March 29, 1966 A. J. KATZ 3,243,225

RECLINING CHAIRS PROVIDED WITH FOOT REST OR OTTOMAN, AND HARDWARE THEREFOR

Filed Aug. 19, 1964 3 Sheets-Sheet 1

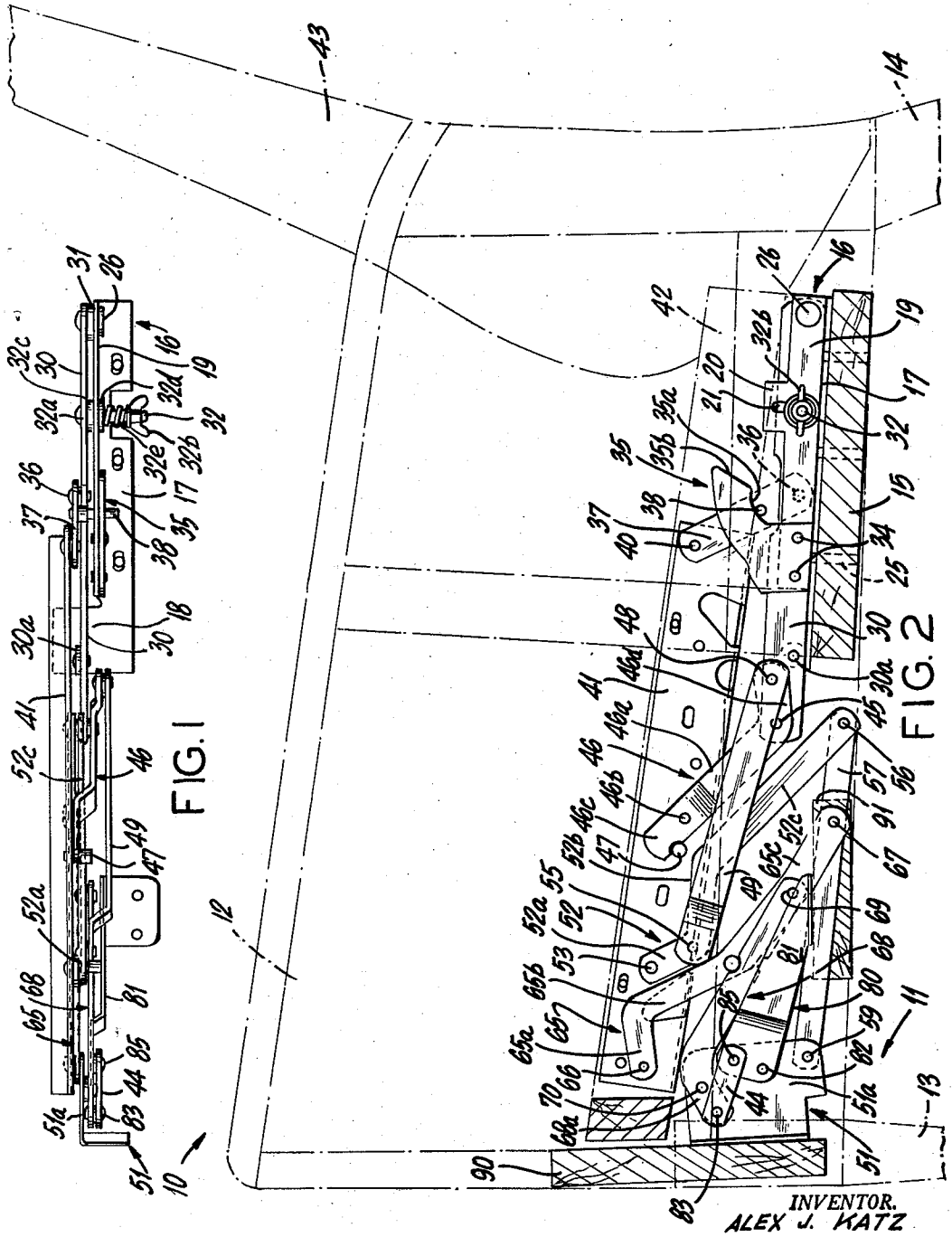


FIG. 1

FIG. 2

INVENTOR.
ALEX J. KATZ

BY

J. B. Fellabaum
ATTORNEY.

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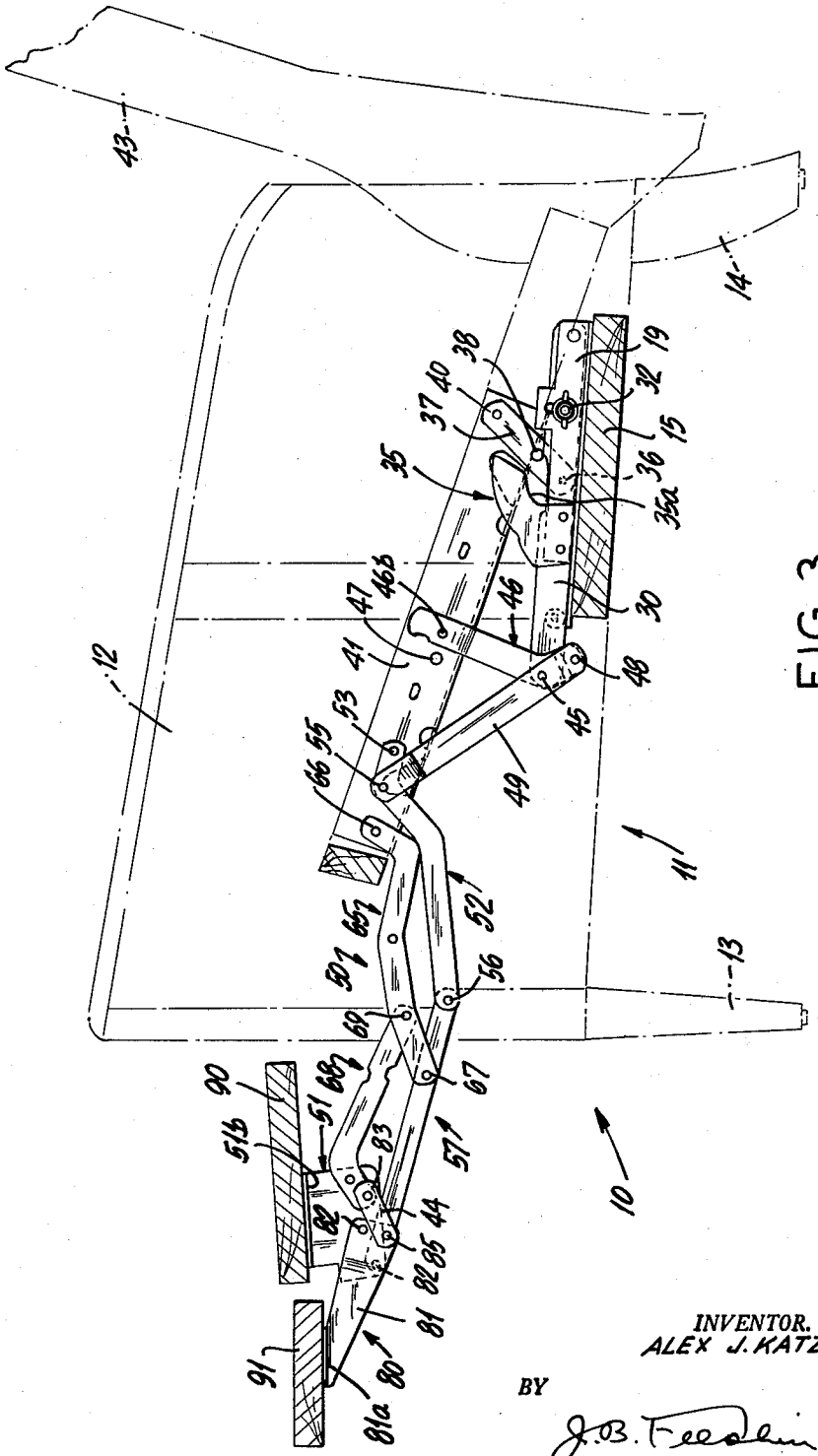


FIG. 3

INVENTOR.
ALEX J. KATZ

BY

J. B. Freedman

ATTORNEY.

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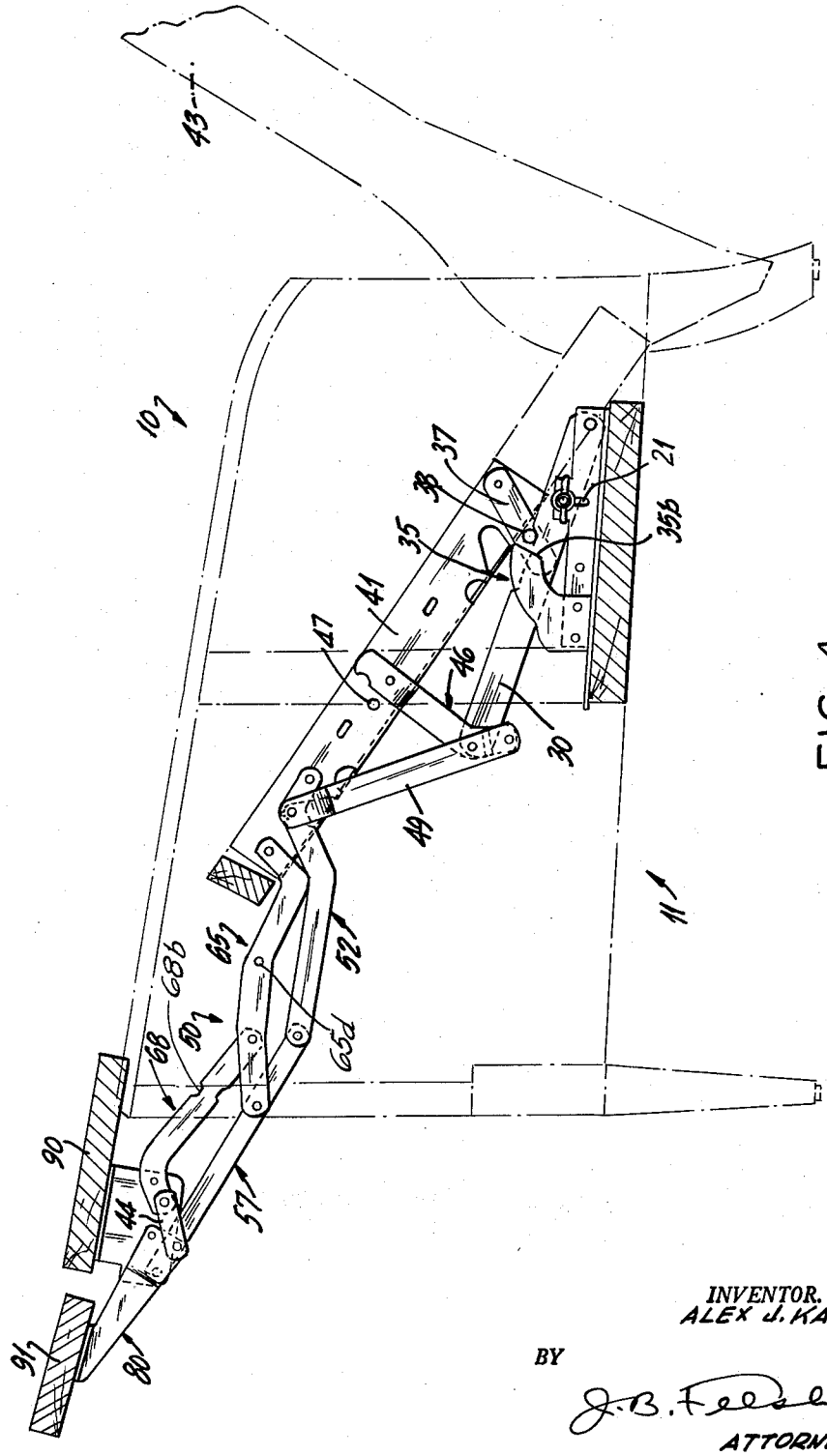


FIG. 4

INVENTOR.
ALEX J. KATZ

BY

J. B. Feeslin

ATTORNEY.

United States Patent Office 3,243,225 Patented Mar. 29, 1966

3,243,225

RECLINING CHAIRS PROVIDED WITH FOOT REST OR OTTOMAN, AND HARDWARE THEREFOR

Alex J. Katz, Orange, N.J., assignor, by mesne assignments, to Super Sagless Spring Corporation, Amsterdam, N.Y., a corporation of New York

Filed Aug. 19, 1964, Ser. No. 390,540
2 Claims. (Cl. 297—75)

This invention relates to reclining chairs provided with foot rest or ottoman and hardware therefor. It is particularly directed to high legged chairs and chairs wherein the foot rest has a foot rest extension which folds under the foot rest.

An object of this invention is to provide a chair of the character described in which the leg rest or ottoman support maintains its angular relationship to the seat when moving from an intermediate TV position to fully reclined position.

In reclining chairs with foot rest or ottoman as heretofore constructed, difficulty existed because of drifting ottoman. When the hardware, in such prior chairs became loose, the chair operated easily, and often started opening without an occupant in the chair.

It is hence another object of this invention to provide hardware for a reclining chair, which while it opens easily when an occupant is in the chair, will nevertheless not open by itself when there is no occupant in the chair.

Still another object of this invention is to provide a chair of the character described in which the woodwork, such as cross rails, is not expensive, one flat cross board (substantially horizontal cross-rail) supporting all the hardware.

Yet another object of this invention is to provide in a chair of the character described, manually adjustable means to make it possible to retard the reclining movement of the chair at points intermediate the TV and fully reclined positions so that it will stop in balance, and without the tendency to shift to either TV or fully reclined positions.

A further object of this invention is to provide a strong, durable and comfortable chair and hardware therefor, of the character described, which shall be relatively inexpensive to manufacture, easy to assemble, and yet practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The inveniton accordingly consists in the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the following claims.

In the accompanying drawings in which is shown an illustrative embodiment of this invention,

FIG. 1 is a top edge view of hardware embodying the invention, for one side of a reclining chair, with said hardware in retracted position when the chair in which the hardware is incorporated, is in sitting or upright position;

FIG. 2 is a side elevational vertical cross-sectional view of a chair in upright or sitting position, with the hardware of FIG. 1 incorporated thereinto;

FIG. 3 is a view similar to FIG. 2 but showing the chair and hardware in TV or intermediate reclining position; and

FIG. 4 is a view similar to FIG. 3 but showing the chair and hardware in fully reclining position.

Referring now in detail to the drawing, **10** designates a chair embodying the invention. The chair **10** comprises a fixed frame support **11** having side arms **12**, front legs **13**, rear legs **14** and a substantially horizontal, flat,

wood cross-rail **15** interconnecting the side arms and extending from near the rear of the support forwardly to substantially the middle of the support.

Fixed to the top side of the cross-rail **15**, at each side of the chair, is a metal member **16** comprising a flat horizontal wall **17** extending from the rear of cross-rail **15**, forwardly, and having an inwardly extending flat horizontal extension **18** at its forward end. Extending upwardly from the inner side of wall **17** is a vertical flange **19** terminating short of extension **18**. Flange **19** has a central upwardly extending tab **20**, and is formed, at said tab and therebelow, with a vertical slot **21**. Member **16** may be attached to cross-rail **15** by means of rivets, screws or other fasteners **25**.

It will be understood that the hardware is similar but symmetrically disposed on both sides of the chair. Hence, the hardware on one side only will be described.

Pivoted to the rear end of flange **19**, as by rivet **26** is a member **30**. A washer or shim **31** on rivet **26** is interposed between flange **19** and member **30**. Member **30** is parallel to flange **19** in the upright position of FIGS. 1 and 2 and in the TV position of FIG. 3, but extends beyond the forward end of flange **19** and forwardly beyond plate portion **17**. A bolt **32** passes through an opening in member **30**, and through slot **21**. Said bolt has a head **32***a* contacting the innner surface of member **30** and a screw shank to which a wing nut **32***b* is screwed. Nylon or other friction washers or shims **32***c*, **32***d* on the shank of the bolt, are located on opposite sides of flange **19**. Washer **32***c* is interposed between flange **19** and member **30**. A coil tension spring **32***e* on the shank is interposed between the wing nut **32***b* and washer **32***d*.

Fixed to the forward end of flange **19**, as by rivets **34**, is a stop plate **35** extending upwardly from said flange, and having an inner upwardly and rearwardly curved under edge **35***a*, and an end edge **35***b*.

An abutment disc **30***a* fixed to the forward end of member **30** contacts the upper side of plate extension **18** to limit downward movement of said member.

Pivoted to the inner side of member **30**, as on pivot **36**, is a link **37** inclined forwardly and upwardly, in the upright position of the chair, up above stop plate **35**. A horizontal pin **38** fixed to link **37**, is disposed beneath arced or curved edge **35***a*. The axis of said curved edge **35***a* is at the axis of pivot **36**, so that pin **38** moves in an arc following the arc of said edge. Thus while pin **38** is under edge **35***a*, member **30** is locked against upward swinging movement.

Pivoted to the upper end of link **37**, as at **40**, is the rear end of a seat bar **41** to which an upholstered seat **42** may be attached. A backrest **43** for the chair may be fixed to the rear end of seat **42**.

Seat bar **41** is slightly inclined forwardly and upwardly in the sitting or upright position of the chair, as shown in FIG. 2.

Pivoted to the forward end of the member **30**, as at **45**, is a bell crank **46**. Said bell crank **46**, in the upright or sitting position of FIG. 2, has an upwardly and forwardly inclined relatively long arm **46***a*, pivoted, as at **46***b* to the seat bar **41**. A fixed pin **47** on the seat bar **41** contacts an upward extension **46***c* on arm **46***a* to limit counterclockwise rotation of said arm relative to said seat bar.

Said bell crank **46** is furthermore provided with a relatively shorter arm **46***d* which extends rearwardly and somewhat upwardly, in said upright position of FIG. 2.

Pivoted to the rear end of arm **46***d*, as at **48**, is a pusher link or bar **49**, which projects forwardly and is somewhat inclined upwardly in the FIG. 2 position. Pivot **48** is located slightly above pivot **45**. A pull forward on the lower end of link **52**, causing a pull forward on pusher link **49**, will not rotate bell crank **46**, since extension **46***c* contacts fixed pin **47**.

A four bar lazy tong linkage **50** actuated by said pusher bar **49** serves to project an ottoman or leg rest angle member **51** in the manner hereinafter explained. Said linkage **50** comprises links **52, 57, 65** and **68**. Link **52** is pivoted to seat bar **41** at **53** forwardly of pivot **46***b*.

Link **52** is dog-leg shaped. It has a portion **52***a* inclined downwardly and rearwardly from pivot **53** in the FIG. 2 position.

Extending from arm **52***a* is an intermediate portion **52***b* extending almost horizontally rearwardly, and from which extends a downwardly and rearwardly inclined portion **52***c*. The pusher bar **49** is pivoted to link **52** as by pivot **55** at the junction of portions **52***a*, **52***b* of said link, closer to the upper, than to the lower end of said link.

The lower rear end of link **52** is pivoted, as at **56**, to the rear end of link **57**. Link **57** is nearly horizontal in the position of FIG. 2, and its forward end is pivoted, as at **59**, to the lower rear corner of vertical flange **51***a* of ottoman or foot rest angle member **51**.

Link **65**, also of dog leg shape, is pivoted at its upper, forward end to the forward end of seat bar **41**, as at **66**, forwardly of pivot **53**. Said link **65** has a portion **65***a* which is inclined upwardly and rearwardly from pivot **66**, in the FIG. 2 position. Extending from portion **65***a*, is a portion **65***b* which is inclined sharply downwardly from the rear end of portion **65***a*, and from which extends a portion **65***c* inclined downwardly and rearwardly, in the FIG. 2 position. The lower rear end of link **65** is pivoted, as at **67**, to an intermediate portion of link **57**.

Link **68** is pivoted at its lower rear end, as at **69**, to an intermediate point of portion **65***c* of link **65**. Said link **68** is inclined forwardly and upwardly and is pivoted as at **70**, to an upper part of said flange **51***a* of ottoman or leg rest angle **51**. A pin **65***d* on link **65** contacts a notch **68***b* formed in link **68** in the retracted condition of the lazy tong linkage **50**.

It will now be observed that linkage **50** comprises the four bars or links **52, 57, 65** and **68** for quickly projecting the angle bar **51**. It will be noted that said linkage **50** and ottoman angle bar **51** are located above the underside of the cross-rail **15**, in the sitting or upright position of the chair, as illustrated in FIG. 2 of the drawing. The fact that the pusher link **49** is pivoted to the link **52** near pivot **53** makes for quick projection of the leg rest.

A foot rest or ottoman extension angle **80** has a vertical flange **81** pivoted as at **82** to flange **51***a*, between pivots **59, 70**. Link **68** has an extension **68***a* projecting forwardly and downwardly from pivot **70**, in the upright position of the chair, and the forward end of said extension is pivoted, as at **83**, to a short link **44** pivoted as at **85** to flange **81** above pivot **82**, looking at FIG. 2. Said extension **80** projects rearwardly from the pivots **82, 85** in the upright position of the chair, and is located above the underside of cross-rail **15**.

Ottoman angle **51** has a flange **51***b* to which a leg rest or ottoman **90** is attached. Ottoman extension angle **80** has a flange **81***a* at right angles to flange **81** and attached thereto is an ottoman or leg rest extension **91**. Ottoman **90** is in vertical position at the front of the seat bar in the upright position of the chair. In such position of the chair, ottoman extension **91** is horizontal, and rearward of the lower end of said ottoman.

Thus all of the hardware, seat, back rest and leg rest are supported on cross-rail **15** and do not project therebelow.

In FIG. 3 there is illustrated the TV or intermediate reclining position of the chair. To move the parts from upright to TV position, the seat **42** is pushed rearwardly and link **37** swings in a clockwise position. Member **30** is locked against movement, but bell crank **46** is swung by the seat bar **41** sharply in a clockwise direction causing pusher link or bar **49** to actuate the four bar linkage **50** (comprising links **52, 57, 65, 68**) to project the ottoman **90** to the position of FIG. 3. At the same time, ottoman extension **91** is swung forwardly and upwardly

to the position of FIG. 3, parallel and forwardly of ottoman **90**.

When link **37** has swung back sufficiently to carry stop pin **38** rearwardly beyond the arcuate edge, the leg rest may be swung from TV to fully reclined position of FIG. 4.

It will be noted that the pusher link or bar **49** is pivoted to the bell crank or lever **52**. This construction will cause easy projection of the leg rest, yet will not permit drift or opening of the leg rest when no occupant is in the chair.

The wing nut **32***b*, and spring **32***e* on the bolt passing through slot **21** of bracket **16**, together with the nylon washers, permit increase or decrease of friction which makes it possible to brake the movement of the chair at points intermediate TV and fully reclined position and maintain the seat and back rest in balance in such stopped positions.

During movement from TV to fully reclined position bar **30** can swing upwardly. Since link **37** is pivoted to pivoted bar **30** and not to a fixed support, and since link **52** is pivoted to the seat and not to the bell crank **46**, the leg rest actuating linkage **50** and the leg rest maintains its relationship to the seat, when going from TV to fully reclined position.

The present construction is particularly applicable to high leg chairs since all the hardware is above a predetermined high level, permitting the chair to be designed to look light, not bulky and to look more like a living room chair that does not have the reclining feature.

When going from fully reclined to upright position, the chair must go through TV position because pin **38** does not go above edge **35***b* of the stop plate. Pivoted member **30** must go down to its bottom position before link **37** can swing forwardly.

It will thus be seen that there is provided an apparatus in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a chair having a support, the combination comprising a bracket fixed to the support, a stop plate fixed to said bracket, a member pivoted at one end thereof to said bracket, means to limit the motion of said pivoted member between a lowered position and a raised position, a link pivoted at one end thereof to said pivoted member mediately the ends of said pivoted member, means to limit the motion of said link between a forward position and a rearward position, a bell crank pivoted mediately the ends thereof to the other end of said pivoted member, a seat bar mounted on the other end of said link and one end of said bell crank, first preventing means on said link and stop plate to prevent motion of said pivoted member from said lowered position toward said raised position until said link is substantially in said rearward position, second preventing means on said link and stop plate to prevent motion of said link from said rearward position toward said forward position until said pivoted member is substantially in said lowered position, a foot rest, and means controlled by said seat bar, pivoted member and bell crank to project and retract said foot rest, said stop plate having an arcuate under edge, an extending pin fixed to said link intermediate the ends of said link and engageable with said under edge, said first preventing means comprising said extending pin and said arcuate under edge.

2. The combination of claim **1**, said stop plate having an end edge, said pin being engageable with said end edge,

said second preventing means comprising said extending pin and said end edge.

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FRANK B. SHERRY, *Primary Examiner.*

J. T. McCALL, *Assistant Examiner.*