

Sept. 1, 1931.

C. E. FERREIRA

1,821,299

RECLINING SEAT.

Filed May 8, 1929

2 Sheets-Sheet 1

Fig. 1.

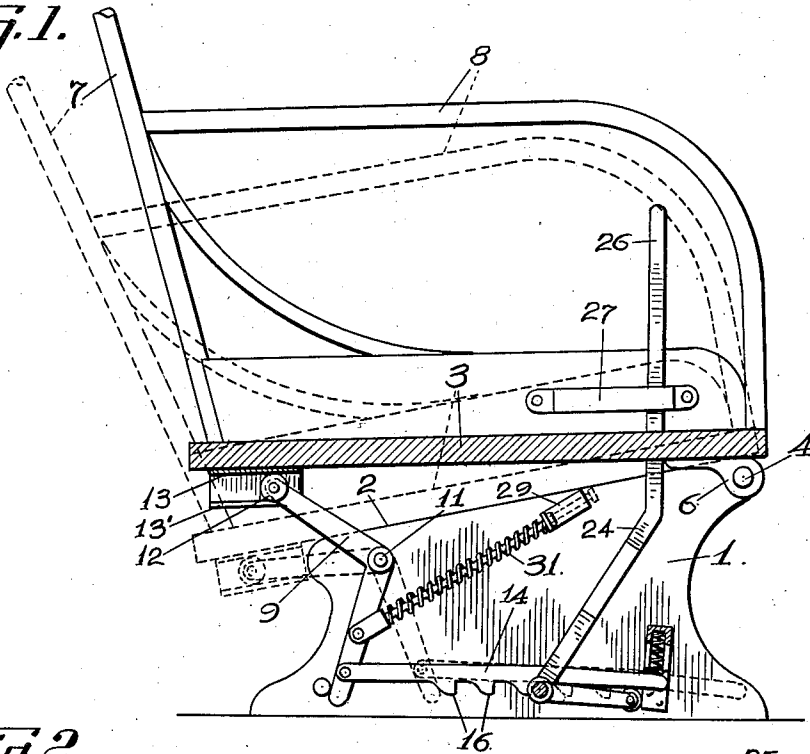


Fig. 2.

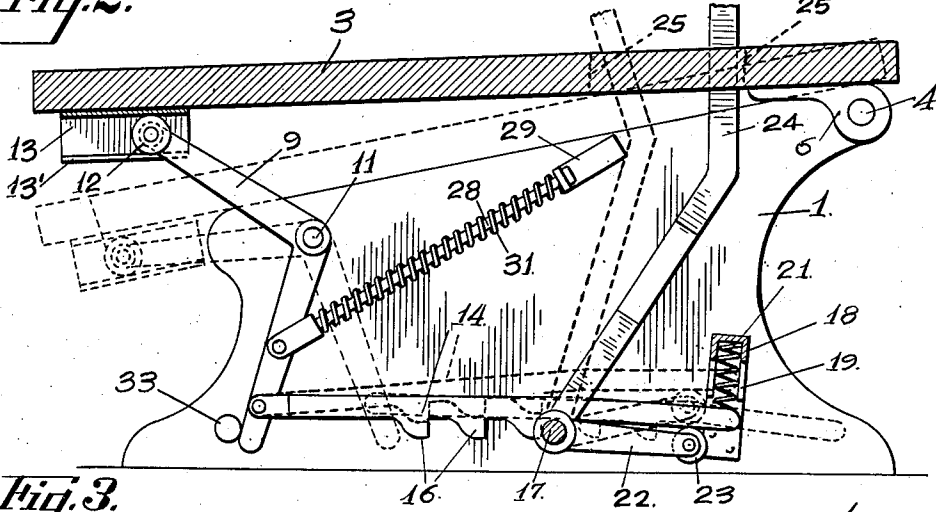
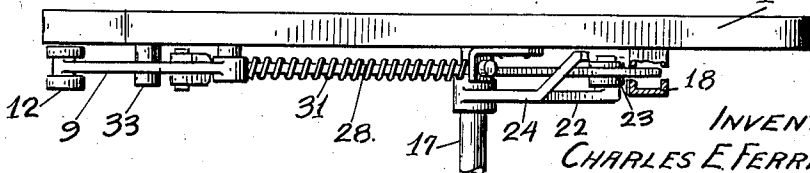


Fig. 3.



INVENTOR
CHARLES E. FERREIRA
BY *Arthur H. Slee.*
ATTY.

Sept. 1, 1931.

C. E. FERREIRA

1,821,299

RECLINING SEAT

Filed May 8, 1929

2 Sheets-Sheet 2

Fig. 4.

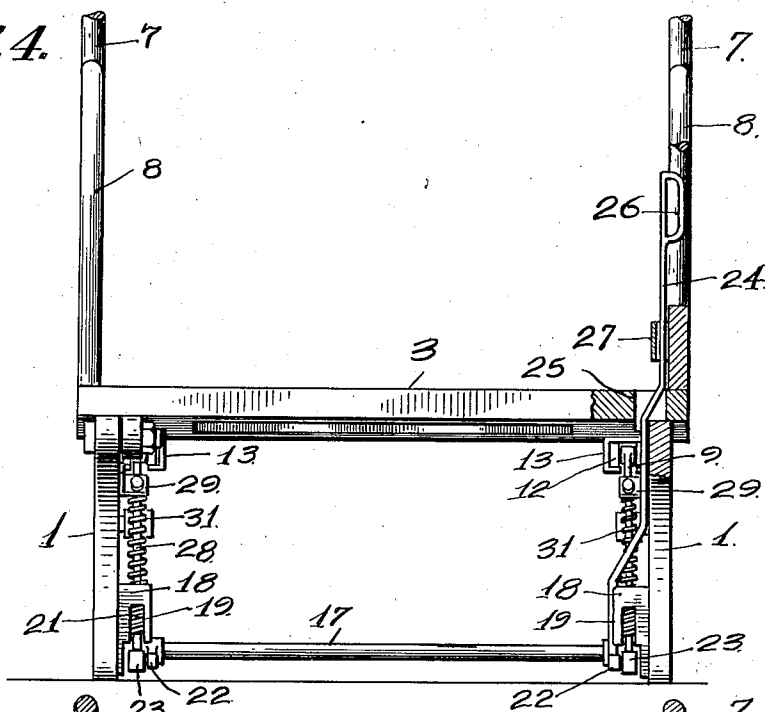
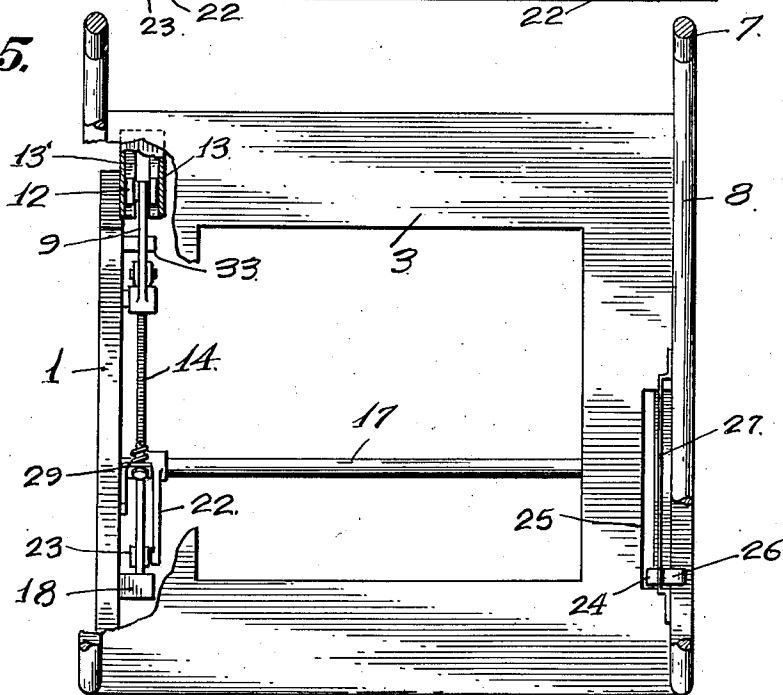


Fig. 5.



INVENTOR
CHARLES E. FERREIRA
BY *Arthur R. Slee*
ATTY.

UNITED STATES PATENT OFFICE

CHARLES E. FERREIRA, OF OAKLAND, CALIFORNIA

RECLINING SEAT

Application filed May 8, 1929. Serial No. 361,356.

My invention relates to improvements in reclining seats wherein a seat frame provided with back and arms is pivotally mounted at the forward edge thereof upon a supporting base, the rearward portion of the frame being adapted to be supported in any of a plurality of positions, said frame being adapted to be tipped rearwardly upon its pivot mounting by the weight of an occupant of the seat and automatically returned to normal position when relieved from the weight of the occupant.

My improved reclining seat, while suitable for general use as a reclining chair, is particularly adapted for use as a seat for motor-busses and the like to permit an occupant of the seat to adjust the seat to a desired reclining position affording increased comfort while traveling and to permit the occupant to sleep in comfort in the chair.

The primary object of my invention is to provide an improved reclining seat.

Another object is to provide an improved seat having the seat frame and back movable together to a reclining position without altering the angle between the seat bottom and the seat back.

A further object is to provide an improved reclining seat having the seat frame pivoted at its forward edge whereby the seat may be tipped rearwardly to reclining position without raising the forward edge of the seat bottom.

Another object is to provide an improved seat movable to a reclining position adapted to produce increased comfort for an occupant and which will prevent the occupant from sliding forward out of natural reclining position.

Another object is to provide an improved chair of the character described which may be easily moved to a desired reclining position by an occupant while seated, and which will be automatically returned to normal position when relieved from the weight of an occupant.

A further object is to provide an improved mechanism for adjustably supporting the seat in a desired position and affording a

simple and positive means for adjusting the seat to a desired reclining position.

A still further object is to provide an improved adjusting mechanism which is rugged and efficient and which may be economically constructed and easily and efficiently operated.

I accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present application wherein like characters of reference are used to designate similar parts throughout the specification and drawings, and in which—

Fig. 1 is a broken sectional view of my improved reclining chair construction and operating mechanism;

Fig. 2 is a broken sectional view of the base and seat bottom, drawn upon a larger scale and disclosing the construction and operation of the adjusting mechanism;

Fig. 3 is a broken plan view of the adjusting mechanism as mounted upon one side of the base;

Fig. 4 is a broken front elevation of my improved reclining chair structure; and

Fig. 5 is a broken plan view of the structure as shown in Fig. 4.

Referring to the drawings, the numeral 1 is used to designate in general a supporting base, preferably comprising a pair of spaced parallel side members having inclined upper edges 2 sloping downwardly from the front to the rear. A seat frame 3 is pivotally mounted upon the base 1 by means of pivot pins 4 mounted at the forward end and near the top of the side members of the base and engaging bearing members 6 secured upon the seat frame adjacent the forward end thereof. The seat frame is provided with a back frame 7 and arm members 8 secured to the seat frame and movable therewith, the back frame 7 being arranged at an angle to the seat frame 3 adapted to afford a comfortable sitting posture. In the drawings, I have illustrated only a skeleton frame, such as used in constructing wicker chairs, but it is to be understood that the frame may be constructed of any suitable material and in

any desired form to receive upholstery or other finishing material.

The rearward end of the seat frame 3 is supported by means of supporting members 9 pivotally mounted as at 11 upon the inner sides of the base members 1 at points intermediate the ends of said members 9. The upper ends of the members 9 are arranged to engage the under sides of the seat frame 3 adjacent the rearward edge thereof, said ends preferably being provided with rollers 12 engaging channel guides 13 secured upon the seat frame.

The lower ends of the supporting members 9 are provided with adjusting members 14 pivotally connected thereto and extending forwardly substantially parallel to the bottom edge of the base 1. The members 14 are each provided with a plurality of detents 16 formed upon the lower edges thereof and adapted to engage a shaft 17 extending transversely across the base 1, the end portions of said shaft forming stops engaged by the detents 16 to normally prevent forward movement of the member 14 and the lower ends of the members 9. The forward ends of the members 14 are extended into housings 18 secured upon the inner sides of the base 1 and slotted as at 19 to permit movement of the forward ends of the members 14 horizontally and vertically therein. Springs 21 are mounted within the housings 18 to normally hold the members 14 firmly against the stops formed by the shaft 17.

Actuating arms 22 are secured upon the shaft 17 adjacent the members 14 and extending forwardly from the shaft 17 substantially parallel to the forward ends of said member 14. The members 23 are arranged to engage the forward ends of the members 14, preferably by means of rollers 23 mounted upon the ends of the arms 22 and adapted to engage the lower edges of the members 14. The shaft 17 is arranged to be partially rotated to move the arms 22 upwardly to displace the members 14 and detents 16 thereof out of engagement with the ends of the shaft 17. The shaft 17 is preferably rotated by means of an operating lever 24 secured to the shaft and extending upwardly along one side of the base 1 and through a slot 25 formed in the seat frame 3, the upper end of the lever extending to an operative position adjacent the adjacent arm member 8 and being provided with a suitable grip 26 whereby the lever may be conveniently grasped and operated by an occupant while seated within the seat. A guide 27 secured upon the frame 3 serves to guide the upper portion of the lever 24.

A rod 28 is pivotally connected to the lower portion of each supporting member 9, said rod extending forwardly and upwardly through a guide 29. A compression spring 31 is mounted upon each rod 28 to be com-

pressed between the guide 29 and a yoke 32 secured upon the rod 28 and by which said rod is connected to the member 9. The pressure of the springs 29 normally moves the lower ends of the members 9 to their extreme rearward positions as defined by suitable stops 33, thereby causing the upper ends of said member 9 to raise the seat frame 3 to its uppermost or normal upright position.

In operation, the rearward portion of the seat frame 3 normally rests upon the upper ends of the members 9, said frame being held in a normal upright position as indicated in full lines in Figs. 1 and 2 of the drawings. The foremost detent 16 of each adjusting member 14 engages the stops formed by the ends of the shaft 17 to normally hold the supporting member 9 in an operative supporting position. The lower ends of the members 9 are held against rearward movement by the stops 33, and the seat frame 3 is held against any upward movement by inwardly disposed flanges 13' formed upon the guides 13 and engaging the lower surfaces of the rollers 12.

When it is desired to tip the seat rearwardly to a reclining position, the lever 24 is moved rearwardly from its normal position shown in full lines to a releasing position as indicated in dotted lines in Fig. 2, thereby causing the shaft 17 to be partially rotated and the arms 22 raised to lift the adjusting members 14 clear of the shaft as indicated in heavy dotted lines in Fig. 2. The weight of an occupant of the chair will now cause the rearward end of the frame 3 to be moved downwardly, the members 9 being moved against the pressure of the springs 29 and the member 14 moved forwardly through the housings 18 as indicated in light dotted lines in Figs. 1 and 2. The lever 24 is returned to normal position to cause the members 14 to be lowered and desired detents 16 caused to engage the shaft 17 to hold the seat in a desired reclining position. In the extreme reclining positions indicated in the drawings, the edges of the seat frame 3 rest upon the inclined upper edges of the base 1.

So long as the weight of the person remains against the rearward position of the seat, the seat will be held rigidly in adjusted position by engaging the upper edges of the base 1 or by engagement of desired detents with the shaft 17. When the weight of the occupant is thrown forward or removed from the seat, the springs 28 operate to automatically return the members 9 and the seat frame to the normal position.

In the reclining position, the bottom and back portions of the seat remain in their fixed angular relation to each other while both the bottom and back portions are inclined at a reclining angle. By pivoting the seat at its forward end, the knees of an occupant of the chair will be supported in the

same manner as when the seat is in normal upright position, thereby avoiding any strain or pressure upon the knees or legs of the occupant. At the same time the rearwardly inclining position of the bottom portion of the seat will prevent an occupant from sliding forwardly. This is particularly important in the case of seats installed in motor busses as the vibration and jolting which occurs when a bus is in motion tends to shift the weight of an occupant forwardly in the seat with the back and body only partially supported and in an unnatural and uncomfortable position.

While I have illustrated and described my invention in what I now regard as its preferred embodiment, the device is of course subject to modification in numerous ways without departing from the spirit of my invention. I therefore do not wish to restrict myself to the specific details of construction and arrangement as illustrated and described, but desire to avail myself of all modifications which may fall within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is—

1. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a back mounted upon the seat frame and movable therewith; a supporting member pivoted at a point intermediate its ends upon the base and having one end thereof engaging the seat frame adjacent the rearward edge to support the seat frame and back; an adjusting member pivotally connected to the opposite end of the supporting member and provided with a plurality of detents; a stop secured upon the base adjacent the adjusting member to be engaged by any of said detents to releasably secure the supporting member in a desired position; and means for moving the adjusting member to be disengaged from the stop whereby the seat may be tipped rearwardly from a normal upright position to a desired inclined position.

2. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a back mounted upon the seat frame and movable therewith; a supporting member pivoted at a point intermediate its ends upon the base and having one end thereof engaging the seat frame adjacent the rearward edge to support the seat frame and back; an adjusting member pivotally connected to the opposite end of the supporting member and provided with a plurality of detents; a stop secured upon the base adjacent the adjusting member to be engaged by any of said detents to releasably secure the supporting member in a desired position; means for moving the adjusting member to be dis-

gaged from the stop whereby the seat may be tipped rearwardly from a normal upright position to a desired inclined position; and means for normally moving the supporting member and seat frame to normal upright position.

3. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a back mounted upon the seat frame and movable therewith; a supporting member pivoted at a point intermediate its ends upon the base and having one end thereof engaging the seat frame adjacent the rearward edge to support the seat frame and back; an adjusting member pivotally connected to the opposite end of the supporting member and provided with a plurality of detents; a stop secured upon the base adjacent the adjusting member to be engaged by any of said detents to releasably secure the supporting member in a desired position; means for moving the adjusting member to be disengaged from the stop whereby the seat may be tipped rearwardly from a normal upright position to a desired inclined position; and spring means adapted to automatically move the supporting member and seat frame from an inclined position to normal upright position when relieved from the weight of an occupant.

4. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a back mounted upon the seat frame and movable therewith; a pair of supporting members mounted upon the base upon opposite sides of the seat, said members being pivoted at points intermediate their ends and having one end of each member engaging the seat frame adjacent the rearward edge to support said seat frame and back; adjusting members pivotally connected to the opposite ends of the supporting members and each provided with a plurality of detents; stops secured upon the base adjacent the adjusting member to be engaged by the detents to releasably secure the supporting members in desired positions; means for moving the adjusting members to be disengaged from the stops whereby the seat may be tipped rearwardly from a normal upright position to a desired inclined position; and means for normally moving the supporting members to normal upright position.

5. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a pair of supporting members mounted upon the base upon opposite sides of the seat, said members being pivoted at points intermediate their ends and having one end of each member engaging the seat frame adjacent the rearward edge to support said frame; adjusting members pivotally connected to the

opposite ends of the supporting members and each provided with a plurality of detents; stops secured upon the base adjacent the adjusting member to be engaged by the detents to releasably secure the supporting members in desired positions; means normally holding the releasing members in engagement with the stops; lever actuated means for moving the adjusting members out of engagement with the stops whereby the seat may be tipped rearwardly from normal position to a desired inclined position; and means for normally moving the supporting members to normal upright position.

6. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a pair of supporting members mounted upon the base upon opposite sides of the seat, said members being pivoted at points intermediate their ends and having one end of each member engaging the seat frame adjacent the rearward edge thereof to support said frame; adjusting means connected to the supporting members and provided with a plurality of detents; a stop secured upon the base adjacent the adjusting member to be engaged by the detents to releasably secure the supporting members in desired positions; means normally holding the adjusting means in engagement with the stop; lever actuated means for moving the detents out of engagement with the stop whereby the seat may be tipped rearwardly from a normal upright position to a desired inclined position by the weight of an occupant of the chair; and means for normally moving the supporting members to normal upright position.

7. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a pair of supporting members mounted upon the base upon opposite sides of the seat, said members being pivoted at points intermediate their ends and having one end of each member engaging the seat frame adjacent the rearward edge thereof to support said frame; guides mounted upon the frame and engaging said ends of the supporting members; adjusting members connected to the opposite ends of the supporting members and each provided with a plurality of detents; stops secured upon the base adjacent the adjusting member to be engaged by the detents to releasably secure the supporting members in desired positions; means normally holding the adjusting members in engagement with the stops; lever actuated means for moving the adjusting members out of engagement with the stops whereby the seat may be tipped rearwardly from a normal upright position to a desired inclined position by the weight of an occupant of the chair; and means for normally moving the supporting members to normal upright position.

8. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a pair of supporting members mounted upon the base upon opposite sides of the seat, said members being pivoted at points intermediate their ends; guides mounted adjacent the rearward edge of the seat frame and engaged by the upper ends of the supporting members; adjusting members connected to the lower ends of the supporting members and each provided with a plurality of detents; stops secured upon the base adjacent the adjusting member to be engaged by the detents; means normally holding the adjusting members in engagement with the stops; actuating arms pivotally mounted adjacent the adjusting members; and an operating lever connected to the actuating arms whereby said arms may be actuated to move the adjusting members out of engagement with the stops to permit the seat frame to be tipped rearwardly from a normal upright position to a desired reclining position by the weight of an occupant of the seat.

9. A reclining seat comprising a base; a seat frame pivotally connected adjacent the forward edge thereof to the base; a pair of supporting members mounted upon the base upon opposite sides of the seat, said members being pivoted at points intermediate their ends; guides mounted adjacent the rearward edge of the seat frame and engaged by the upper ends of the supporting members; adjusting members connected to the lower ends of the supporting members and each provided with a plurality of detents; stops secured upon the base adjacent the adjusting member to be engaged by the detents; means normally holding the adjusting members in engagement with the stops; actuating arms pivotally mounted adjacent the adjusting members; an operating lever connected to the actuating arms whereby said arms may be actuated to move the adjusting members out of engagement with the stops to permit the seat frame to be tipped rearwardly from a normal upright position to a desired reclining position by the weight of an occupant of the seat; and means for normally moving the supporting members and the seat frame to normal position when relieved from the weight of the occupant.

In witness whereof, I hereunto set my signature.

CHARLES E. FERREIRA.