

Nov. 11, 1958

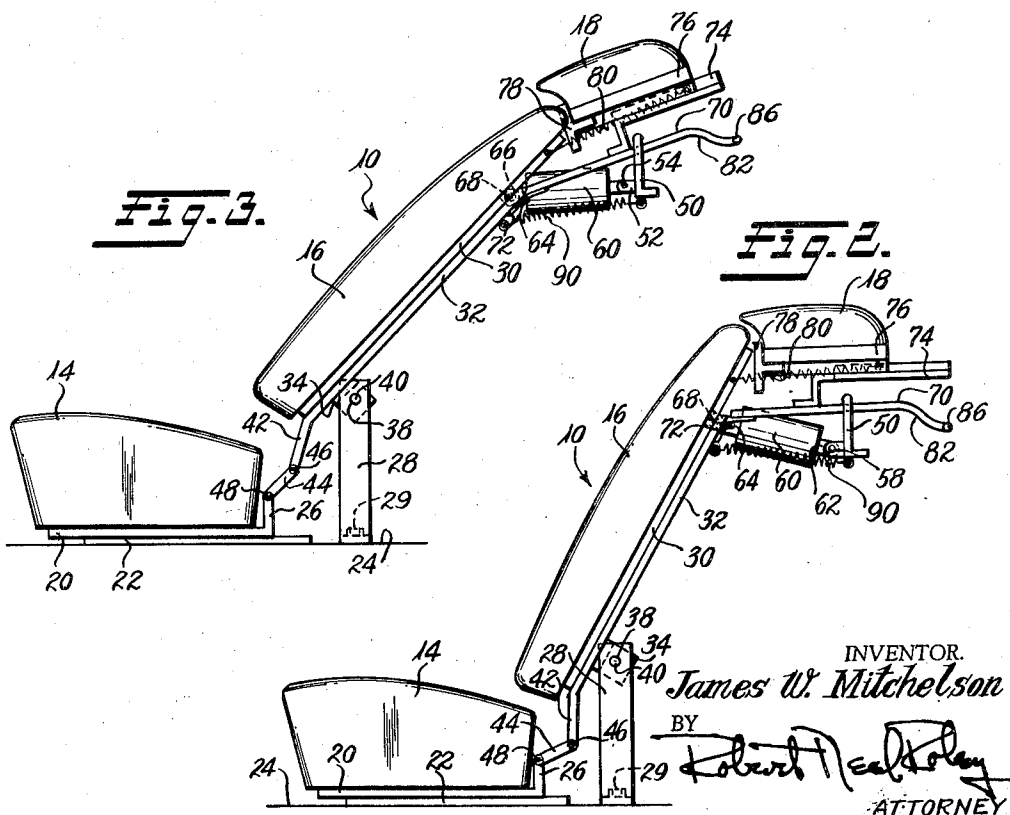
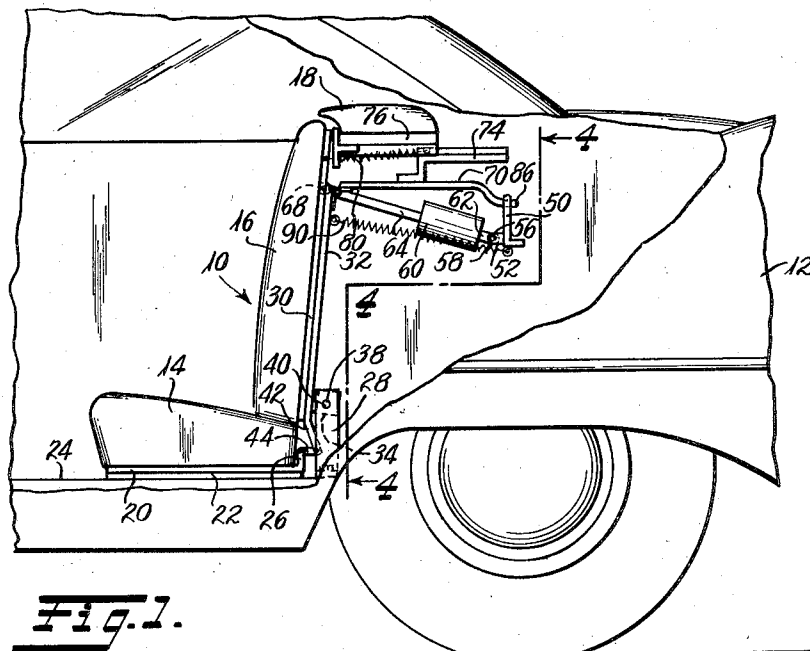
J. W. MITCHELSON

2,859,797

ADJUSTABLE RECLINING CHAIR AND HEADREST THEREFOR

Filed Dec. 31, 1957

2 Sheets-Sheet 1



Nov. 11, 1958

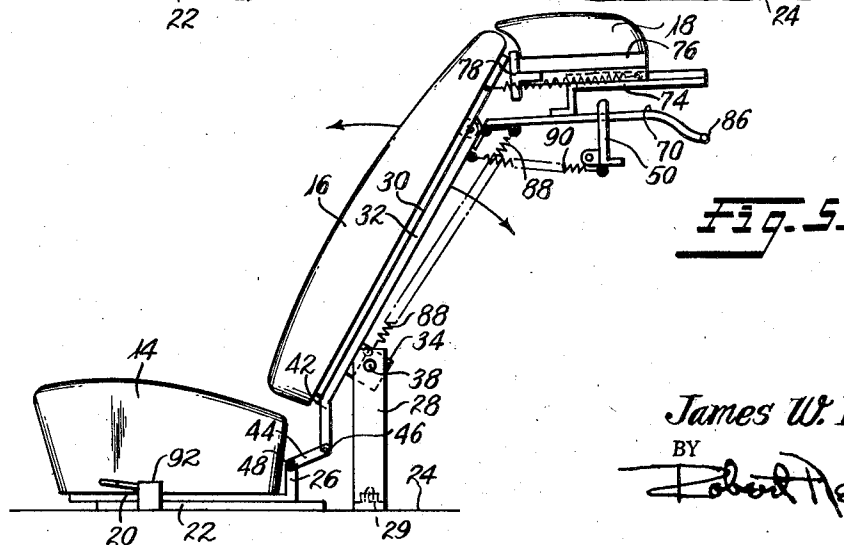
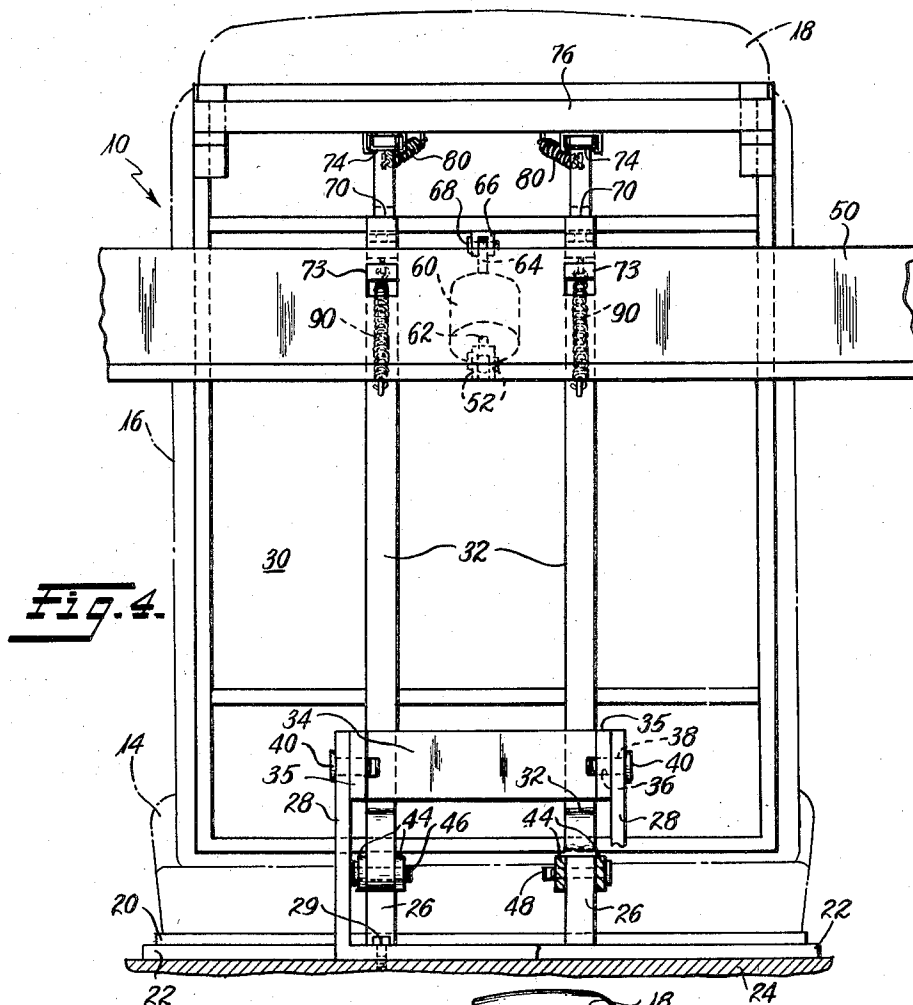
J. W. MITCHELSON

2,859,797

ADJUSTABLE RECLINING CHAIR AND HEADREST THEREFOR

Filed Dec. 31, 1957

2 Sheets-Sheet 2



INVENTOR

James W. Mitchelson

BY

Robert A. Foley

ATTORNEY

1

2,859,797

ADJUSTABLE RECLINING CHAIR AND HEADREST THEREFOR

James W. Mitchelson, Taylorville, Ill.

Application December 31, 1957, Serial No. 706,404

8 Claims. (Cl. 155—5)

This invention relates to an adjustable reclining chair and more particularly to an adjustable reclining chair having a seat member, a back member, and a head rest member which are each interconnected for simultaneous concurrent movement between a normal upright position and a plurality of selected desired reclining positions.

An important object of this invention is to provide a chair for a vehicle, such as an automobile, railway carriage, airplane or the like, with the vehicle chair having a seat member, a back member and a headrest member, with means interconnecting the members for simultaneous adjustable movements between a normal upright position and various reclined positions.

Another object of this invention is to provide a vehicle chair having a headrest cushion which is automatically brought from a retreated, out of the way, position into a comfortable head-supporting relationship with the back cushion of the chair simultaneously when the latter is shifted from an upright position to a reclined position with respect to the chair seat cushion.

A more detailed object of this invention is to provide means for sliding a vehicle chair seat forwardly or backwardly along the floor of the vehicle and, as an incident thereto, for concurrently pivotally moving therewith an associated back member and an associate headrest member to permit the chair seat to be set in a normal position with the back member substantially upright and the headrest member in a retreated, out of the way, position, or in at least one reclined position wherein the back member is inclined rearwardly with respect to the seat and the headrest member is positioned to comfortably support the head of a reclining person positioned in the seat.

An additional object of this invention is to provide a vehicle chair having the foregoing characteristics, wherein the adjusting movement and positioning of the various chair parts are brought about, at least in part, by means, such as springs or hydraulically operated devices, so as to permit a traveler to shift the relative movable associated parts of the chair to various desired positions with little effort or inconvenience on his part.

Other objects and advantages of the invention will become apparent in the course of the following detailed description, taken in connection with the accompanying drawing, wherein;

Fig. 1 is a partial side elevational view of an automobile, the body of which has been partly broken away, to better illustrate a chair thereof, which embodies the present invention and which is shown in an upright position;

Fig. 2 is a side elevational view of the chair illustrated in Fig. 1 showing the chair in a partly reclined position;

Fig. 3 is a side elevational view of the chair illustrated in Fig. 1 showing the chair in a fully reclined position;

Fig. 4 is a rear elevational view, partly broken away, of a single chair taken on line 4—4 of Fig. 1; and

2

Fig. 5 is a side elevational view of a chair illustrating an alternative embodiment of the present invention.

Turning now to the drawing, wherein are illustrated preferred embodiments of the present invention and in which like reference characters apply to like parts throughout the same, and more specifically to Figs. 1 to 4, inclusive, attention is directed to a vehicle chair 10, embodying the present invention, and which is illustrated as being in the rear portion of an automobile 12. It will be appreciated, however, that the use of chair 10 is not limited to automobiles, but that its usefulness extends quite readily to buses, trains, airplanes and other vehicles employed in the transport of human beings.

The chair 10, as illustrated, includes a seat member 14, a back member 16 and a headrest member 18, each of which may be upholstered or cushioned, if desired. The chair members 14, 16 and 18 are relatively movable, adjustable and fixedly positionable between a normal position, as shown in Fig. 1, and various other desirable reclining positions, as shown in Figs. 2 and 3, in order to more comfortably support the body of a human being in a selected desired position, either upright or reclining.

Movement of the seat member 14 is in a substantially linear direction along the floor of the automobile 12 in a direction generally parallel to the longitudinal axis of the automobile and generally normal to the plane of the back member 16. This movement is obtained by supporting the seat member 14 on a frame structure 20 which is rigidly connected to the seat. The frame structure 20 in turn is slidably mounted, by any well-known means, on laterally spaced guide or track means 22 attached to the floor 24 of the automobile 12 in substantially parallel relationship with the longitudinal axis thereof. Extending upwardly from the rear portion of the frame structure 20 is a pair of laterally spaced upright brackets 26 which serve a purpose which will be more fully disclosed hereinafter.

The back cushion member 16 is movably supported by being pivotally connected to a pair of laterally spaced upright members 28 which are attached to the floor 24 by a securing means, such as bolts 29. Such pivotal connection may be obtained, as in the present instance, by attaching to the rear portion of the back cushion 16 a flat base or board 30 having a pair of laterally spaced stringers 32 fixed to the rear surface of the board 30 in parallel relationship to a vertical plane through the longitudinal axis of the vehicle 12. A cross member 34 is connected across the lower portions of the stringers 32 and has adjacent each end extremity thereof a rearwardly extending bracket 35 provided with an opening 36 which registers with an opening 38 in a respective one of the upright members 28, as shown by Fig. 4. A separate hinge rod 40 passes through each pair of registered openings 36 and 38 to pivotally connect the upright members 28 and stringers 32 together.

In order to obtain sliding movement of the seat cushion member 14 in response to the tilting or pivotal movement of the back cushion member 16 about the hinge rods 40, a linkage arrangement between the two cushion members 14 and 16 is provided. In the instant inventive concept, each of the stringers 32 has a downwardly extending portion 42 bent rearwardly away from the plane of the base or board 30. Two links 44, one on either side of the stringer 32, are pivotally connected at one end thereof to the end extremity of each portion 42 of the respective stringer 32 by a hinge pin 46, or the like, which passes through the links 44 and the respective end extremity of the portion 42. These two links 44 are in turn pivotally connected at the other ends thereof to the end extremity of one of the upright brackets 26, by a hinge pin 48. It will be readily apparent, therefore,

3

that the seat cushion member 14 will be moved forwardly or backward along the floor 24 by the links 44 as the back cushion member 16 is moved clockwise or counter-clockwise, respectively, about the hinge rods 40, as viewed in the accompanying drawing.

To effect the pivotal movement of the back cushion member 16, there is provided fixed support means 50 positioned behind the top portion of the back cushion member 16 and power operated extensible means 60 interposed between the back cushion member 16 and the fixed support means 50. In the present embodiment the fixed support means 50 is shown to comprise an angle bar secured to the frame of the vehicle 12 so as to extend laterally thereof. A pair of ears 52, centrally located with respect to the back cushion member 16, extend forwardly from the angle bar and are each provided with a mutually aligned opening 56 for receiving a pivot pin 58. The power operated extensible means 60, cooperating with the back cushion member 16 and the fixed support means 50, preferably comprises a fluid pressure cylinder having on one end thereof a lug 62 pivotally connected to the ears 52 by the pivot pin 58, and a piston rod 64 extending from the other end thereof and pivotally connected to the base or board 30 of the back cushion member 16, as by lug 66 and pin 68. Application of pressure fluid to the pressure cylinder acts to extend the piston rod 64. Preferably this extension is yieldably resisted by a pair of tension springs 90, only one of which is illustrated, connected between the stringers 32 and the fixed support means 50, which aid in moving the back member 16 rearwardly from its normal position.

It is to be understood, however, that the power operated extensible means 60 may also comprise a double acting pressure fluid cylinder, in which case the springs 90 may be omitted, if desired.

It is to be understood that the springs 90 may also be eliminated entirely from the modification of this inventive concept, as illustrated in Figs. 1, 2 and 3, without departing from the intended scope thereof, since the springs 90 are primarily a safety means which facilitate the movement of the back member 16 and in case of failure of the power operated extensible means 60 the springs 90 will enable the members to have the necessary desired relative movement.

Further, it is to be understood that other types of power means, such as solenoids, etc., may be used instead of fluid, as disclosed, to actuate the power extensible means 60.

A pair of bars 70 are attached, respectively, to a pair of hinges 72, mounted on the stringers 32, and extend rearwardly therefrom through openings 73 in the fixed support means 50. Each of the bars 70 supports a Z-shaped bracket 74, and the two brackets 74 in turn slidably support a backing 76 for the headrest cushion member 18. The forward end of the backing 76 is provided with a T-shaped member 78 which rests with the head portion thereof being against the upper end of the base or board 30 and is maintained in position by means of a pair of helical tension springs 80 suitably connected to and between the base or board 30 and the backing 76. The rear ends of the bars 70 are downwardly and rearwardly bent, as at 82, and are provided, at the outer ends thereof, with stop pins 86 which limit the movement of the bars 70 in the openings 73.

Considering next the operation of the above described chair, and first referring to Fig. 1, it will be readily apparent that if pressure fluid be released from the cylinder of the power operated extensible means 60 the piston rod 64 will be retracted due to the action of the springs 90 and the back cushion member 16 will be pivoted clockwise from the normal position, Fig. 1, about the hinge rod 40, and also the seat cushion member 14 will be moved forwardly. Also, as the piston rod is retracted, the straight portions of the bars 70 will enter the openings 73 lowering the same so as to cause the head rest

4

cushion member 18 to tilt upwardly as it slides rearwardly on the Z-shaped bracket 74, as evidenced from Figs. 2 and 3. Admitting fluid to the rear portion of the cylinder will cause a reverse movement of the chair parts, bringing them back to their normal positions, as shown in Fig. 1. It is of course contemplated that suitable means, not shown, will be provided for permitting the chair user to manually control the application of pressure fluid to the cylinder to adjust the chair to any one of the desired positions, as the user may select.

In another modification of the present invention, as shown by Fig. 5, the pressure cylinder of the power operated extensible means 60 is omitted and in place thereof a pair of springs 88 (only one being shown) are connected to and between the bars 70 and to the brackets 35. In this modification the chair is adjusted to its various positions by manually moving the seat cushion member 14 forwardly or backwardly on the guide or track means 22, suitable means 92, being provided for releasably locking and positioning the seat cushion member 14 in various desired selected positions. It is believed to be apparent that the springs, 88 and 90, resiliently bias the various parts associated with the headrest cushion member 18 to cause the latter to be properly moved in accordance with the movements of the seat and back cushion members 14 and 16.

While I have only illustrated a single adjustable reclining chair which is positioned and disclosed as the rear seat of an automobile, it is to be understood that this novel adjustable reclining chair can be so positioned and used either as a single unitary structure or as a plurality of structures such as 2, 3 or more chair sections positioned, as desired, with connecting means and/or independent actuating means, as disclosed and claimed in this application.

It is to be understood that though preferred forms of the invention have been detailed and disclosed herein it is not intended that the invention be limited to such forms, but instead, it is intended that the invention extend to such modifications and alternative constructions thereof that fall within the spirit and scope of the appended claims.

What I claim as my invention is:

1. In an adjustable reclining chair structure, a guide means, a seat member slidably mounted on said guide means for rearward and forward movement of the seat member, a first supporting means, a back member pivoted to said first supporting means, connecting means between the seat member and the back member to permit simultaneous movement of the seat member and back member in generally opposite directions, a second supporting means fixed relative to and rearward of said back member, a headrest member, and connecting means between the back member and the headrest member slidably engaging the second supporting means to permit simultaneous inclination of the back member and sliding and tilting movement of the headrest member.

2. The structure according to claim 1 wherein the first mentioned connecting means includes a lever and a link between the back member and the seat member.

3. The structure according to claim 2 wherein the second mentioned connecting means includes a pair of bars hinged to the back member and a slide on said bars for supporting the headrest member.

4. The structure according to claim 1, together with a fluid pressure operated means for pivoting the back member.

5. The structure according to claim 1, together with resilient spring means for pivoting the back member and sliding and tilting the headrest member.

6. In an adjustable reclining chair structure for a vehicle, a first guide means, a seat member slidably mounted on said guide means to permit rearward and forward movement of the seat member, a supporting means for a back member, a back member pivoted adja-

5

cent the lower end thereof to said supporting means, linkage connections between said seat member and said back member, a pair of arms pivoted to the back member adjacent the upper end thereof, said arms having downwardly and rearwardly bent rear portions, a second guide means for said arms, a bracket carried by said arms, a headrest slidably mounted on said bracket, means holding said headrest against said back member, and means for pivoting said back member, said linkage connections causing movement of said seat member and said arms causing movement of said headrest during movement of said back member.

7. The structure according to claim 6 wherein the means for pivoting the back member includes a fluid pressure cylinder and a piston connected between the back member and the frame structure of the vehicle.

6

8. The structure according to claim 6 wherein the means for pivoting the back member includes resilient spring means connected between the back member and the frame structure of the vehicle.

References Cited in the file of this patent

UNITED STATES PATENTS

439,303	Newton	Oct. 28, 1890
2,285,112	Dorton	June 2, 1942
2,491,898	Luketa	Dec. 20, 1949
2,815,794	Hendrickson et al.	Dec. 10, 1957

FOREIGN PATENTS

567,937	France	Mar. 12, 1924
---------	--------	---------------