

Dec. 5, 1933.

J. M. KNIGHT

1,937,578

CAR SEAT

Filed Aug. 21, 1929

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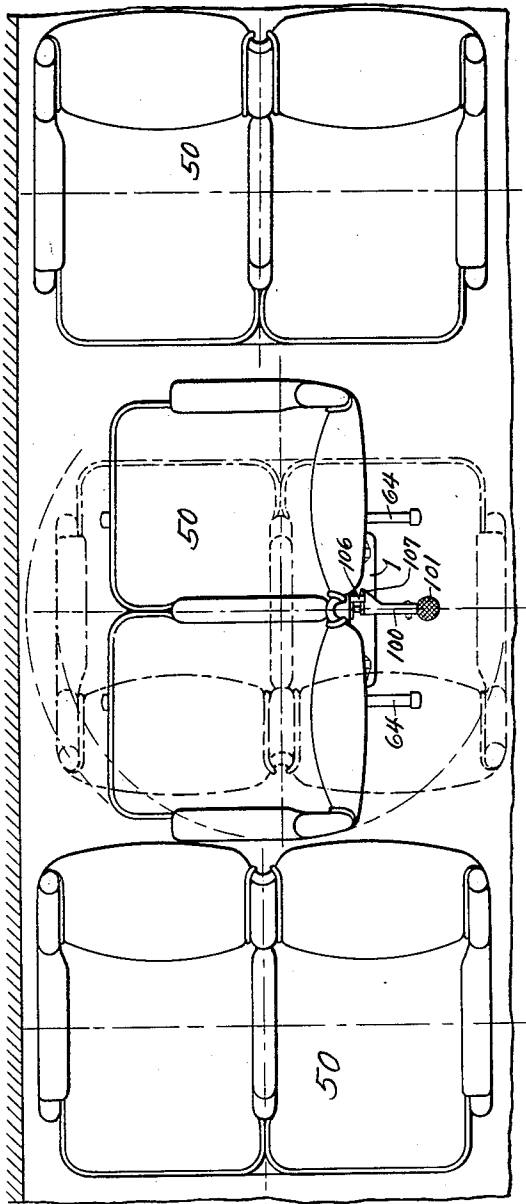


Fig. 1.

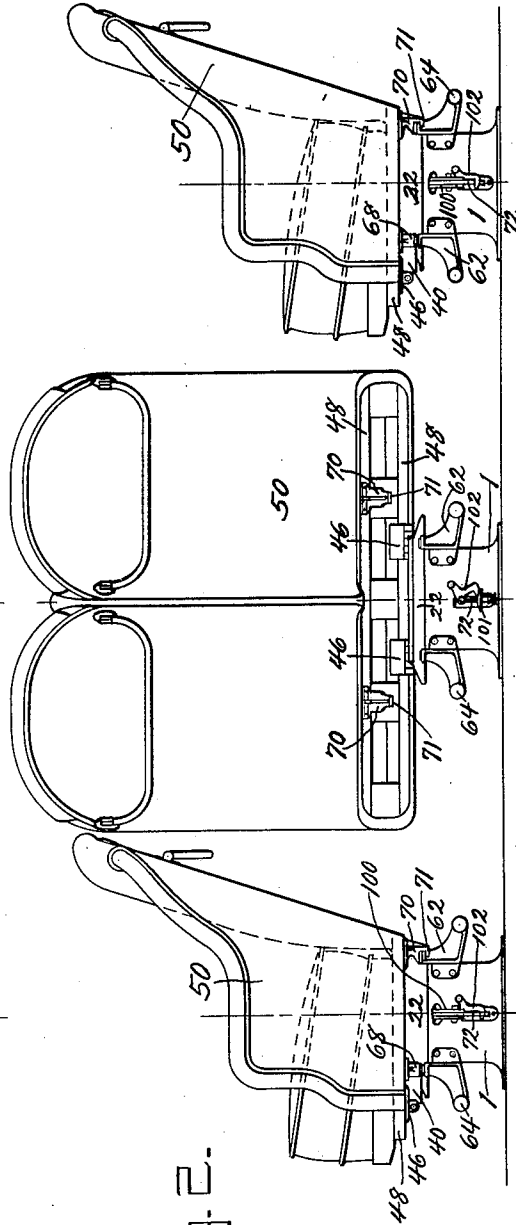


Fig. 2.

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Fig. 4.

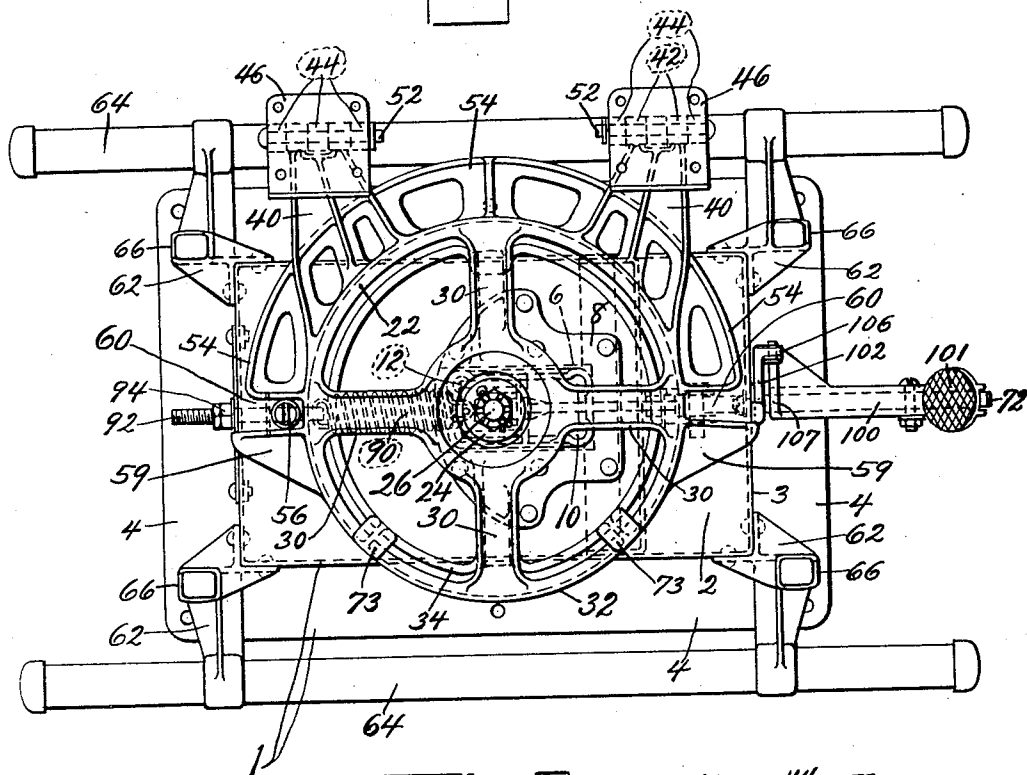
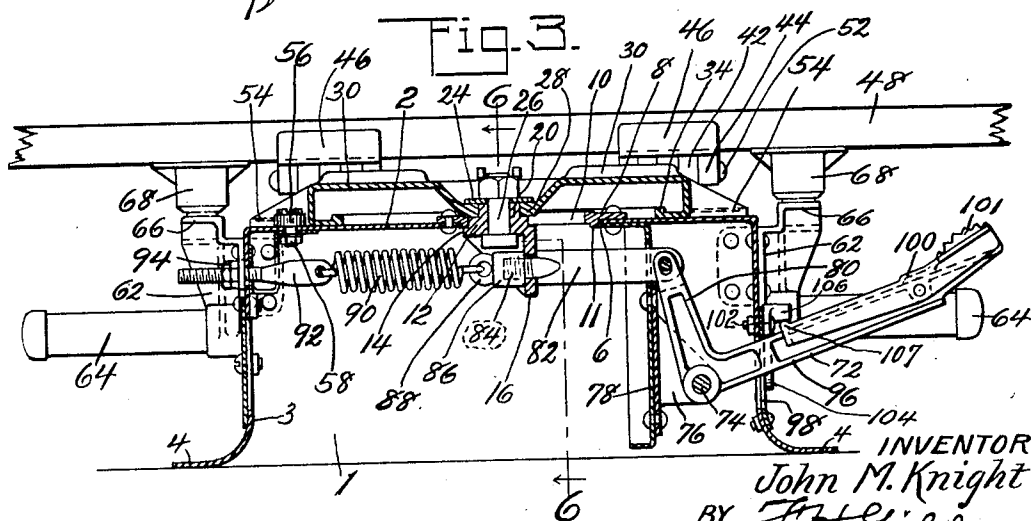


Fig. 3.



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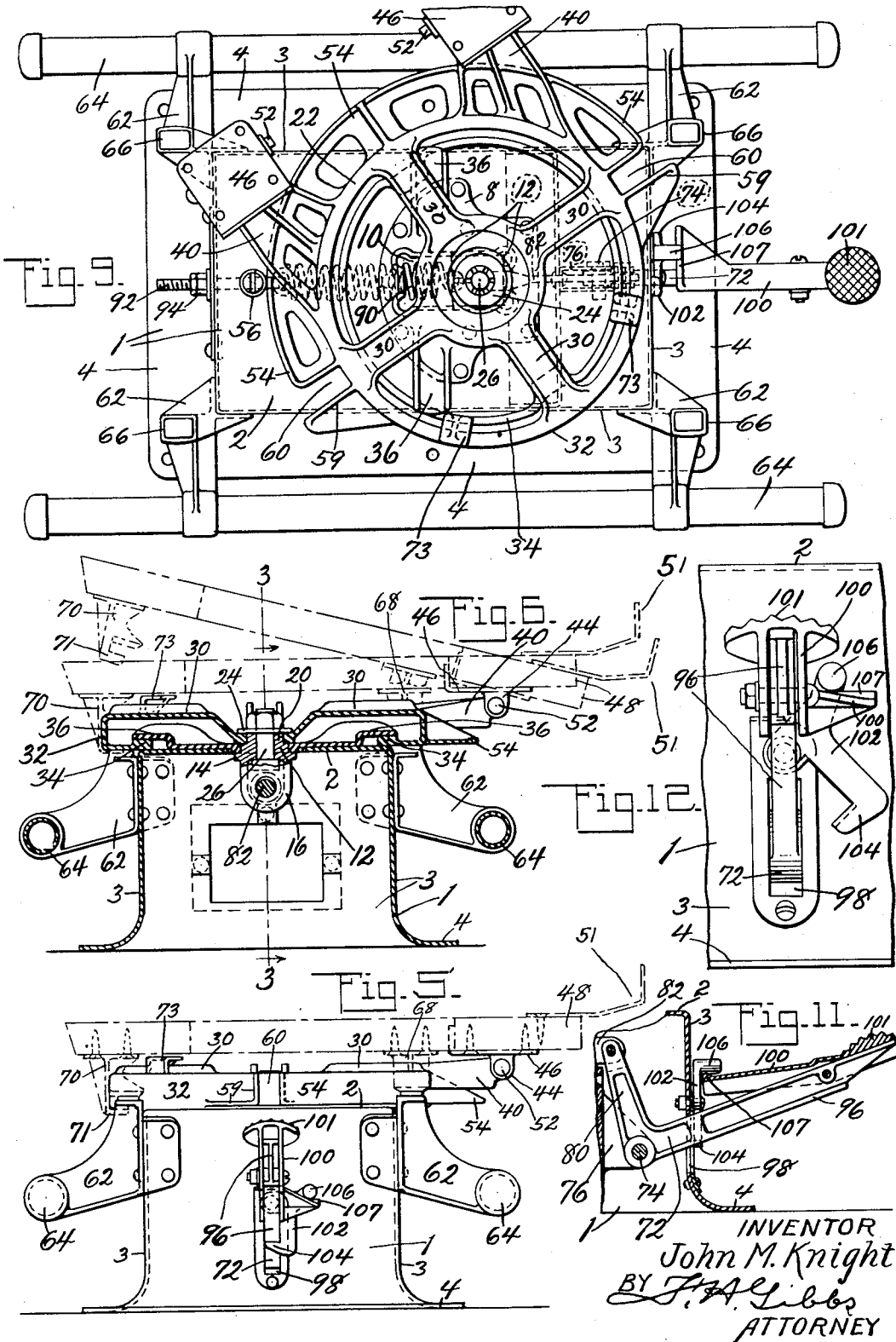
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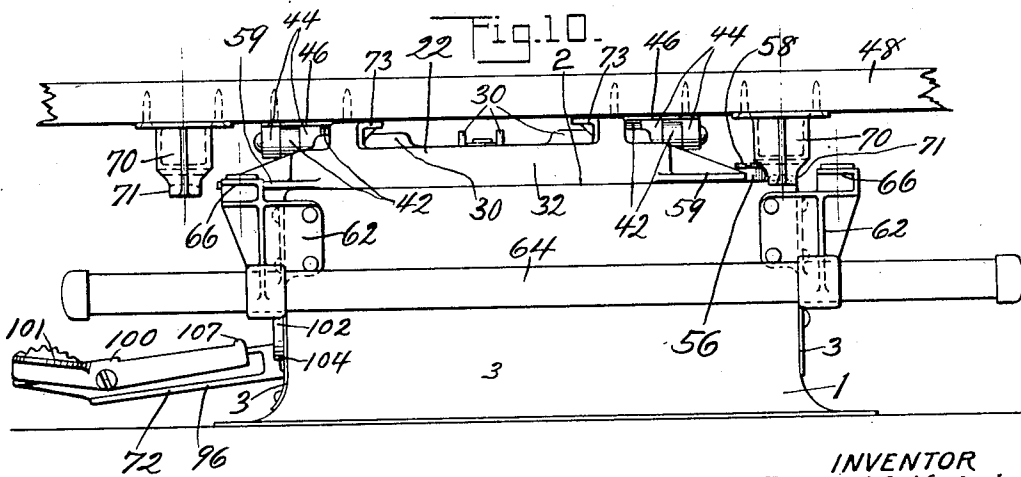
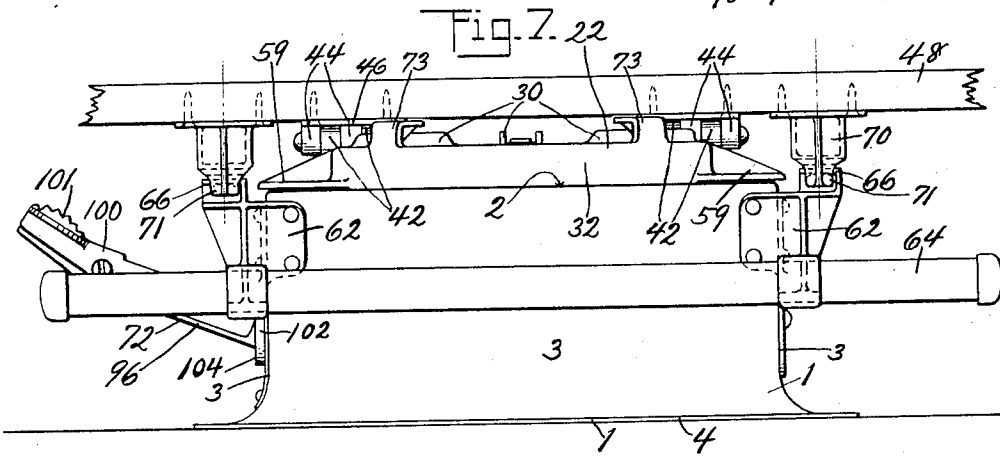
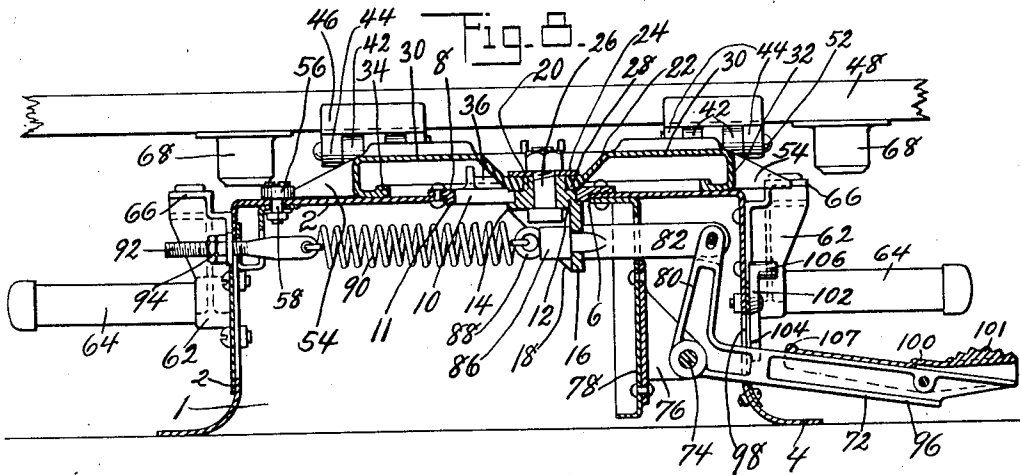
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# UNITED STATES PATENT OFFICE

1,937,578

## CAR SEAT

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Application August 21, 1929. Serial No. 387,407

13 Claims. (Cl. 155—96)

This invention relates to seats for railway cars and more particularly to seats which may be rotated to face towards either end of the car and it is an object of this invention to provide an improved mechanism for seats of the type described which will be of simple design, easily operated and of low maintenance cost. It is also an object of this invention to provide a seat of the type described which may be rotated without tilting the seat body when all the seats of a row are rotated in succession and in which the seat body may be tilted so that individual seats of a row may be turned without disturbing adjacent seats. It is also an object of this invention to provide an improved mechanism for a seat of the type described which will lock the seat against all movement but which will be released automatically and shift the seat to a position in which it may be turned upon operation of the operating lever and which will automatically return the seat to the fully locked position upon movement of the seat to either limit of rotation.

With these and other objects in view, as will appear more fully hereinafter, the invention consists substantially in the construction, combination, location and relative arrangement of the parts, all as will be more fully herein set forth, as shown in the accompanying drawings and finally pointed out in the appended claims.

In the drawings:

Fig. 1 is a top plan view of a portion of a row of seats, the middle seat being shown in solid lines in tilted and partly turned position and in broken lines in position assumed when released for turning;

Fig. 2 is an elevation, as seen from the car aisle, of the seats shown in Fig. 1;

Fig. 3 is a vertical section taken longitudinally of the seat as on the line 3—3 of Fig. 6 with the seat in normal position, and only part of the seat body being shown;

Fig. 4 is a top plan view of the seat base, the mechanism being in its normal position as in Fig. 3;

Fig. 5 is an end elevation of the seat base as seen from the car aisle or the right in Figs. 3 and 4, only the lower portion of the seat body being indicated by broken lines;

Fig. 6 is a vertical section of the seat base taken as on line 6—6 of Fig. 3 and showing in broken lines the lower portion of the seat body in normal and tilted positions;

Fig. 7 is an elevation of the seat base looking toward the back of the seat body and showing the seat body in normal position;

Fig. 8 is a vertical section similar to Fig. 3 and showing the position of the operating mechanism when the seat body has been shifted away from the car wall prior to being turned;

Fig. 9 is a view similar to Fig. 4 showing the positions of the parts when the seat body has been partly turned;

Fig. 10 is a view similar to Fig. 7 showing the positions of the parts when the seat body has been moved out from the car wall prior to turning;

Fig. 11 is a fragmentary vertical section of the base showing the operating lever in its normal position and the latch operating lever carried by the operating lever in latch releasing position; and

Fig. 12 is an end elevation, drawn to a larger scale, of the parts shown in Fig. 11.

As shown in the drawings a car seat constructed in accordance with this invention comprises a pedestal 1 substantially of box shape and having a flat top 2 and vertical sides 3, the sides 3 being flared at their lower edges to provide attaching flanges 4 by means of which the pedestal is secured to the car floor or frame. While the pedestal has been indicated in the drawings as formed as a single pressed member it will be understood that it may be formed of a number of parts united together in any desired manner. In the top 2 of the pedestal 1 is an elongated rectangular opening or slot 6 and to the top 2 is attached a guide plate 8 of irregular shape and having an opening 10 corresponding to the opening 6 in the top 2, the opening 10 being defined by flange 11 which fit the sides of the opening 6. Slidably mounted in the opening 10 is a slide block 12 having shoulders or flanges 14 which engage beneath the flanges 11 of the guide plate 8 and a downwardly projecting arm 16 braced by ribs 18. The slide block 12 is also provided with a cylindrical portion 20 which projects above the plate 8 and about which fits the hub of a spider or hinge plate 22 which rests on the guide plate 8 and top 2 and is secured to the slide block 12 by washer 24 and bolt 26; the hinge plate 22 and shoulders 14 serving to retain the slide block 12 in position in the opening in the guide plate 8.

The hinge plate 22 forms a seat body support, as will be apparent hereinafter, and includes the hub portion 28 which fits about the slide block 12 and arms 30 which connect the hub portion 28 to an annular rim 32 of substantially channel shape, having its lower flange resting on the top 2 and formed at its outer edge with a thickened portion 34 which fits beneath the outwardly pro-

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jecting arms 36 formed integral with the guide plate 8. The hinge plate 22 is also provided with spaced projecting arms 40 formed at their ends with spaced perforated lugs 42 which cooperate with similar lugs 44 formed on plates 46 attached to member 48 of the base frame of the seat body 50, the openings in the lugs 42 and 44 being aligned to receive hinge pins 52 which pivotally connect the plates 46 to the arms 40 of the hinge plate 22. The hinge plate 22 is also formed with a flange 54 which projects outwardly from the rim 32 for a portion of its length and cooperates with a roller 56 pivotally mounted on a bolt 58 attached to the top 2 of the pedestal. Spaced from the ends of the flange 54 are stops 59 which have a greater projection than the flange 54 and are positioned so as to form diametrically opposite slots 60 which receive the roller 56. As shown in Figs. 5 and 6 the hinges attaching the body 50 to the hinge plate 22 are set inwardly from the front edge of the base frame of the seat body and the base frame is provided with a projecting skirt or retaining piece 51 secured to the top of the front rail of the base frame and engaging the front face of the seat cushion to retain the cushion in place. This arrangement provides additional clearance at the front edge of the seat and permits of a greater tilt to the seat body than if the frame were carried out to the front edge of the cushion.

To the vertical edges of the pedestal are attached foot rest brackets 62 in which are mounted the usual foot rests 64. The brackets 62 are formed with projections or pads 66 which serve as supports or rests for pairs of pads or supports 68 and 70 attached to the base frame of the seat body. The supports 68 which are attached to the base frame adjacent the hinge edge of the seat are formed so as only to rest upon the upper surfaces of the projections 66 while the supports 70 which are attached to the base frame at the edge opposite to the hinge edge of the seat are provided with flanges or lips 71 spaced from the bodies of the supports and which engage beneath the projections 66 when the seat body is in its normal position on the pedestal. Formed integral with the rim 32 of the hinge plate 22 are pads 73 positioned opposite the arms 40 and projecting above the remainder of the hinge plate. The pads 73 serve as supports for the seat body 50 when the supports 68 and 70 are disengaged from the brackets 62 but are of such height as to be free of the seat body when the supports 68 and 70 are engaged with the brackets 62.

To operate the seat there is provided a bell crank lever 72 pivoted at 74 in a bracket 76 attached to a diaphragm 78 which is secured to the top 2 and sides of the pedestal and also serves to reinforce the pedestal. To the arm 80 of the bell crank lever 72 is pivotally connected a link 82 having a reduced threaded end portion 84 which projects through an opening in the arm 16 on the slide block 12 and is secured to the arm 16 by a cap 86 threaded on the portion 84 of the link 82. The cap 86 is provided with an eye 88 to which is attached a spring 90 which has its other end attached to the bolt 92 adjustably mounted in the side of the pedestal by means of nuts 94. The other arm 96 of the bell crank lever 72 is of substantially I-section and projects through an opening 98 in the pedestal 1 and adjacent its outer end has pivotally mounted thereon a lever 100 of substantially channel section and fitting over the arm 96. To the pedestal 1 adjacent the arm 96 of the bell crank

lever 72 there is pivoted a latch 102 having a hook portion 104 which, when the arm 96 is in its normal or raised position, will engage beneath the arm 96 and prevent the arm from being moved downward. The latch 102 is also provided with an arm having an outwardly projecting lug 106 which is positioned to be engaged by the projection 107 on the inner end of the lever 100 so that upon operation of the lever 100 the latch 102 will be operated and the hook portion 104 withdrawn from beneath the arm 96. The latch 102 is so shaped that when released it will fall by gravity to its position beneath the bell crank lever 72 and the lever 100 is pivoted so that the inner end of the lever will tend to rest on the arm 96 and keep the outer portion of the lever 100 away from the outer portion of the lever arm 96. The arm 96 has its web filled to equal thickness with the flanges adjacent the latch 102 so that when the arm 96 is in its lowered position the latch will be in engagement with the thickened portion of the arm 96 and be held in position to engage beneath the arm 96 when it is raised to its normal position and kept from interfering with the movement of the arm 96.

In the arranging of the seats in the car the seats are placed in a row with the pedestal so positioned that the arm 96 projects toward the aisle of the car and the seat body is so positioned on the hinge plate 22 that the hinges are adjacent the front edge of the seat body. The hinge plate 22 will, when the seat is in a normal position facing an end of the car, be as shown in Fig. 4 with the slide block 12 at the extreme left of the slot 10 in the guide plate 8 and with the roller 56 engaging in a slot 60 preventing turning of the seat body. At this time the flanges 71 will be engaged beneath the projections 66 preventing tilting of the seat body about the hinges and the brackets 68 and 70 will be resting upon the projections 66. At this time also the bell crank lever 72 will be in its raised position with the latch 102 in engagement beneath the arm 96 preventing sliding movement of the seat on the pedestal and the lever 100 will have its inner portion resting on the arm 96. The seats when placed in the car are spaced apart so that when it is desired to turn all the seats of a row this may be accomplished by beginning with the front seat of the row and turning the seats in succession. Where the seats are of the usual construction, this spacing of the seats does not permit of turning an intermediate seat alone because of interference of the seat back with adjacent seats. To turn each seat when all the seats of the row are being turned the operator presses his foot on the pedal portion 101 on the outer end of the lever 100 causing the projection 107 on the inner end of the lever to operate the latch 102 retracting the hook portion 104 thereof from beneath the lever arm 96. Continuing the pressure on the lever 100 causes the lever 72 to be operated against the action of spring 90, sliding the slide block 12 in the slot 10 in the guide plate 8 and carrying with it the hinge plate 22 and the seat body 50 (see Fig. 8). This operation draws the seat from the car side wall toward the aisle as shown in broken lines in Fig. 1 to a position in which the front corners of the seat will clear the car side wall when the seat is rotated and in this position the hinge plate 22 has been moved to a point where the roller 56 has been disengaged from the slot 60 and the supports 68 and 70 have been withdrawn from

the brackets 62. In this position the seat may be turned but the stops 59 insure that the seat may be turned in only one direction from each of its extreme positions. A turning movement of the seat now brings the roller 56 in engagement with the flange 54 on the hinge plate 22 and holds the hinge plate in the position to which it has been shifted. At this time the operator may withdraw his foot from the lever 100 permitting the lever to drop back upon the arm 96 and permitting the latch 102 to drop down into engagement with the web of the arm 96. The seat may then be turned until the full traverse of 180 degrees has been made at which time the roller 56 will engage the other stop 59 stopping the rotation of the seat and permitting the spring 90 to shift the seat body and hinge plate on the pedestal and bringing the roller 56 into the other slot 60. This movement causes the seat body to move toward the car side wall and away from the aisle and brings the supports 68 and 70 into engagement with the brackets 62 causing the flanges 71 to engage beneath the flanges 66 and permitting the latch 102 to engage beneath arm 96. The movement of the seat outwardly from the wall by the operation of the lever 72 retracts the hinge plate 22 from the roller 56 permitting the seat to be turned, and retracts the supports 70 and 68 from the brackets 62 and the flanges 71, from the projections 66 permitting the seat to be tilted but the seat cannot be moved from the wall unless the deliberate act of operating the latch 102 is performed. Where it is desired to turn a seat in a row in order that passengers may sit face to face the foot pedal 72 will be operated as before withdrawing the seat from the wall and freeing the seat so that it may be turned, but in order to turn the seat in the small clearance provided it is then necessary to tilt the seat body 50 from its normal position on the hinges which connect the seat body 50 to the hinge plate 22 thus bringing the seat back more nearly in a perpendicular line with the center of rotation of the seat and reducing the clearance necessary. The seat body then assumes the position shown in solid lines in Fig. 1 in which position the seat may be turned without interfering with the seats adjacent to the seat being turned.

While the preferred form of the invention has been shown and described it is to be understood that the invention is not limited to the exact details of construction shown and described as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

What is claimed is:

1. In a car seat, a pedestal, a seat body mounted on the pedestal, lever means on the pedestal connected with the body and operative to shift the body on the pedestal, a latch for said lever means, and operating means for the latch having provision to insure movement of the latch prior to operation of the lever means.

2. In a car seat, a pedestal, a slotted guide plate secured thereto and having spaced arms projecting therefrom, a block slidably mounted in the slot, a seat body supporting element rotatably engaging the slide block, the latter furnishing a partial support for said element, and said element having a rebent marginal supporting flange resting on the pedestal and engaging beneath said arms, lever means operative for sliding the seat body supporting element on the pedestal, and a roller on the pedestal engaging with the

supporting element to hold the latter in shifted position during rotation.

3. In a car seat, a pedestal, a seat body mounted on the pedestal, lever means on the pedestal connected with the body and operative to shift the body on the pedestal, a latch for said lever means, and operating means for the latch forming a part of the lever means having provision to insure movement of the latch prior to operation of the lever means.

4. In a car seat having a pedestal and a seat body shiftably mounted on the pedestal, lever means on the pedestal connected with the seat body and operative to shift the said body on the pedestal, latch means on the pedestal normally in engagement with the lever means to prevent operation of the latter, and latch operating mechanism secured to the lever means.

5. A body supporting element for car seats comprising a unitary casting having a hub and arms extending radially therefrom, a rim connecting said arms and provided with an inturned supporting flange and a cam flange formed with the rim and extending partly around the latter.

6. A body supporting element for car seats comprising a hinge plate having a hub provided with arms projecting radially therefrom, the hub being depressed relative to the upper surfaces of said arms and the latter constituting supporting means for a seat body, and a rim connecting the free ends of said arms and provided with a supporting flange arranged beneath the before mentioned radially projecting arms.

7. In a rotatable car seat having a pedestal provided with a flat upper surface, a guide plate secured to the upper surface and having oppositely directed arms, said plate being provided with a slot, a block slidably mounted in said slot, a hinge plate rotatably mounted on said block and provided with a projecting supporting flange resting upon the top of the pedestal and engaging beneath the arms of said guide plate, and a seat body supported on the hinge plate.

8. In a rotatable car seat having a pedestal, a guide plate secured thereto and having oppositely directed arms, said plate having a slot therein, a block slidably mounted in said slot, and a hinge plate rotatably mounted on said block, said hinge plate having an inturned annular supporting flange resting on the pedestal and engaging the arms of said guide plate to prevent rocking of said hinge plate.

9. In a car seat having a pedestal, a hinge plate slidably and pivotally mounted on the pedestal, and a seat body hinged to said hinge plate, foot rest brackets attached to the pedestal, and supports attached to the seat body and cooperating with the brackets on said pedestal in the normal position of the seat body to support the latter.

10. In a car seat having a pedestal, a hinge plate slidably and pivotally mounted on said pedestal, and a seat body hinged to said hinge plate, a plurality of brackets attached to said pedestal at points spaced longitudinally of the car seat, and supports attached to said seat body and normally in interlocked relation with a plurality of the brackets on said pedestal to prevent tilting of said seat body when the latter is in its normal position.

11. In a car seat having a pedestal, a hinge plate slidably and pivotally mounted on said pedestal, and a seat body hinged to said hinge plate, brackets attached to said pedestal at spaced points thereof, and supports attached to said seat body cooperating with the brackets on said

pedestal in the normal position of said seat body to support the latter at spaced points along its length, said brackets and supports being relatively so formed and arranged as to be engaged and disengaged by the sliding of said hinge plate on said pedestal.

12. In a car seat having a pedestal, a hinge plate slidably and pivotally mounted on said pedestal, and a seat body hinged to said hinge plate, brackets attached to said pedestal at points spaced lengthwise of said seat, and supports attached to said seat body and so arranged as to be interlocked with the brackets on said pedestal to prevent tilting of said seat body when the latter is in its normal position, said brackets and supports being relatively so formed as to be

engaged and disengaged by the sliding of said hinge plate on said pedestal.

13. In a car seat having a base, a seat body supported thereby and capable of turning movement, tilting movement and laterally shiftable movement, means for normally locking said body against turning movement, a lever operative to effect lateral shifting of the body to release said body from its locked relation to permit turning movement of the body, a latch normally engaged with the lever for preventing movement of the latter, and a second lever carried by said first named lever for operating said latch to disengage the latter from said first named lever.

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