame.

2. The chair according to claim 1 in which similar additional bracket means are fixed to and extend downward from opposite sides of said seat frame, said bracket means pivotally supporting said additional linkage.

3. The chair according to claim 1 further including clutch means comprising movement restraining means engageable with said linkage means and operable to resist limited light pressure against said back tending to pivotally move it from upright position relative to said seat frame, said clutch means being releasable automatically upon the application of force as aforesaid greater than said limited light force and thereby permit movement of said back to an inclined position relative to said seat frame and the projection of said footrest.

4. A combination rocking and reclining chair comprising in combination, a base arranged to rest stationarily on a floor surface, support means rigid with and extending upward from opposite sides of said base, a seat frame, rigid brackets extending downward from opposite sides of said seat frame, means pivotally connecting the lower ends of said brackets to said support means for pivotal rocking movement of said seat frame relative to said support means and about an axis appreciably below said seat means, said support means extending to a level above said seat frame and engageable by the hands of the occupant, a chair back extending upward from the rear end of said seat frame, means pivotally connecting said chair back solely to said seat frame for limited movement between substantially vertical and rearwardly inclined positions relative to said seat frame, a footrest, interconnected linkage means movably supported solely by said seat frame and connected to said footrest for movable support thereof between a retracted position substantially beneath said seat frame to an extended horizontal position forwardly of said seat frame, means interconnecting said chair back and linkage means and operable to position said footrest as desired incident to pivotally moving said chair back relative to said seat frame, said seat frame and chair back and footrest supported thereby being rockable as a unit relative to said base about the pivot means for said chair seat in all positions of said back and footrest relative to said seat frame, and rigid arm means extending upward from the opposite sides of said seat frame and terminating in arm rests at a level above the seating level of said chair, whereby an occupant engaging said arm rests readily may pull or push lightly to effect rocking of said seat frame unit relative to said pivotal axis of said chair seat adjacent said base and thereby provide a substantial lever arm between said arm rests and pivotal axis regardless of the relative positions of said back and foot rest relative to said seat frame.

5. The chair according to claim 4 in which bumper means are mounted stationarily relative to said base means and are positioned to be engaged by the movable frame means of said chair at the end of rocking movement in either direction, thereby to limit such rocking movement and prevent injury to any parts of the chair.

6. The chair according to claim 4 in which a seat cushion is supported by said seat frame and cushion positioning means are carried by the opposite sides of said seat frame and are movable therewith and extend upwardly therefrom along the opposite sides of said cushion to retain said cushion in position thereon and prevent contact thereof with said upwardly extending arm means when said seat frame is being moved pivotally relative to said base.

7. The chair according to claim 6 in which said cushion positioning means comprise thin plate-like means connected rigidly to and extending vertically upward from the opposite sides of said seat frame and are spaced from the adjacent surfaces of said vertically extending arm means to space the sides of said cushion at all times from said sides.

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