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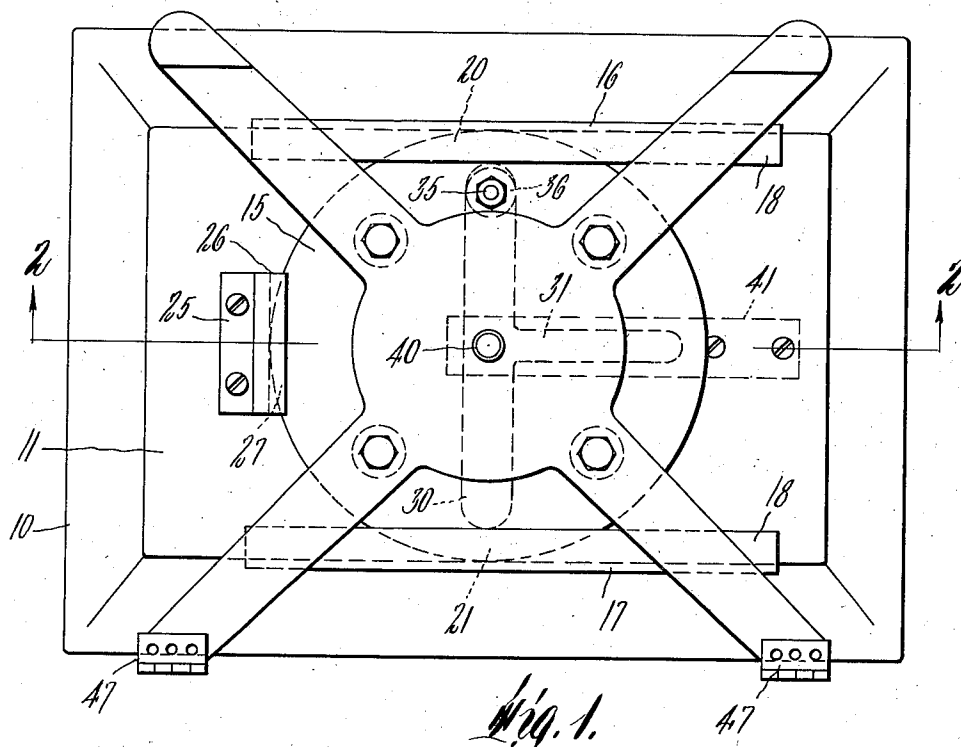
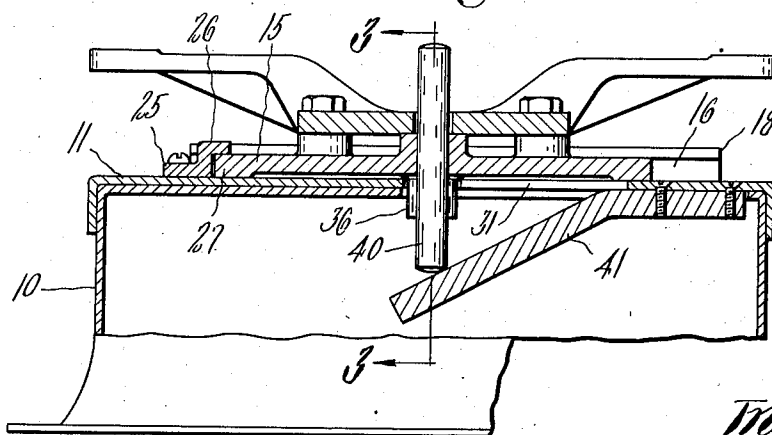
S. HENDRICKSON ET AL

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ROTATING CAR SEAT BASE.

Filed Nov. 10, 1934

4 Sheets-Sheet 1



Dec. 8, 1936.

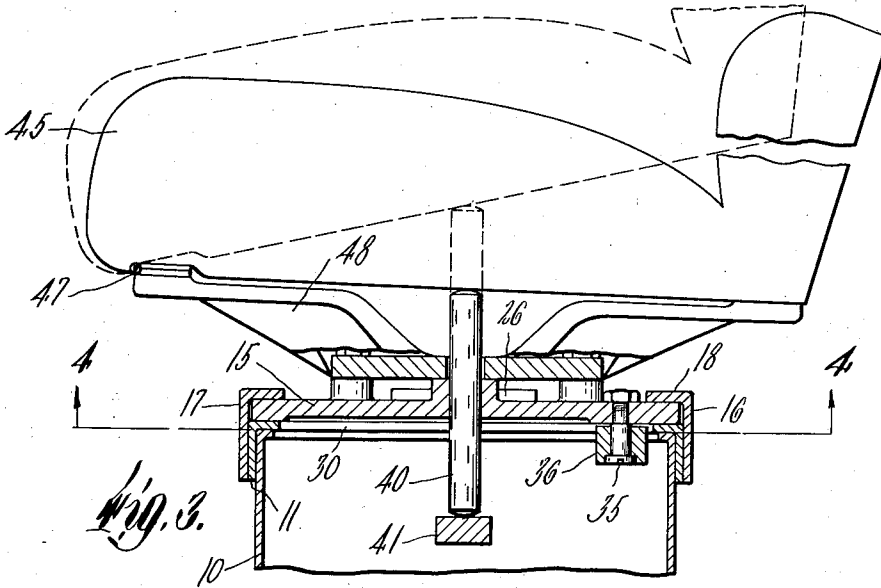
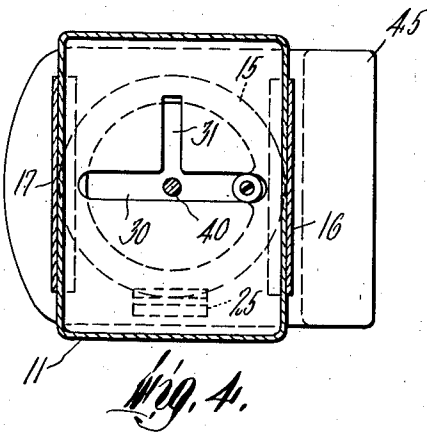
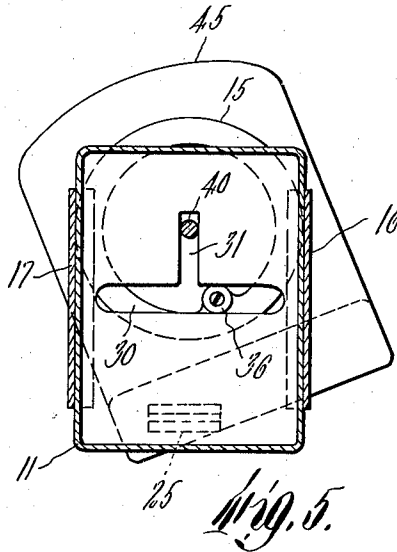
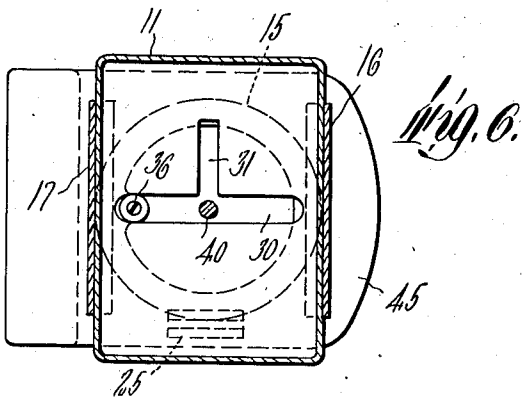
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ROTATING CAR SEAT BASE

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4 Sheets-Sheet 2



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ROTATING CAR SEAT BASE

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4 Sheets-Sheet 3

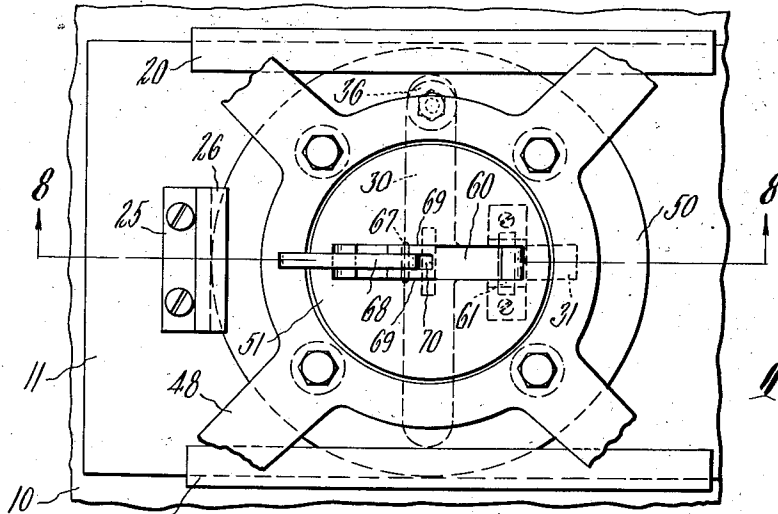


Fig. 7.

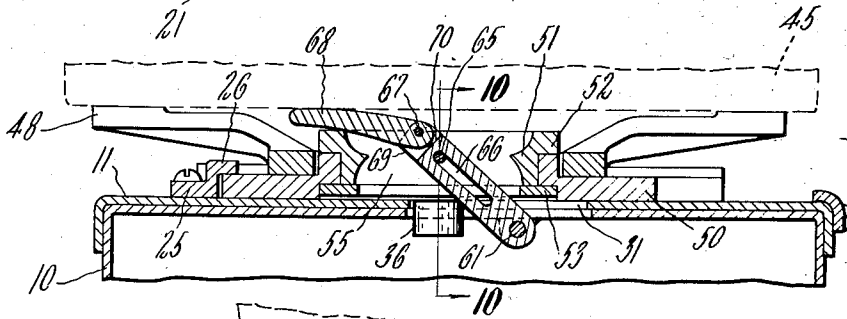


Fig. 8.

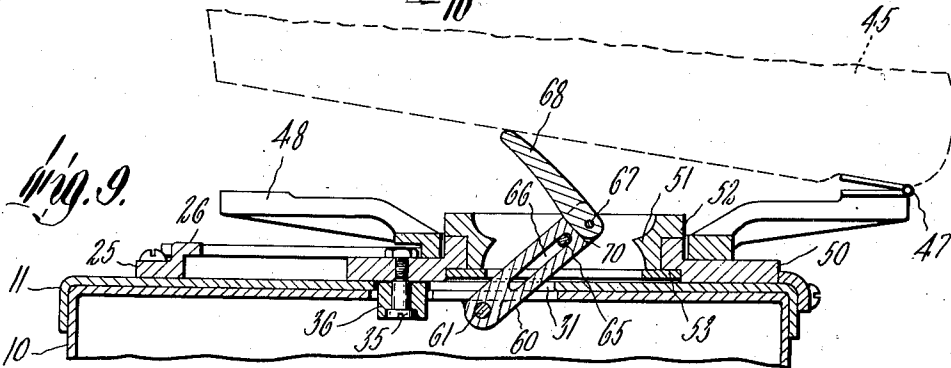


Fig. 9.

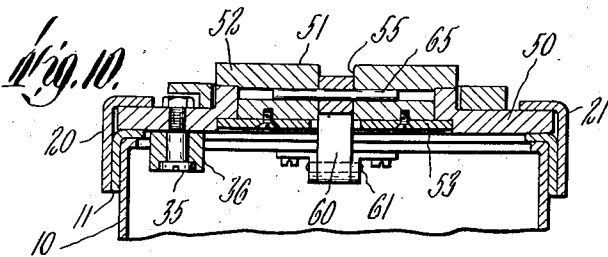


Fig. 10.

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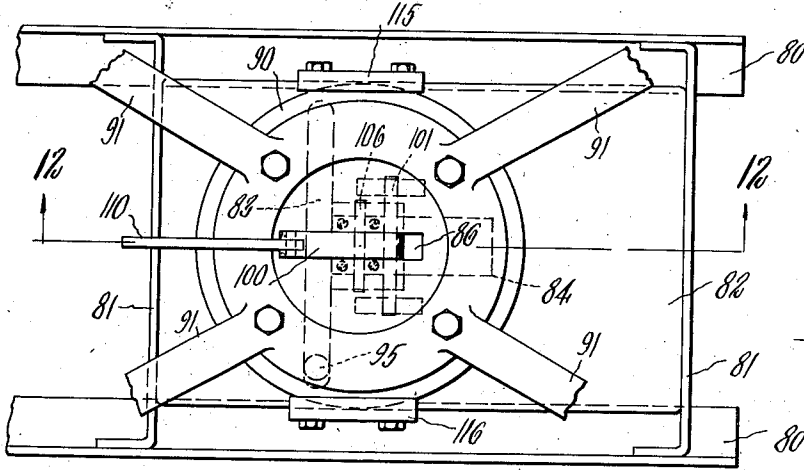


Fig. 11.

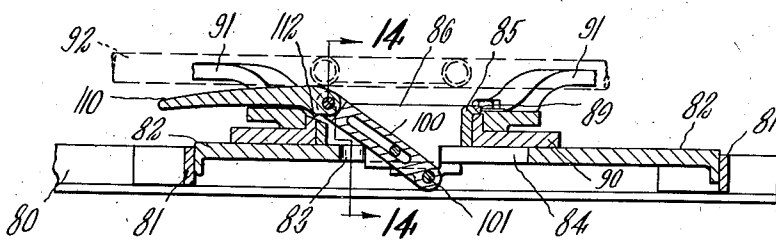


Fig. 12.

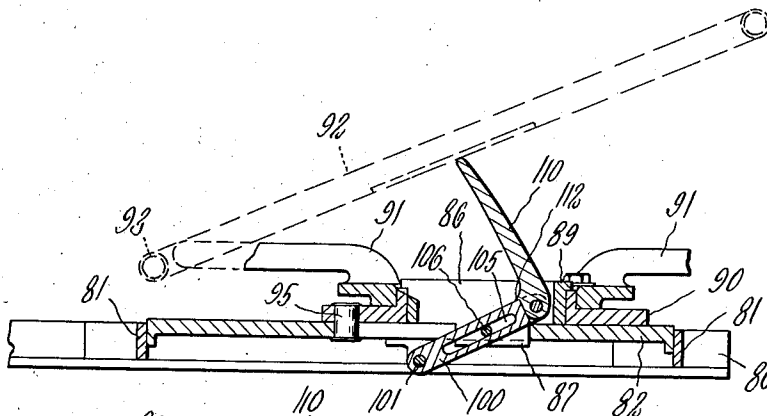


Fig. 13.

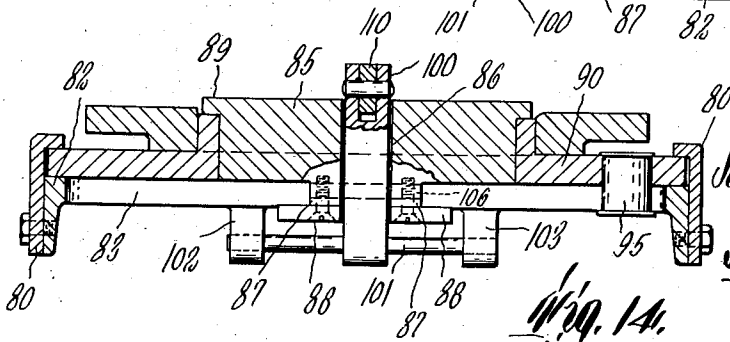


Fig. 14.

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UNITED STATES PATENT OFFICE

2,063,674

ROTATING CAR SEAT BASE

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Application November 10, 1934, Serial No. 752,448

8 Claims. (Cl. 155—96)

This invention relates to a car seat and base adapted to be rotated back and forth through an angle of 180° so that the seat may face in either of two opposite directions.

5 In railroad cars and the like, it is necessary that the seats therein be capable of facing toward either end of the car. It is furthermore desirable that the seats be normally located close to the side wall of the car so as to leave the maximum width of aisle space. Since the seat-frame is customarily of generally rectangular shape, this means that, if the seat is to be rotated on a vertical axis from one position to the other, the seat must be moved away from the wall sufficiently to allow the corners to clear the wall as the seat swings on its axis. The backs of railroad car seats slope rearwardly, so that, if the seat is constructed to swing from one position to the other, the sloping back tends to hit the back of an adjacent seat. To overcome this difficulty, the seat back may be tilted forward prior to or at the beginning of the turning movement so as to avoid contact with adjacent seat backs.

These features of car-seat operation are well known in the art and various devices have been made for the purpose of permitting car seats to be rotated on a vertical axis from one position close to the side wall of the car. It is an object of the present invention to accomplish similar results by a simple and efficient mechanism which can be easily and economically manufactured, which has relatively few parts, and which is easily assembled or taken apart for repairs.

These and other advantages will be apparent to one skilled in the art from the disclosure of the invention in the following description and on the drawings, of which

Figure 1 is a plan view of a car-seat base embodying the invention.

40 Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 2, showing a seat mounted on the base.

45 Figure 4 is a section on the line 4—4 of Figure 3.

Figures 5 and 6 are sections similar to Figure 4, showing the moving parts in different positions of operation.

50 Figure 7 is a fragmentary plan view of another embodiment of the invention.

Figure 8 is a fragmentary section on the line 8—8 of Figure 7.

55 Figure 9 is a similar sectional view showing the parts in a different position of operation.

Figure 10 is a section on the line 10—10 of Figure 8.

Figure 11 is a plan view of another embodiment of the invention.

Figure 12 is a section on the line 12—12 of Figure 11.

Figure 13 is a similar section showing the parts in a different position of operation.

Figure 14 is a section on the line 14—14 of Figure 12.

The seat base illustrated on the drawings comprises a pedestal 10 which may have the customary oblong shape for the support of a double railroad car seat. On the top 11 of the pedestal a circular disk 15 is slidable, this disk being adapted for rotation in its own plane and for translation in the direction of the long axis of the pedestal. To this end a pair of parallel guide rails 16 and 17 may be provided, these rails being preferably mounted along the front and rear edges of the top 11, and spaced apart a distance substantially equal to the diameter of the disk 15. Each rail is provided with a horizontal flange 18 projecting toward the opposite rail. Marginal segments 20 and 21 of the disk 15 engage under the flanges 18 so as to hold the disk in its horizontal position upon the upper face of the top 11. The guide rails 16 and 17 and their flanges 18, together with the adjacent portions of the top 11, form a pair of channels in which the diametrically opposite segments 20 and 21 of the disk may travel. A stop member 25 is provided to limit the movement of translation of the disk toward the left, as in Figure 1, and thus to determine its normal positions which it occupies when the seat is in use. This member may have an overhanging flange or lip 26 which assists the flanges 18 in maintaining the disk horizontal and preventing rocking of the seat when in position for use. To this end the marginal portion 27 of the disk fits snugly under the lip 26 as indicated in Figure 2.

It is desirable that the initial turning movement of the seat, and hence of the disk 15 which carries it, be preceded or accompanied by a lateral movement away from the wall of the car. Mechanism for accomplishing this result may include a pair of parallel cam elements extending horizontally between the rails 16 and 17 and perpendicular thereto. Such elements may conveniently be in the form of edges of a slot 30 cut in the top 11 of the pedestal. For reasons hereinafter explained, the slot 30 may be intersected at its mid-point by a branch slot 31 which extends parallel to the guide rails 16 and 17 and

midway between them, and which forms a T-shaped slot with the slot 30. As shown in Figure 3, a pin or cam follower 35 projects downwardly from the disk 15, near the margin thereof, into the slot 30. In order to avoid frictional resistance between the cam follower 35 and the edges of the slot 30, a suitable roller 36 may be carried by the pin or cam follower 35. This pin and roller are normally positioned near one end of the slot 30, the center of the disk being then preferably but not necessarily over the center line of the slot 30. Since the guide rails 16 and 17 constrain the translatory movement of the disk to a direction perpendicular to the slot 30, it is evident from Figures 4 to 6 that rotation of the disk through a quarter turn from one extreme position will move the pin 35 to the mid-point of the slot 30, the center of the disk being displaced from the slot 30 along a line midway between and parallel to the guide rails 16 and 17. The next quarter turn of the disk will result in movement of the pin 35 to the opposite end of the slot 30 and the return of the center of the disk to its normal position over the mid-point of the slot 30.

The weight of the seat may be employed to maintain the disk 15 in either of its normal positions. To this end, the disk 15 is centrally perforated, a pin 40 being vertically slidable in the perforation. When the disk is in either of its normal positions, that is, with its center over the mid-point of the slot 30, the pin 40 projects down through the slot 30, its lower end resting on an inclined track 41. This track underlies the slot 31 and slopes upwardly as it recedes from the slot 30. When the disk 15 rotates from either normal position, its center moves away from the slot 30 along a line midway between the rails 16 and 17. The pin 40, being through the center of the disk, partakes of this motion and hence moves along the slot 31 which is parallel to the rails, thereby augmenting the guiding action of the rails 16 and 17 in keeping the disk 15 with its center on the median line of the pedestal. During this motion, the lower end of the pin 40 rides on the upwardly sloping track 41 so that it is forced to slide upwardly through the disk 15. When in its lowermost position, the upper end of the pin 40 abuts the bottom of the seat 45 which is hinged at its forward edge as at 47 to a supporting frame or spider 48, the latter being secured to the disk 15. Thus the upward movement of the pin 40 on the track 41 tilts the seat 45, with its back, forwardly, thus avoiding interference with adjacent seats. It is also evident from Figure 1 that any rotational movement of the disk 15 from the position shown in this figure must involve movement of the pin 40 to the right, that is, on the upward slope of the track member 41. Hence the weight of the seat 46 normally holds the disk 15 firmly against the lug 25 and prevents looseness or wobbling of the supporting structure when the seat is in either one of its positions for use.

Another form of apparatus for tilting the seat 45, when it is laterally shifted, is illustrated in Figures 7 to 10 inclusive. As therein shown, the mechanism, by which the shifting and turning movements of the seat carriage are correlated, may be substantially identical with that illustrated in Figures 1 to 6 inclusive. A circular plate or disk 50 slides on the top 11 of the pedestal 10 between a pair of guide rails 20 and 21, movement of the plate 50 in one direction being limited by a suitable stop 25 mounted on the top 11. As indicated in Figure 8, the disk 50 is

annular in form, having a relatively large central aperture in which is loosely mounted a cylindrical block 51 so that the block need not rotate with the disk 50. This block has an outwardly extending flange 52, which, with a plate 53 secured to the under face of the block, maintains the block in place within the central aperture of the disk 50. The block 51 is provided with a central slot 55 which extends down through the block and through the plate 53. This slot is over the median line of the pedestal and is in line with the slot 31 in the top of the pedestal. Extending through the slots 31 and 51 is a lever 60, which, as shown, may be conveniently pivoted at its lower end as at 61 within the pedestal 10, that is, immediately below the top 11. The upper end portion of this lever is adapted to engage and bear against the bottom of the seat 45 in such a manner that, when the lever is rocked on its pivot 61, that is, in a vertical plane through the median of the pedestal, its upper end portion either raises the seat 45 so as to tilt it on its hinges 47, or allows the seat to settle back to its normal position. For the actuation of the lever 60, a pin 65 may be mounted in the block 51 so as to extend across the slot 55. This pin also passes through a longitudinal slot 66 in the lever 60, so that, when the block 51 shifts from one position of operation to the other as illustrated in Figures 8 and 9, the lever is rocked back and forth by the engagement of the pin 65 in the slot 66.

In order to avoid interference between the working parts of the mechanism as a whole, the lever 60 may be jointed as at 67, the upper portion 68 of the lever being in the form of a finger pivoted at 67 to the lower portion. The lower portion is notched at its upper end to form a pair of ears 69 which carry the pivot 67. The bottom of the slot between the ears 69 acts as a stop 70 to limit the rocking movement of the finger 68 in one direction, that is, when the two portions of the lever are substantially perpendicular to each other as shown in Figure 9. It is evident that, when the lever swings toward the right from the position shown in Figure 8 to a vertical position, the finger 68 will then be substantially horizontal and will have reached the limiting position with respect to the lower portion of the lever as shown in Figure 9. Further rocking of the lever 60 toward the right will result in an elevation of the tip of the finger 68. As this tip bears against the bottom face of the seat 45, the seat is thus tilted on its hinges 47. When the lever 60 is swung toward the left from the position shown in Figure 9, the seat is lowered until the lower portion of the lever has reached a substantially vertical position. Further rocking of the lever 60 toward the left returns the lever to the position shown in Figure 8, the finger 68 rocking on its pivot 67 so as to accommodate itself to the space between the bottom of the seat 45 and the upper rim of the block 51.

A further modified form of rotating car-seat base is illustrated in Figures 11 to 14 inclusive, the structure of this base being in many respects similar to that illustrated in Figures 7 to 10 inclusive. As shown, the base comprises a fixed pedestal which may include a pair of frame members 80 adapted to extend transversely of the car in which the seat is located. These members are connected as by cross members 81 which support a suitable plate 82. In this plate is a T-shaped slot consisting of a straight slot 83 extending across the plate nearly to the side edges thereof, and a slot 84 extending at right angles to the slot 83 from

the midpoint thereof. Slidably mounted on the upper face of the plate 82 is a circular slide 85 which is centrally slotted as at 86. The slide 85 is held against the upper face of the plate 82 as by a pair of flange plates 88 which are secured to a pair of ears 87 projecting downwardly from the slide 85. These ears engage the sides of the slot 84 so as to prevent rotation of the slide 85. The slide 85 fits in a rotatable ring 90 which rests on the upper face of the plate 92 and slides thereon. A flange 89 on the slide 85 overlaps the ring 90 to hold it against the upper face of the plate 82. The ring 90 rotates with reference to the slide 85 and also partakes of the linear movement of the slide 85. Mounted on the ring 90 are a set of arms 91 forming a support for a seat frame 92, the frame being hinged to the support so as to rock on an axis 93. Thus the seat frame with its seat partakes of the motions of the ring 90, and is also capable of being tilted as indicated in Figure 13.

In order to control the movements of the ring 90, a pin 95 is mounted on the ring so as to project downward therefrom into the transverse slot 83. The movement of the ring 90 is similar to that of the ring 50 illustrated in Figures 7 to 10 inclusive. Initially, the ring 90 swings on the pin 95 as a pivot, but, since its freedom of movement is limited by the central slide 85, it moves longitudinally with respect to the supporting frames 80 while it is rotating. This longitudinal motion lasts until the seat has been turned through an angle of 90° at which time the pin 95 is at the midpoint of the slot 83. During the remaining 90° of rotation of the seat, the longitudinal motion is in the reverse direction.

As the seat turns, the slide 85 moves on the top of the plate 82. This motion rocks an arm 100 which is pivoted on a pin 101 which is supported by a pair of fixed lugs 102 and 103 secured to the plate 82. The arm 100 is provided with an elongated slot 105 in which rides a pin 106 mounted in the lower portion 87 of the slide 85. Thus the motion of the slide causes the arm 100 to rock about its axis between the positions illustrated in Figures 12 and 13. At the upper end of the arm 100 there is pivoted a finger 110. This finger has a shoulder 112 which engages a side of the arm 100 as indicated in Figure 13, when the finger 110 is approximately at right angles to the arm 100. Thus, when the arm 100 swings from the position shown in Figure 12, the finger 110 remains in a substantially horizontal position until the arm 100 reaches a vertical position. Thereafter, the two members rock as a unit, the free end of the finger 110 swinging upward to the position shown in Figure 13. During the initial swing of the arm 100 from the position shown in Figure 12, the upper end of the arm or the adjacent portion of the finger 110 engages the bottom of the seat frame 92 and starts to raise it so that it tilts on the axis 93. As the arm 100 swings further, the finger 110 tilts upward against the bottom of the seat frame 92 so as to rock the seat frame to the position shown in Figure 13. It is evident that reverse movement of the slide 85 rocks the arm 100 and the finger 110 back again toward the left, lowering the seat frame to its normal horizontal position.

When the seat is in either of its normal positions of use, the edge of the ring 90 catches under a pair of fixed hold-down members 115, 116 which hold the moving members steady.

It is evident that many modifications and changes may be made in the details of structure shown and described without departing from the

spirit or scope of the invention as defined in the following claims.

We claim:

1. A car seat comprising a circular disk, a seat-supporting frame mounted on said disk, means for horizontally and slidably supporting said disk, said means including a pair of parallel guide rails spaced a distance substantially equal to the diameter of the disk and between which the disk is rotatable in its plane and translatable in a direction parallel to the rails, said means also having a T-shaped guide slot with a portion parallel to and midway between said rails and a portion perpendicular to said rails, a pin extending downwardly from the marginal portion of said disk into said perpendicular portion of said slot, means on said base for tilting a seat on said frame including a device extending through said parallel portion of the slot and engaging the bottom of said seat, and means engaging said device and operating the device when said disk is rotated.

2. A car seat comprising a circular disk, a seat-supporting frame mounted on said disk, means for horizontally and slidably supporting said disk, said means including a pair of parallel guide rails spaced a distance substantially equal to the diameter of said disk and between which the disk is rotatable in its plane and translatable in a direction parallel to the rails, said means also having a T-shaped guide slot with a portion parallel to and midway between said rails and a portion perpendicular to said rails, a pin extending downwardly from the marginal portion of said disk into said perpendicular portion of the slot, and means for tilting a seat on said frame including a second pin extending vertically slidable through the center of the disk and said parallel slot portion, and a sloping track underlying said parallel slot to engage the lower end of said second pin.

3. A car seat comprising a pedestal having a substantially oblong top and a T-shaped cam slot, a pair of parallel guide rails along the front and rear edges of said top having overhanging flanges, a circular disk slidably mounted on said top between said guide rails, marginal portions of said disk engaging under said overhanging flanges, a cam follower near the edge of the disk projecting downwardly from said disk through said slot, a seat-supporting frame secured to said disk, a plunger vertically slidable through the center of said disk and said frame, an inclined surface beneath a portion of said cam slot, and a seat hingedly mounted on said frame and bearing on the upper end of said plunger, said plunger extending downwardly through said slot and riding on said inclined surface.

4. A car seat comprising a pedestal having a pair of parallel channels and guide elements forming a front-to-rear slot and a branch slot at right angles thereto and forming therewith a single T-shaped cam slot, a disk movably mounted with diametrical marginal portions engaging in said channels, a cam follower near the edge of the disk extending downwardly from said disk through the front-to-rear slot and normally near the end thereof, a plunger vertically slidable through the center of said disk and through said slot, said plunger being laterally movable into and along said branch slot when said disk travels in said channels, a sloping support surface beneath said branch slot engaged by the lower end of said plunger, a support frame mounted on said disk, and a seat hingedly mounted on said frame and engageable by the upper end of said plunger

to tilt said seat when the plunger rides up on the sloping support surface.

5 5. A car seat comprising a pedestal, a seat carriage movably supported by said pedestal, a seat
hinged to said carriage, and means for tilting said
seat, said means comprising a lever pivoted at its
lower end to said pedestal and engaging at its
upper end the bottom of said seat, and means on
said carriage engaging said lever between the ends
10 thereof and actuated by horizontal movement of
said carriage to rock said lever and thereby to
tilt said seat.

6. A car seat comprising a pedestal having a
slot in its top, a seat carriage movably supported
15 by said pedestal, a seat hinged to said carriage,
and means for tilting said seat, said means comprising a lever extending through said slot and
pivoted within said pedestal to rock in a vertical
plane, said lever having a portion engageable by
said carriage to rock said lever, and an upper portion
20 engaging the bottom of the seat.

7. In a car seat having a pedestal and a seat
carriage slidable thereon, a device for tilting the
seat when the carriage is shifted, comprising a
25 slotted member shiftable with said carriage on
said pedestal, a lever extending through the top

of the pedestal and the slot in said member and
pivoted at its lower end to said pedestal, said lever
having a longitudinal slot, and a pin extending
across the slot in said member and through
the slot in said lever, the upper portion of said
5 lever being adapted to bear against the bottom
of said seat to tilt said seat when said lever is
rocked on its pivot.

8. A car seat comprising a pedestal, a circular
seat carriage slidably supported on said pedestal,
10 a seat hinged on said carriage, cam means for
causing the carriage to shift when it is rotated,
and means operable by shifting movement of the
carriage to tilt said seat, said tilting means including a cylindrical member coaxially supported
15 by said carriage and rotatable relatively thereto,
said member having a vertical slot through the
center thereof, a lever extending through said slot
and pivoted at its lower end to said pedestal, and
means carried by said member and engaging said
20 lever to rock said lever when said member is
shifted, said lever having an upper portion bearing
against the bottom of said seat to tilt said seat
when the lever is rocked.

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