Sept. 27, 1932. A. B. BELL 1,879,037

CAR CHAIR

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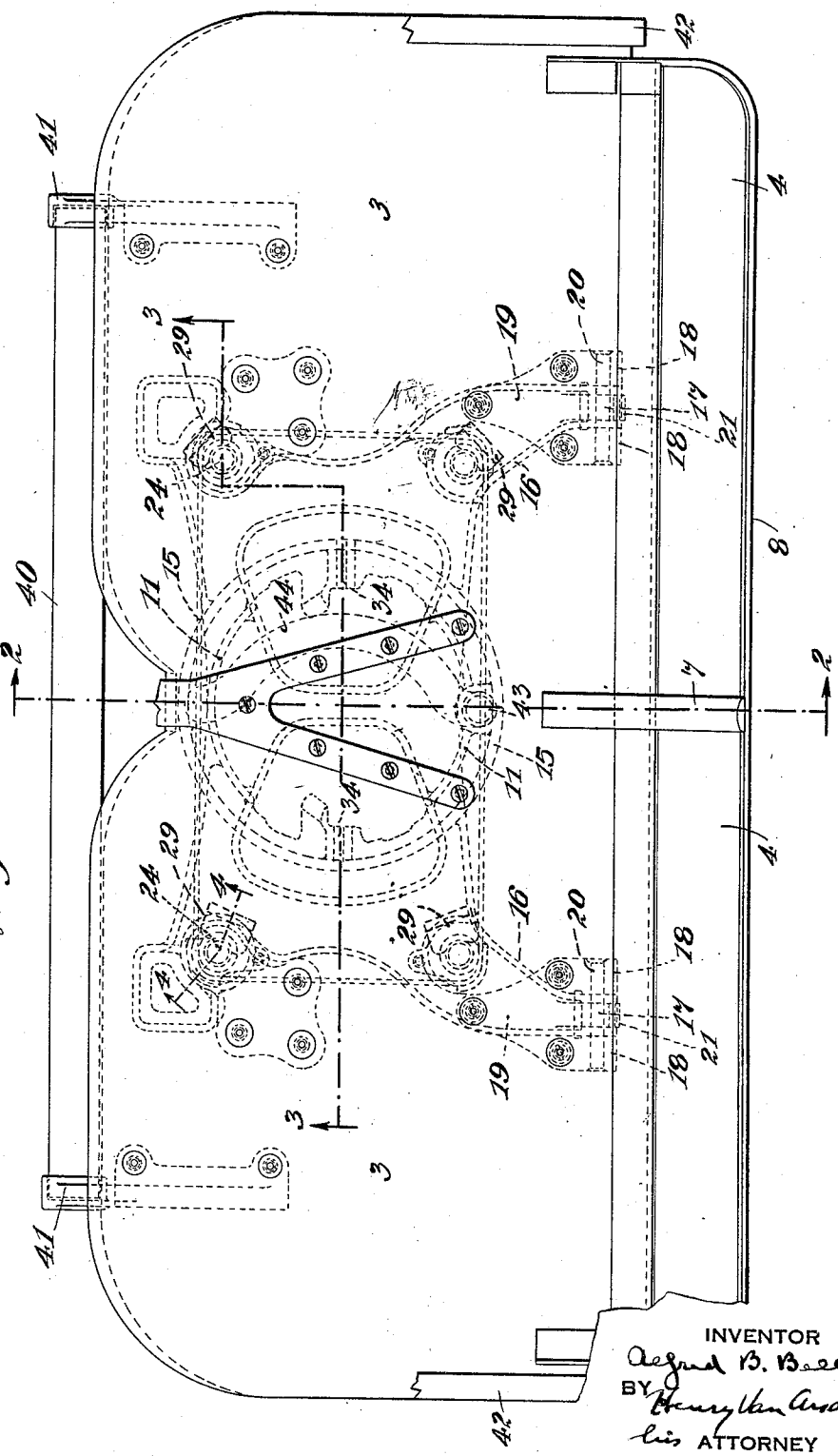


Fig. 1.

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Fig. 2.

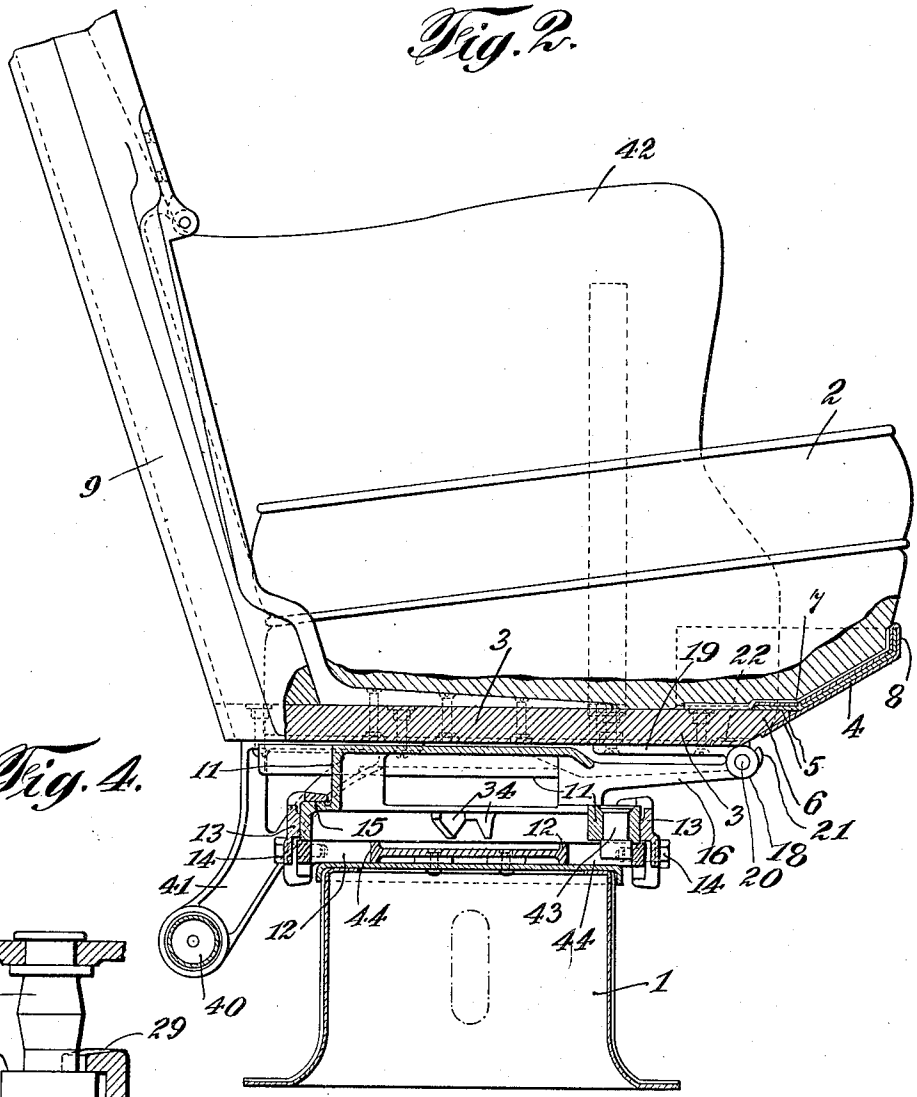
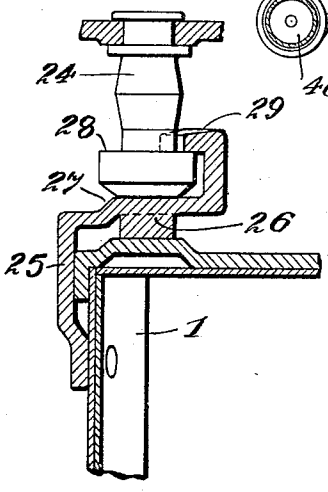


Fig. 4.



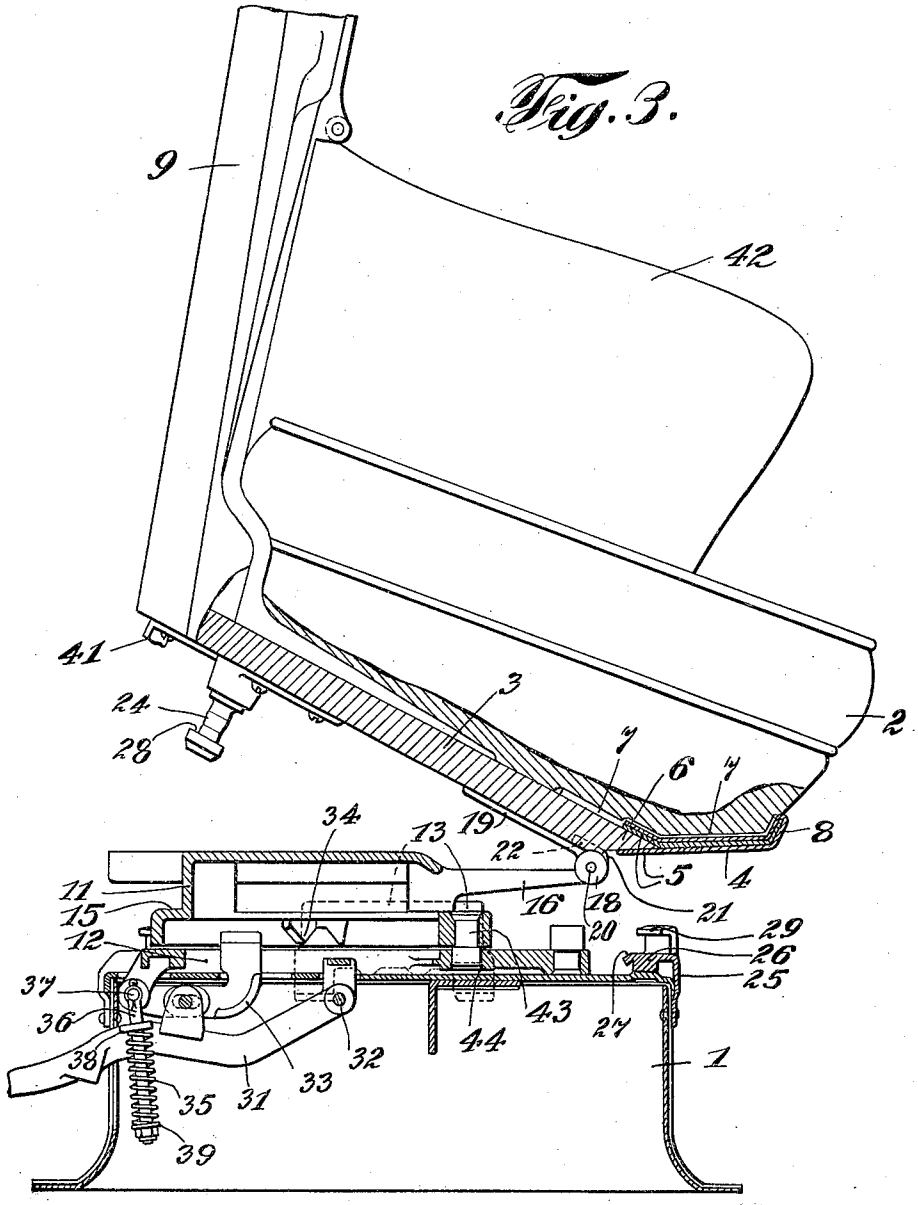
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Fig. 3.



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UNITED STATES PATENT OFFICE

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CAR CHAIR

Application filed January 2, 1930. Serial No. 417,864.

This invention relates to car chairs and more particularly to double chairs for railway passenger cars, trams and busses.

The principal object of this invention is to provide a car chair which may be reversed readily and easily, and which permits chairs wide enough to accommodate two occupants to be placed in a car with their centers closer together than has heretofore been possible without interfering with the reversal of the chairs.

A further object of this invention is to provide a car chair which projects no part below the truss line level, and thus permits of the installation of the usual heating pipes or other heating equipment in the usual location along the sides of the car wall or beneath the chair, without interfering with the reversing of the chair.

Another object of this invention is to provide a car chair of the character described, which automatically becomes firmly locked against tilting and rotation when it is reversed into either seating position.

Another object of this invention is to provide a car chair of the character described, which offers a comfortable inclination of the back and may be equipped with deep and comfortable upholstery without in any way interfering with the operation of the shifting and tilting mechanism.

Other objects of this invention will be in part obvious and in part pointed out hereinafter.

In the usual construction of car chairs, the chair cushion is usually supported on a flat frame. It has been proposed to hinge such frame at its front edge to a member which is rotatable on the pedestal, so that the entire frame and back may be tilted as a unit to avoid interference with adjacent chairs during reversal.

In accordance with my invention, the frame which harbors the cushion is angular in transverse cross-section, the section to the rear of the apex of the angle being adapted to be approximately horizontal when the chair is in either seating position, and the section in front of the apex inclining upwardly. The chair back may be permanently secured to the rear edge of the rear section. This cushion frame is pivotally mounted at the apex of its angle on a member which is rotatably supported on the chair pedestal, so that as the chair is reversed, the chair cushion and back unit, including the angular frame, may be tilted about the apex of the angle of the frame to avoid the car wall and adjacent chairs.

It will be obvious that the radius of the arc through which the chair back swings, is smaller when the cushion frame is pivoted intermediate its front and rear edges, than when it is pivoted at its extreme front edge. Consequently, the chair back—especially the top—and the rear corners of the cushion frame and cushion are drawn further toward the center of the chair for any given amount of tilting elevation. The space required for reversal is thus reduced and this permits a row of chairs to be installed in a railway car or bus with the distances between the centers of the chairs closer together than has heretofore been possible with car chairs adapted to accommodate two passengers and provided with deep and comfortable upholstery. In fact these chairs can be used to replace present car seating equipment on old cars on their standard seat centres.

By making the cushion frame angular, as stated, the front section will not be projected below the truss line level of the chair during reversing of the chair. Thus, there is nothing to interfere with the installation of heater pipes in the usual location along the car wall and heating equipment under the chair. By pivoting the cushion and back unit intermediate its front and rear edges, the front portion has a counter-balancing effect when the chair is operated, thus reducing the effort required to tilt the chair.

In order that a clearer understanding of my invention may be had, attention is hereby directed to the accompanying drawings forming a part of this application, and illustrating certain possible embodiments of my invention. It is to be understood, however, that my invention may be embodied in chairs of various different types and including, if desired, various mechanisms for effecting the

shifting and tilting of the chair or both, either manually or automatically.

To illustrate my invention in one possible environment, I have illustrated in the drawings my invention embodied in a car chair which has shifting mechanism and in which the tilting is effected manually. In these drawings:—

Fig. 1 is a top view of a car chair of this type and embodying my invention, certain parts being shown broken away and others shown in dotted lines, to more clearly bring out certain features of the construction;

Fig. 2 is a side view of the same, certain parts being broken away and others shown in section to more clearly bring out certain of the details of the construction and is taken on the line 2—2 of Fig. 1;

Fig. 3 is similar to Fig. 2, but shows the chair in an intermediate position of reversal, and is taken on the line 3—3 of Fig. 1; and

Fig. 4 is an enlarged sectional view of a portion of the construction, and is taken on the line 4—4 of Fig. 1.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring to the drawings, the chair illustrated includes a suitable stationary supporting standard or pedestal 1, on which a seat cushion and back assembly is rotatably and shiftably mounted and held by any suitable means. As shown, the seat cushion 2 rests on a frame which is angular in transverse cross-section, comprising a rear section 3 and a front section 4. The front section may be a sheet metal formation, having a flanged formation 5, attached to the tapered end 6 of section 3. The sheet metal portion 4 may further be secured to the rear section 3 by means of straps 7. Preferably, section 4 presents a vertical flange 8 along its front edge. A suitable chair back 9, preferably comfortably inclined, is secured at its lower edge to the rear edge of section 3 of the seat cushion frame. The seat cushion 2 is disposed on the seat cushion frame and behind the confining flange 8. The bottom of the cushion preferably conforms in shape to the angular shape of its supporting frame.

The cushion frame is hinged at its apex to a member which is rotatably and shiftably mounted on the supporting pedestal. For instance, as shown in the drawings, a block 11 may be mounted for rotation and shifting on a table member 12, secured to the top of the pedestal 1. Gibs 13 bolted to the table 12, as at 14, and overlapping an annular shoulder 15 of the block 11, hold these parts together while permitting relative rotative and shifting movement. Forwardly projecting arms 16 may be attached to, or formed on the block 11. At the outer end of each of these arms 16 is formed a hinge knuckle 17, adapted to be received between two hinge knuckles 18, formed on a hinge arm 19 secured to the bottom of section 3 of the chair cushion frame. These knuckles are connected by hinge pins 20. Preferably, in order to limit the raising of the chair back beyond a predetermined height, and to prevent the forward portion of the cushion frame from projecting below the truss line level of the chair, a stop lug or shoulder 21 is formed on each arm 16 adapted to be engaged by a shoulder or stop 22, formed on each hinge arm 19. When the chair is tilted to a certain elevation, stops 22 come against stops 21 and prevent the chair from being raised higher.

If desired, stanchions or posts 24 for supporting and steadying the chair on the pedestal, may be secured to the frame 3. These stanchions are adapted to rest on the pedestal or on a plate thereon, or preferably, on receiving members 25 therefor secured to the pedestal 1, as shown in Fig. 4. These receiving members 25 may be formed to present a raised surface 26, on which the stanchions 24 are adapted to rest when the chair is in seating position. Receiving members 25 are preferably formed to present inclined surfaces 27, leading to the surfaces 26 to aid in seating the stanchions in their final locations thereon. Also, if desired, the stanchions 24 may be formed with annular shoulders 28 at their lower ends, which are adapted to engage beneath flanges 29 formed on the receiving members 25. This engagement not only holds the chair firmly against rocking and vibrating when in seating position, but also renders the tilting of the chair impossible until it has been revolved a sufficient distance to take the stanchions out of engagement with the flanges 29 of the receiving members.

To prevent rotation of the chair accidentally or at inopportune times, releasable means may be provided whereby the chair is automatically locked against rotation when it arrives in either seating position. These means may include a foot lever 31 hinged to the pedestal as at 32, and having hinged thereto a latch member 33, which, at its upper edge is adapted to engage in either one of a pair of notched or recessed formations 34, 180° apart, provided on the block 11. The latch may be held in engaged position by means of a coil spring 35 carried on a pin 36 pivotally suspended from the pedestal, as at 37, the spring being compressed between an ear 38, formed on the lever 31, and a washer and nut 39 carried on the end of pin 36.

If desired, there may be provided a foot rest 40, carried on depending brackets 41, which are secured to the rear cushion frame section 3. Also if desired, arm rests 42 may be secured to each end of the rear frame section 3.

Automatic shifting of the chair to avoid interference with the car wall may be ob-

tained by providing on block 11 a pin or stud 43 which rides in a cam groove 44 formed on table 12. As the chair is rotated it is thus automatically shifted away from and back against the wall when the chair is reversed.

Reversal of the chair is effected by the operator releasing the pedal latch, and rotating the chair to reverse its seating position. The operator may tilt the chair to avoid interference with the car wall or with adjacent chairs, as soon as and at any time after there has been sufficient rotation to disengage the stanchions 24 from the confining flanges 29, secured to the pedestal. The back may be lowered into seating position before the complete rotation is made, so that at the end of the rotation, the stanchions will engage and again be locked beneath the flanges 29 when the chair is in final seating position. The pedal latch will then automatically engage the corresponding notched or recessed formation 34 on the block 11 to prevent rotation or tilting of the chair until the pedal latch is again released.

From the above, it will be readily apparent that not only does my invention permit the construction of chairs, each adapted to accommodate two passengers comfortably, and equipped with deep and luxurious upholstery of cushion and back, which chairs can be placed with their centers extremely close together without interfering with the reversal of the chairs, but further, that no part of the seat structure projects below the truss line level of the chair, and, therefore, permits of the installation of the usual heating pipes and other heating devices in the standard and usual locations.

Also, it will be clear that by hinging the cushion frame intermediate its front and rear edges, maximum length of chair may be obtained with minimum amount of lift being required to avoid interference with adjacent chairs, and thus permits the installation in a car, or other environment, of a row of chairs with their centers closer together than has been possible heretofore. Also, it is apparent that a counter-balancing effect is obtained by that portion of the chair which is in front of the hinges and that this counter-balancing effect reduces the effort that would otherwise be necessary to tilt the chair.

From the above, it will be obvious that my invention is adapted for embodiment in chairs of various types and in chairs, including, if desired, various mechanisms for effecting the shifting and tilting of the chair or both, either manually or automatically.

Accordingly, as many changes may be made in the above construction and as many widely different embodiments of this invention could be made without departing from the scope thereof, it is understood that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim is:—

1. In a chair of the character described, in combination, a support and a seat cushion frame tiltably mounted thereon, the tilting axis being disposed intermediate the front and rear edges of a seat cushion harbored on the frame, a portion of the bottom of the frame being forward of the tilting axis and inclining upwardly with respect to the bottom portion of the frame rearward of the tilting axis, whereby the front portion of the frame remains above the top of the support when the frame is tilted thereon.

2. In a chair of the character described, in combination, a support, a seat cushion supporting frame tiltably mounted thereon, the tilting axis being disposed intermediate the front and rear edges of said frame, the portion of the frame forward of the tilting axis inclining upwardly with respect to the frame portion rearward of the tilting axis, and a seat cushion disposed on both said frame portions and having a bottom conforming to the shape of the top surface of said frame, whereby the frame portion forward of the tilting axis and the front of the cushion remain above the top of the support when the frame is tilted thereon.

This specification signed this 10th day of December, 1929.

ALFRED B. BELL.