Aug. 25, 1959 C. C. DICKSON 2,901,027

ADJUSTABLE CHAIR

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Fig. 1.

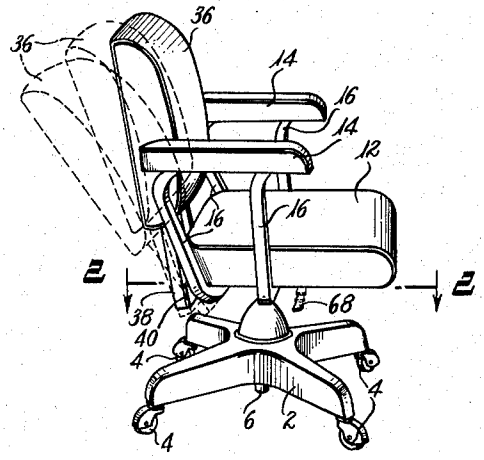
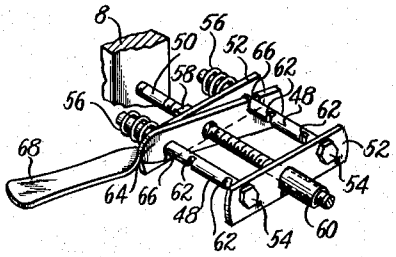


Fig. 4.



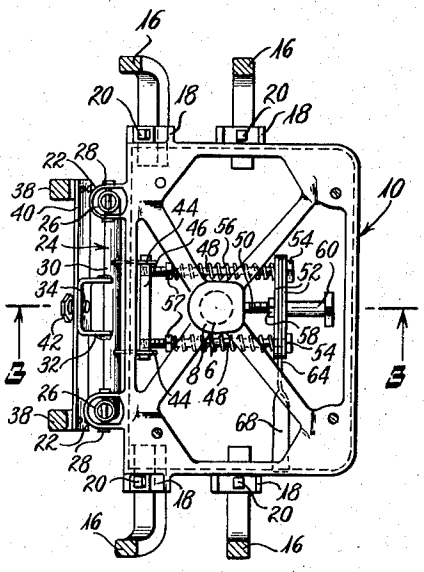


Fig. 2.

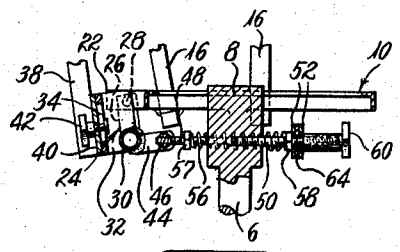


Fig. 3.

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ADJUSTABLE CHAIR

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4 Claims. (Cl. 155—160)

This invention relates to adjustable chairs, and particularly to chairs having resiliently swingable back rests wherein the range of swinging movement may be adjusted and wherein the back rest may be locked in any of a plurality of fixed positions within its range of swinging movement.

In general, the invention comprises novel chair structure wherein a swinging back rest is connected to a seat support through the medium of a control mechanism permitting rearward swinging of the back rest, against the action of spring means, from a forward position. The mechanism includes adjustment features whereby the so-called "forward" position may be changed in a fore-and-aft direction with the back rest still free to resiliently swing throughout the same total range of movement from the different forward positions. The invention also includes novel features of construction and means whereby the back rest may be rigidly locked at any one of a plurality of positions in its range of swinging movement.

It is therefore an object of this invention to provide a chair having a back rest mounted for resilient swinging movement throughout a predetermined angular range and wherein the starting position of said range may be adjusted at will.

It is another object of this invention to provide novel adjustable chair structure.

Still another object of the invention is to provide a novel chair structure of simple construction, economical to manufacture, and reliable in operation.

Additional objects and advantages will become apparent to those skilled in the art as the description proceeds in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view of a chair embodying the present invention with the back rest shown in different positions by dotted line;

Fig. 2 is a fragmentary sectional view taken substantially along the line 2—2 of Fig. 1 and on a somewhat enlarged scale;

Fig. 3 is a vertical sectional view taken along the line 3—3 of Fig. 2; and

Fig. 4 is a fragmentary perspective view of a portion of the structure of Figs. 2 and 3 with the parts shown in a somewhat "exploded" position for clarity of illustration.

Referring first to Fig. 1, the chair comprises a usual or conventional base 2 provided with casters 4. A standard or post 6 extends through the base 2 and may be vertically adjusted therein in any well-known or convenient manner. At its upper end the standard 6 is provided with an enlarged head 8 (Figs. 2 and 3) rigidly secured to a seat frame 10. The seat frame 10 may be cast or fabricated and may be integral with the standard 6 and its head 8, if desired. A seat cushion 12 is secured to the frame 10 and arm rests 14 are supported by side arms 16 which, in turn, are secured to pads 18 formed on the seat frame 10, by means of screws or the like 20.

The rear edge of the seat frame 10, (Fig. 2) is provided with a pair of rearwardly extending loops or brackets 22. A generally U-shaped member 24 comprises upright leg portions 26 extending through and pivoted in the brackets or loops 22 on a common axis defined by pivot pins 28. The leg portions 26 are rigidly joined at their bottom ends by the transverse member 30 of the U-shaped element. The loops or brackets 22 are sufficiently larger than the legs 26 to permit the U-shaped member to swing about the horizontal axis defined by pins 28 throughout a substantial angle of movement.

A U-shaped bracket 32 is secured, as by welding, to the transverse member 30 and is provided with a vertical slot 34 in the web portion thereof. A back rest panel 36 is provided with supporting legs 38 extending downwardly therefrom and joined at their lower ends by a transverse plate 40. The plate 40 is provided with an intermediate opening (not identified) through which a securing means 42 passes. The means 42 comprises a conventional hand nut and bolt extending through the slot 34 in the bracket 32. As is obvious, the back rest panel 36 may be adjusted vertically on the bracket 32 within the range permitted by the slot 34 and is supported by the bracket 32 and U-shaped member 26 for swinging movement about the horizontal axis of pins 28.

A pair of spaced brackets 44 are welded or otherwise securely fastened to the forward side of the transverse member 30 and are provided with aligned openings loosely and pivotally supporting a first rod 46. A pair of threaded slide rods 48 is mounted on the rod 46 with each of the rods of the pair adjacent a corresponding bracket 44 and with both rods between the brackets 44. Transverse openings in the rod 46 are threaded to receive the slide rods 48, as shown. The rods 48 thus hold the rod 46 against endwise removal from the brackets 44 and serve to retain the assembly in the described relationship.

The enlarged head 8 of the standard 6 is provided with a forwardly extending threaded stud 50 (see also Fig. 4) fixed thereon. A pair of identical bars 52 is provided. Each bar 52 has a central opening (not identified) loosely embracing the stud 50 whereby the bars 52 are slidable along the stud 50 on the crests of the threads thereof. Each bar 52 is further provided with an opening on each side of the central opening in line with a corresponding opening in the other bar 52. The slide rods 48, previously described, extend slidably through the spaced openings near the ends of the bars 52. The slide rods 48 are provided with headed ends 54, as shown. A compression spring 56 surrounds each rod 48 and at its forward end abuts the inner bar 52 while its rearmost end abuts a nut 57 threadedly adjustable on the corresponding rod 48.

A nut 58 is threaded on the stud 50 inwardly of the inner bar 52 and a suitable hand nut 60 is threaded to the stud 50 outwardly of the outermost bar 52.

It will be obvious that the transverse bars 52 constitute and abutment defining a reaction member for the springs 56. Thus, the back rest may swing rearwardly, through the dotted line positions of Fig. 1, whereupon the slide rods 48 slide freely through the bars 52 and such movement effects compression of springs 56. Obviously the compression of springs 56 may be adjusted to predetermine the ease with which swinging movement of the back rest can be accomplished and to predetermine the range of swinging movement from the forward position wherein the parts are in the relative positions shown in Figs. 2 and 3. By adjusting nuts 58 and 60 on the stud 50, the position of the bars 52 may be regulated to thereupon change the forward position of the back rest panel 36 to any desired position (within the limits of adjustment) and from that forward position the back

rest is capable of resilient swinging movement through a full range of motion. It is to be noted that such adjustment of the position of bars **52** does not change the compression on springs **56**.

As also clearly shown in Fig. 4, the slide rods **48** are provided with longitudinally spaced notches **62** on their side edges adjacent the forward ends of those rods. As shown, three such notches are provided on each rod. A lever **64** is pivotally carried by the stud **50** between the bars **52** and is, in turn, provided with notches **66** on opposed edges thereof in position to engage the narrow portions of the rods **48**, as defined by the notches **62**, when those notched portions are positioned in the plane of the lever **64**. The lever **64** is also provided with an extending handle portion **68** readily accessible to an occupant of the chair, as evident from Fig. 1.

By the structure thus far described, it will be obvious that the user of the chair may initially adjust the nuts **57** on slide rods **48** to regulate the resilient resistance to swinging movement of the back rest **36**. Then, by adjusting nut **58** and hand wheel **60** on stud **50**, he may regulate the normal or forward position of the back rest panel **36** within a relatively wide range, positioning it to normally occupy a desired position. With the handle **68** of the lever **64** then in its uppermost position, wherein notches **66** are free of the rods **48**, the hand nut **60** may be tightened to clamp the lever **64** in such position and the chair may be used as desired. In this condition of adjustment the user may lean back on the back rest **36** and cause it to resiliently swing through the dotted line positions of Fig. 1 and return, at will. By loosening the hand nut **60** the user may then swing the back rest to a dotted line position wherein selected notches **62** in the rods **48** are aligned with the lever **64** whereupon the handle **68** of lever **64** may be depressed to the position of Fig. 4, which thereby locks the rods **48** against sliding movement through bars **52** and hand nut **60** may be then tightened to lock the lever **64** in the described position. In that position the back rest panel **36** is in the selected angular position and lockd therein against swinging movement in either direction. It is to be noted that, even though only three notches **62** are provided, the panel **36** may be locked in any desired angular position by selecting the nearest notches **62** for engagement by lever **64** and then adjusting the position of bars **52** along stud **50** until the selected locked position of panel **36** is at the angle desired.

The mechanism described herein thus provides a multitude of adjustments and selectable positions for a back rest, in accordance with the aforesaid objects.

While a single specific embodiment of the invention has been shown and described herein, it is to be understood that the form shown is merely illustrative. It is

contemplated that the invention encompass other embodiments falling within the scope of the appended claims.

I claim:

1. In a chair having a seat support and an upstanding back rest pivoted thereto on a horizontal axis, a control structure comprising relatively slidable first and second portions, spring means urging said portions to relatively extended positions in a fore-and-aft direction, said first portion being mounted on said seat support and said second portion being connected to said back rest below said axis, means for adjusting the position of said first portion on said seat support in a fore-and-aft direction, and locking means for locking said portions against relative sliding in any selected one of a plurality of predetermined relative positions thereof.

2. A chair as defined in claim 1 wherein said first portion comprises a transverse bar structure having an opening therethrough, said second portion including a rod slidable through said opening, a lever pivotally mounted on said seat support adjacent said bar structure and having a notch in an edge thereof, longitudinally spaced notches in said rod, said notch in said lever being engageable with a selected notch of said rod to lock said rod against sliding movement in said opening.

3. A chair as defined in claim 2 including means for selectively locking said lever against pivotal movement.

4. A chair as defined in claim 1 wherein said seat support includes a threaded stud fixed thereon and extending forwardly thereon, said first portion comprising a pair of bars having central openings therethrough slidably embracing said stud, a lever pivoted on said stud between said bars, said bars having aligned openings therethrough spaced from said stud and on opposite sides thereof, said second portion including spaced parallel rods extending slidably through said aligned openings and each having a plurality of notches in the sides thereof, said lever having notches in the edges thereof engageable with said rods at the notches therein to lock said rods against sliding movement in said openings, a nut threaded on said stud inwardly of said first portion, and a hand wheel threaded on said stud outwardly of said first portion.

References Cited in the file of this patent

UNITED STATES PATENTS

1,849,073	Collier	Mar. 15, 1932
1,973,627	Harter	Sept. 11, 1934
2,093,319	Herold	Sept. 14, 1937
2,208,561	JungBauer	July 23, 1940
2,249,750	Dickson	July 22, 1941
2,410,871	Fields	Nov. 12, 1946
2,518,946	Sickert	Aug. 15, 1950
2,557,736	Fox	June 19, 1951