

[54] **ADJUSTABLE LEG REST**

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[58] Field of Search.....**297/69-89, 269, 297/270, 271, 431-436, 429**

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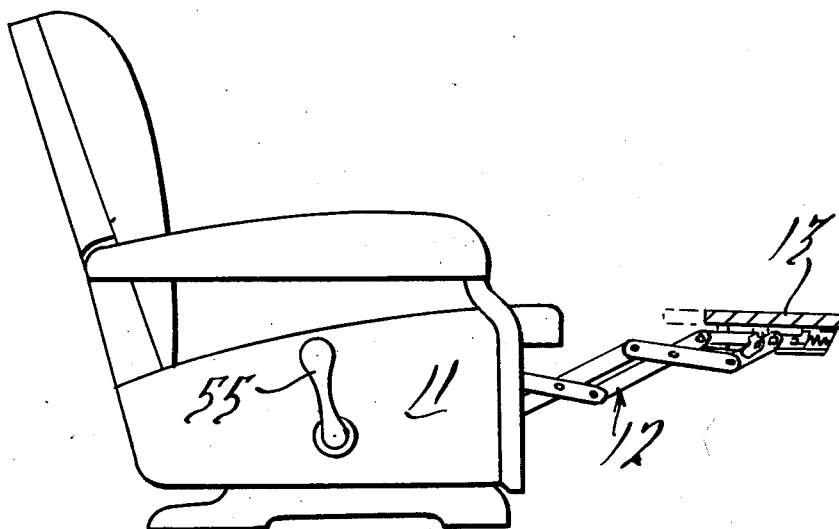
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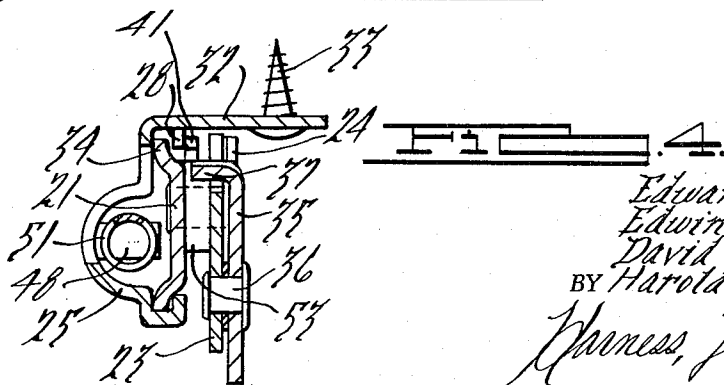
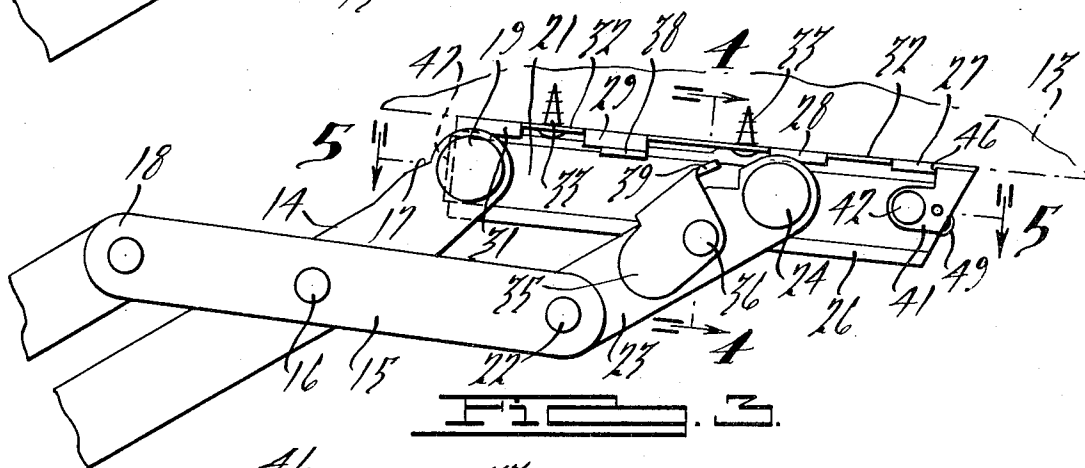
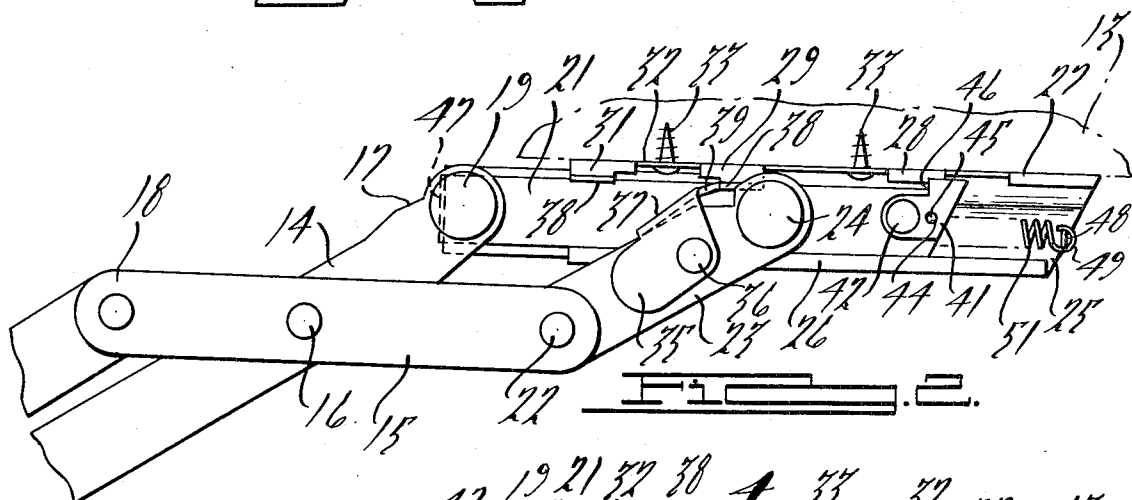
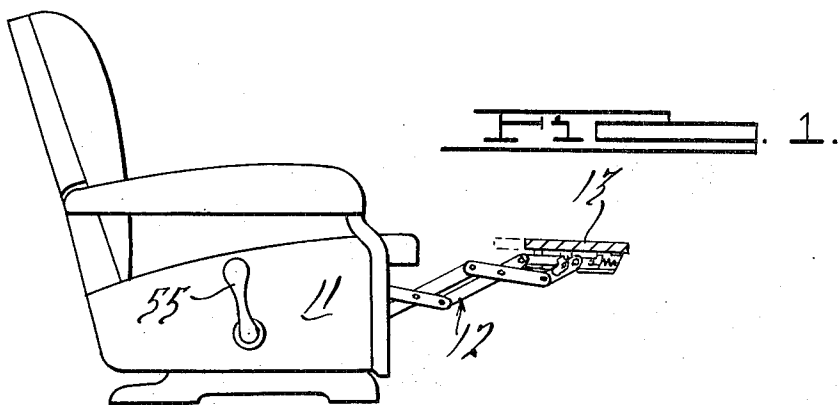
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[57] **ABSTRACT**

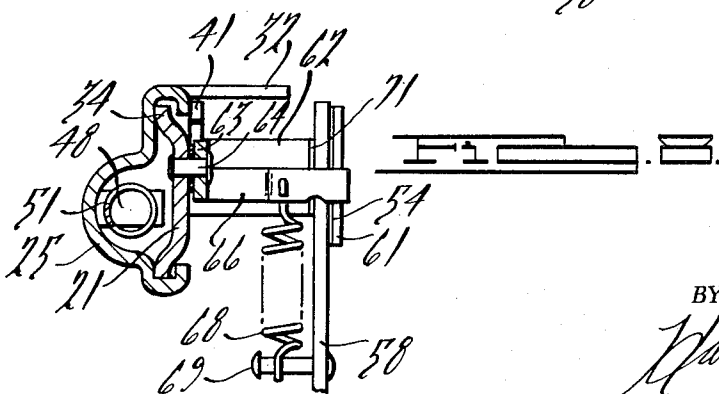
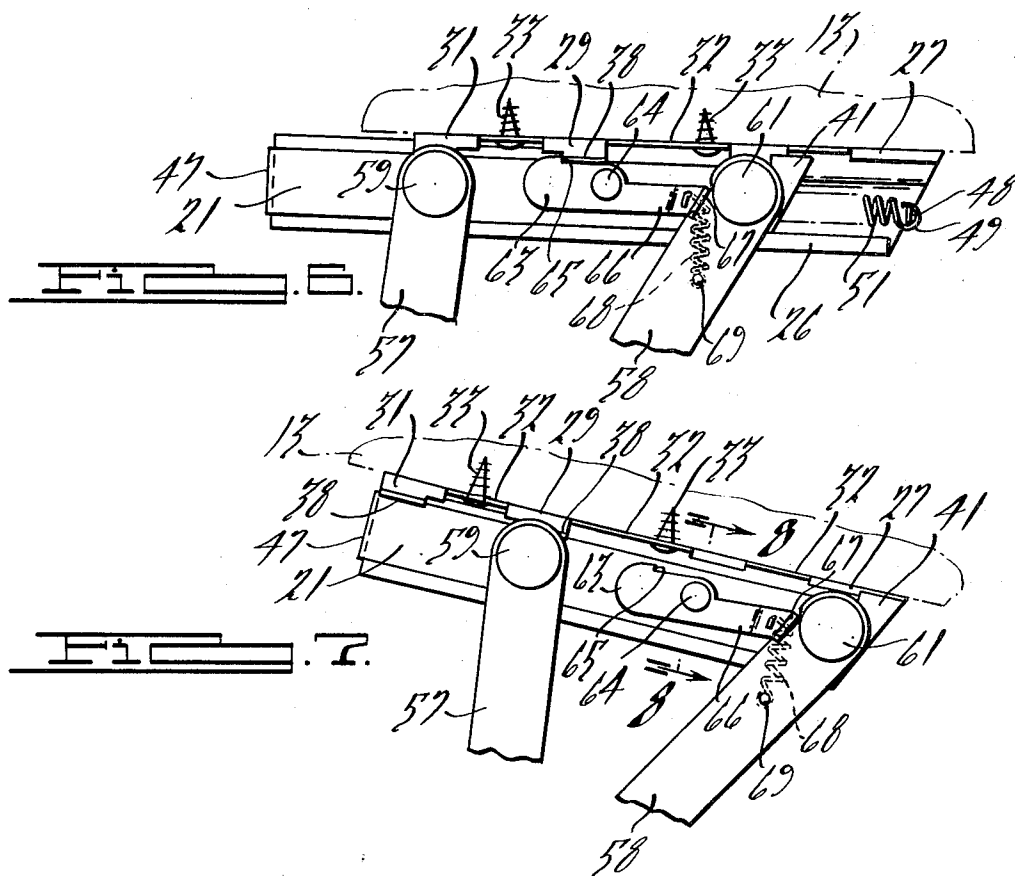
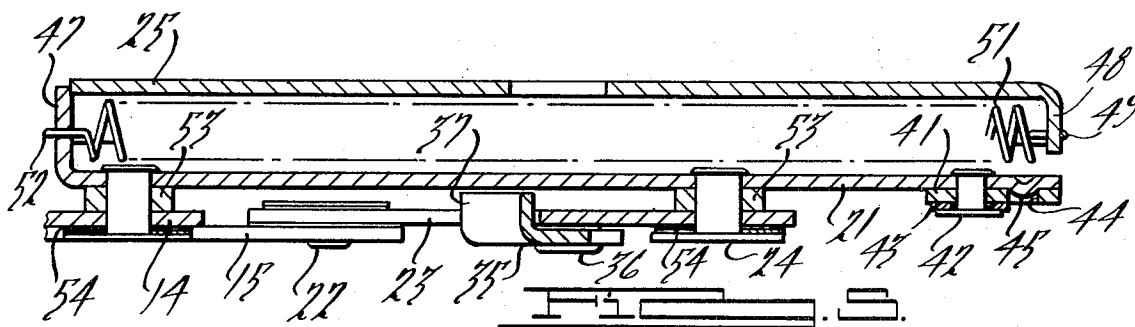
The leg rest of the chair is extensible from a position against the front of the seat to a position forwardly thereof. A pair of spaced scissor links support the leg rest in retracted and extended positions when actuated by a movable member such as a chair back, handle or the like. The leg rest is supported on the scissor links for forward movement thereon when extended to position the leg rest a greater distance from the front of the chair. The forward movement of the leg rest tensions springs and operate latches which retain the leg rest in a selected one of a plurality of forward positions. The latches are automatically released upon the operation of the scissor links to retract the leg rest to its position adjacent to the front of the chair which permits the springs to return the leg rest to its initial position before the end of the retractive movement of the links.

12 Claims, 8 Drawing Figures





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ADJUSTABLE LEG REST

BACKGROUND OF THE INVENTION

Reference may be had to U.S. Pats. Nos. 3,096,121 and 3,357,739 for a disclosure of two types of chairs to which the adjustable leg rest may be applied.

SUMMARY OF THE INVENTION

The invention pertains to a leg rest for a chair which when moved to leg supporting position may be adjusted outwardly on its support to space the leg rest a greater distance from the front of the chair. When retracted, the leg rest is positioned adjacent to the front of the chair and in one form is supported on a pair of spaced scissor links which move the leg rest to extended and retracted positions as clearly disclosed in the above mentioned patents. The outer ends of the scissor links are modified to pivotally support relatively slidable elements, the movable ones of which are attached to the bottom face of the leg rest so that the leg rest can be moved on the other of the relative slidable elements which are pivoted to the ends of the scissor links. A spring is secured to the opposite ends of the relatively movable elements to urge the leg rest to retracted position toward the front of the chair. Latch elements on the relatively movable elements lock the leg rest in any one of a plurality of forwardly moved positions against the tension of the springs. Upon the retraction of the leg rest toward the front of the chair, the latches are released to permit the leg rest to be moved by the springs to its initial position on the ends of the scissor links before the scissor links complete the retractive movement. The forward adjustment of the leg rest on the scissor links provides the same comfort to a person having long legs as that provided to a person with shorter legs.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in elevation of a chair having a leg rest extending forwardly thereof embodying features of the present invention;

FIG. 2 is an enlarged broken end view of the leg rest illustrated in FIG. 1, when in latched position;

FIG. 3 is a view of the structure illustrated in FIG. 2 showing the leg rest in unlatched position;

FIG. 4 is an enlarged sectional view of the structure illustrated in FIG. 3, taken on the line 4—4 thereof;

FIG. 5 is an enlarged sectional view of the structure illustrated in FIG. 3, taken on the line 5—5 thereof;

FIG. 6 is a view of structure, similar to that illustrated in FIG. 2, showing another form of the invention with the leg rest in latched position;

FIG. 7 is a view of the structure illustrated in FIG. 6 with the leg rest shown in unlatched position, and

FIG. 8 is an enlarged sectional view of the structure illustrated in FIG. 7, taken on the line 8—8 thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A chair 11, by way of example, is a view taken from the above mentioned Pat. No. 3,096,121 with the spaced scissor linkage systems 12 extended outwardly from the front face thereof and supporting an adjustable leg rest 13 on the end thereof. The scissor linkage

system 12 is the same as that illustrated in the patent. The link 14 which is pivoted to the cross link 15 by a pivot 16 has the end bent at a slight angle and recessed at 17 to permit the folding of the end 18 of the link 15 therewith when in retracted position. The end of the link 14 having the recess 17 is pivoted on a shouldered rivet 19 secured to a link 21. The opposite end of the link 15 from the end 18 is pivoted on a shouldered rivet 22 secured to one end of a link 23 the opposite end of which is pivoted on a rivet 24 secured on the link 21. With this arrangement, the link 21 is moved from a substantial vertical position at the front of the chair to a substantially horizontal position forwardly of the chair, as illustrated in FIG. 1.

A channel element 25 slides upon the link 21 having the bottom edge flange at 26 and the top edge flange at spaced sections 27, 28, 29, and 31. These flange sections are in the plane of flange 26 and retain the channel element in slidable relation upon the link 21. The link 21 has the edge portions offset at 34 from the central web thereof to slidably support the channel element 25. Securing tabs 32 for screws 33 are provided between the flange sections 27, 28, 29 and 31 for attaching the channel elements 25 to the underface of the leg rest 13.

Each of the links 23 has a latch element 35 secured thereon by a shouldered rivet 36 to permit the latch element to freely swing thereon. The latch element 35 has a top flange 37 with an extending latching finger 39 on the end. The flange sections 29 and 31 have horizontally disposed stop flanges 38 thereon which pass over the latching finger 39 when the channel element 25 is moved to the right as viewed in the figures. The pivot 36 for the latch element 35 is disposed below the finger 39 in such relationship that the heavy rearward portion urges the finger 39 upwardly into latching position after one or the other stop flange 38 has advanced thereover. Any number of stop flanges may be provided on the channel element 25, the two herein illustrated permit the leg rest to be retained in a retracted, fully extended and in an intermediate position therebetween.

A stop plate 41 is secured to the forward end of the web portion of the slide 21 by a rivet 42 having a plastic washer 43 under the head. The plate 41 has an aperture 44 into which a dimple 45 extends from the web of the slide 21 to prevent the plate from turning about the rivet 42. The stop plate 41 provides a shoulder 46 in the path of movement of the stop flange 38 on the flange section 29 and limits the outward movement of the channel elements 25 on the links 21. A flange 47 is bent inwardly from the opposite end of the web of the slide 21 from that having the stop plate 41 thereon in the path of movement of the channel element 25 which is stopped thereby when retracted.

A finger 48 on the forward end of the channel element 25 has an end 49 of a coil spring 51 secured thereto with the opposite end 52 of the spring secured to the flange 47. The web of the channel element 25 is of arcuate shape to encompass the spring. The spring is tensioned when the leg rest is extended for returning the channel elements and leg rest to their initial position when the finger 39 of the latch 35 is released. The rear end of the top flange 37 engages the top edge of the link 23 and when the link moves downwardly upon

the initial operation of the scissor link system 12 to retract the leg rest, the latch elements 35 move downwardly therewith moving the latching fingers 39 downwardly out of contact with the engaged stop flange 38 permitting the spring to move the channel elements 25 against the flanges 47 which is the position it is to be in when the leg rest is retracted to its position at the front of the chair. The links 14 and 23 are spaced from the link 21 by heavy washers 53 through which the rivets 19 and 24 extend. Spring washers 54 are provided between the heads of the rivets and the links 14 and 23 to eliminate any play therebetween. The link system 12, as herein illustrated in FIG. 1, is manipulated to extended and retracted position by a handle 55. When the handle is moved forwardly from the position illustrated, the two scissor link units of the system operate to move the links 15 clockwise moving the links 23 counterclockwise to cause the immediate release of the latching finger 39 to thereby permit the springs 51 to return the leg rest to its initial position where it is retained during the remaining movement of the scissor link units to retracted position. Upon the movement of the handle 55 to the position illustrated in FIG. 1, the leg rest will be extended and retained in its normal position or it may be advanced outwardly on the links 21 and be retained by the latching fingers 39 in either of two positions when engaging one of the stop flanges 38. This permits the leg rest to be adjusted to provide the desired comfort for the chair occupant.

A slightly modified form of the invention is illustrated in FIGS. 6, 7 and 8. This modification permits the adjustable leg rest to be applied to the chair illustrated in the above mentioned Pat. No. 3,357,739 in which the leg rest is maintained in substantially horizontal position throughout its movement from retracted to extended positions. The slide 21 and channel element 25 are the same as that employed in FIGS. 1 to 5 inclusive. The extending links 57 and 58 of the scissor link system are secured by shouldered rivets 59 and 61 to the web of the slide 21. The rivet 61 secures the stop element 41 to the slide 21 with a dimple 45 thereof extending into an aperture 44 through the element. The rivets extend through sleeves 62 which space the extending links 57 and 58 outwardly of the slide 21. A latch element 63 is secured by a shouldered rivet 64 to the slide 21. The upper edge of the latch element 63 has a shoulder 65 which engages one of the stop flanges 38, that on the flange section 29 being engaged in the structure illustrated in FIG. 6. The opposite end of the latch element 63 has a finger 66 which is bent outwardly and engaged in a notch 67 of the extending link 58. A spring 68 has one end attached near the end of the finger 66 and the opposite end secured to a rivet 69 on the extending link 58. The springs 68 rocks the latch element 63 toward latching position from which it is moved by the stop flanges 38 when advanced to the right. When the extending links 57 and 58 move from the position illustrated in FIG. 6 to that of FIG. 7, upon the retractive movement of the scissor link system, the end of the finger 66 is moved upwardly by the extending link 58 to rock the latch element 63 counterclockwise, causing the shoulder 65 to move out of engagement with the stop flange 38 thereby permitting the springs 51 to move the channel elements 25 and the leg rest 13 to their initial position for retraction

beneath the front of the chair. Low friction washers 71 are disposed between the outer ends of the sleeves 62 and extending links 57 and 58 and a spring washer 54 is provided between the heads of the rivets 59 and 61 and the extending links.

In either of the embodiments of the invention the leg rest is operated in a normal manner to extended position and to retracted position. The leg rest may be further moved on the links at the ends of the scissor link system against the tension of the springs 51 which are further tensioned thereby. The leg rest is retained in extended positions by latching elements which are released upon the initial retractive movement of the scissor link system permitting the springs to return the leg rest to its initial position. While the adjustable leg rest is shown mounted on two specific types of chairs on supports of the scissor link system type, it is to be understood that any type of supporting links which moves the leg rest from retracted to extended position may have the structure of the present invention applied thereto.

We claim:

1. In a leg rest for a chair, a pair of spaced link means extensible from the front of the chair, a unit leg rest, and slidable elements supported on the free ends of the link means which permit the leg rest mounted on said elements to be manually moved forwardly of the front of the chair when the leg rest is extended therefrom.
2. In a leg rest for a chair as recited in claim 1, wherein said link means is of the scissor type on the free ends of which one of said relatively slidable elements are pivotally mounted.
3. In a leg rest for a chair as recited in claim 2, wherein said one relatively slidable element is a link.
4. In a leg rest for a chair as recited in claim 3, wherein the other of said relatively slidable elements is a channel member disposed in slidable relation on said links and secured to said leg rest.
5. In a leg rest for a chair as recited in claim 1, wherein a latch element is pivotally carried by one of said slidable elements at each side of the chair, and one or more latch engaging members on each of the other of said relatively slidable elements.
6. In a leg rest for a chair as recited in claim 1, wherein a latch element is pivotally carried by said link means at each side of the chair, and one or more latch engaging members on one of said relatively slidable elements located adjacent to the latch elements.
7. In a leg rest for a chair as recited in claim 5, wherein spring means is secured to opposite ends of said relatively slidable elements in position to retract the leg rest when the latch elements are released.
8. In a leg rest for a chair as recited in claim 6, wherein spring means is secured to opposite ends of said relatively slidable elements in position to retract the leg rest when the latch elements are released.
9. In a leg rest for a chair as recited in claim 7, wherein means are provided for releasing said latch means upon the retraction of said link means to permit the leg rest to return to its initial position thereon as the link means and leg rest are moved to retracted position.
10. In a leg rest for a chair as recited in claim 8, wherein means are provided for releasing said latch means upon the retraction of said link means to permit the leg rest to return to its initial position thereon as the link means and leg rest are moved to retracted position.

11. In a leg rest for a chair as recited in claim 9, wherein stop means limits the movement of the leg rest in both directions of movement.

12. In a leg rest for a chair as recited in claim 10, wherein stop means limits the movement of the leg rest in both directions of movement.

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