

No. 747,489.

PATENTED DEC. 22, 1903.

M. ROUNDS.
ELECTRIC CAR.

APPLICATION FILED JUNE 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

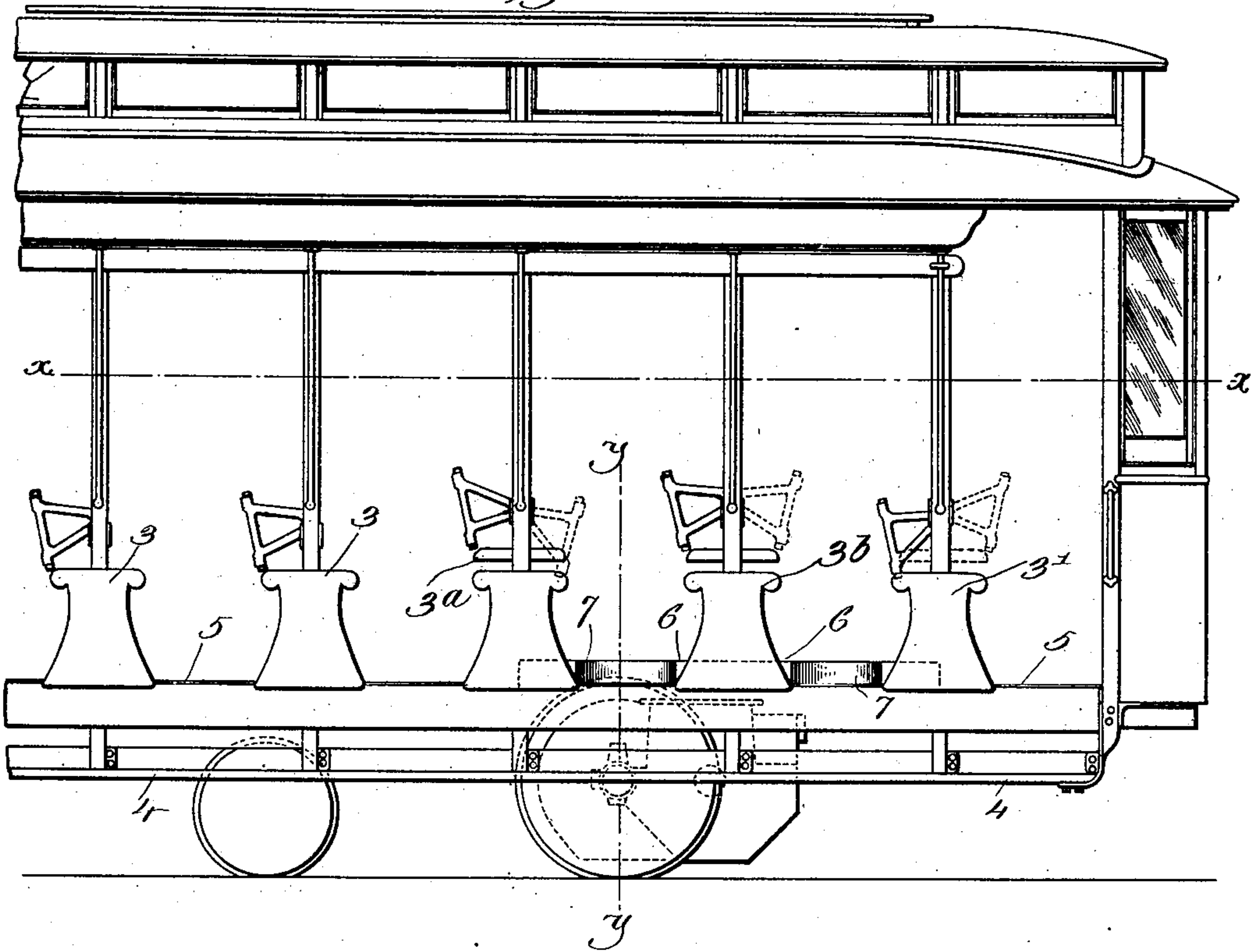
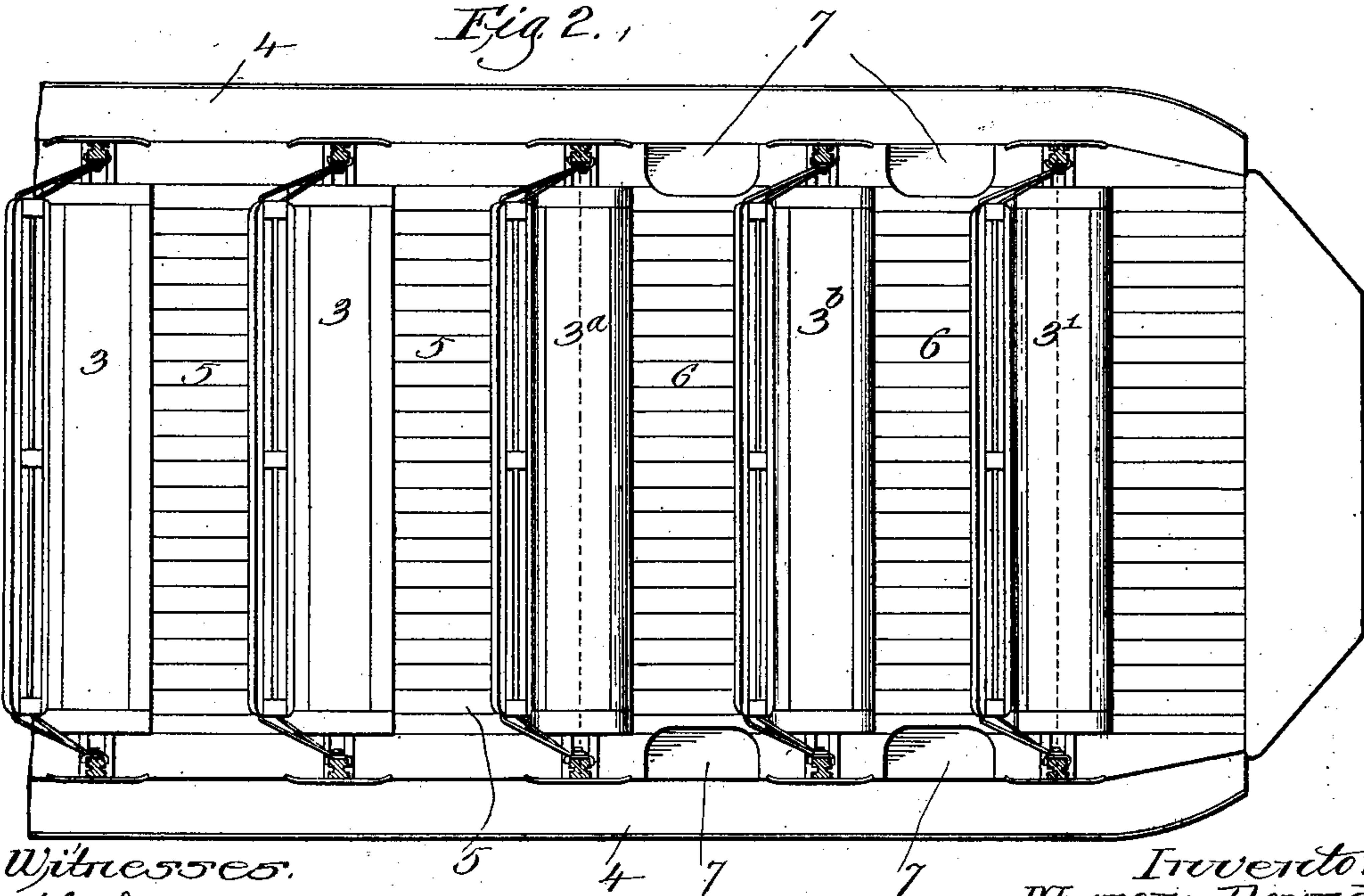


Fig. 2.



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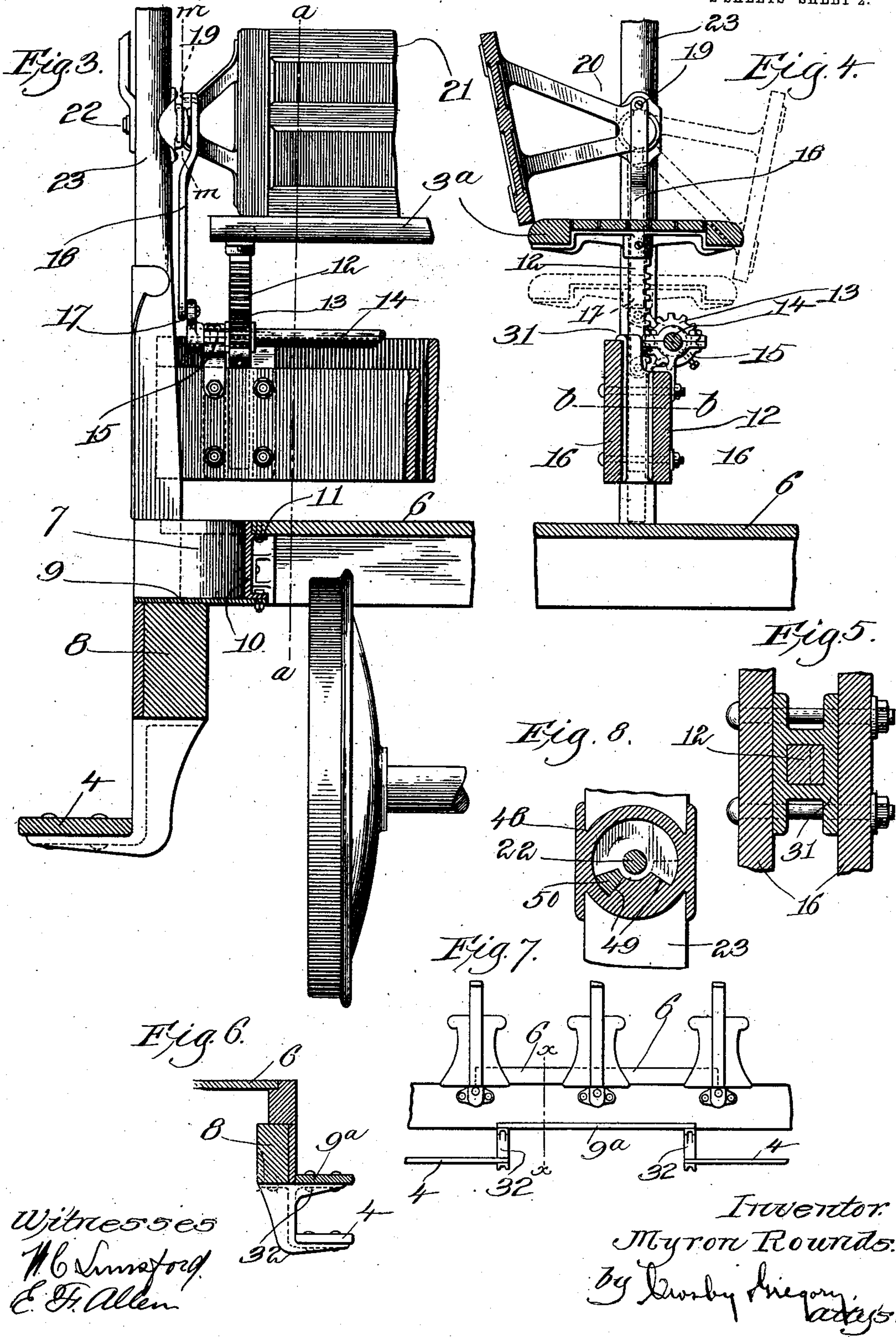
Inventor.
Myron Rounds.
By [Signature]

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2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

MYRON ROUNDS, OF BOSTON, MASSACHUSETTS.

ELECTRIC CAR.

SPECIFICATION forming part of Letters Patent No. 747,489, dated December 22, 1903.

Application filed June 13, 1903. Serial No. 161,251. (No model.)

To all whom it may concern:

Be it known that I, MYRON ROUNDS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Electric Cars, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Electric cars are ordinarily built with the floor on one level, and in order to accommodate the wheels and the trucks it is necessary to have the floor some thirty-four or thirty-six inches above the level of the rail. In box or closed cars there is no particular disadvantage in having the floor at this elevation, because the platforms are usually sufficiently below the level of the car-floor, so that they can be reached by two steps of moderate height, thus making three steps to reach the car-floor. This extremely high elevation of car-floor, however, is very inconvenient in that style of open car in which the seats extend transversely, so that access to or exit from the car is provided at the sides of the car, for as usually constructed such cars have a running-board extending along the side, which makes one step between the ground and the car-floor. When the car-floor is thirty-four or thirty-six inches above the level of the rail, both the step up to the running-board and from the running-board to the car-floor must be seventeen or eighteen inches, which makes entering the car or alighting therefrom extremely inconvenient and more or less dangerous.

It is the object of my invention to provide a novel type of electric car which is so constructed that the steps leading to the car-floor are of moderate height and can therefore be easily and conveniently ascended or descended without any danger. I accomplish this by placing the main portion of the car-floor at a sufficiently low level so that it can be easily reached with two steps of ordinary height and raising portions of the floor which are over the trucks and motors to a higher elevation and providing special step arrangements by which persons may mount to the raised floor-sections. The ends of the raised floor-sections come beneath the transverse seats, with the result that when said seats are

faced in one direction the raised floor portion is beneath the front of the seat, while when said seats are faced in the other direction the portion of the floor at a lower level is beneath the front of the seat. In order that these seats which are situated at the ends of the raised sections may always be at the same level above the portion of the floor toward which they face, I have made said seats vertically adjustable and have provided means whereby when each seat is faced toward a raised floor-section it is elevated, while when it is faced toward the main floor-section it is lowered.

In the accompanying drawings, wherein I have illustrated one embodiment of my invention, Figure 1 is a side view of one end of a car containing my improvements. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a section on the line *y y*, Fig. 1. Fig. 4 is a section on the line *a a*, Fig. 3, looking toward the left. Fig. 5 is a section on the line *b b*, Fig. 4. Figs. 6 and 7 show a modification, and Fig. 8 is a detail hereinafter described.

The type of car which I have herein illustrated is what is called an "open" car and has the usual transversely-extending seats 3 and the running-boards 4. The car is made with the main portion 5 of the floor at such an elevation that it can be reached by two steps of moderate height, and the running-board 4 will preferably be placed about halfway between the street-level and the floor-level.

In many box-cars the first step is placed at an elevation of about sixteen inches above the level of the rail, and the car-platform is about thirteen inches above said first step or about twenty-nine inches above the rail. The platform therefore is reached by two steps of about sixteen inches and thirteen inches, respectively. In practice I propose to approximate these dimensions in constructing my car and will therefore preferably place the main portion 5 of the car-floor at an elevation of about twenty-nine inches and will place the running-board 4 at an elevation of about sixteen inches. If the car were built with the entire floor at this elevation, however, it would not be high enough to accommodate the wheels, trucks, and motors, and

therefore I construct the portion of the floor 6 above said trucks and motors at a higher elevation than the main body of the floor. A car thus constructed has at each end or over the truck raised floor-sections, and in order to facilitate getting into and out of that portion of the car having the raised floor-section I provide a supplemental step, so as to make a flight of three steps leading to said raised section. In Figs. 1, 2, and 3 I obtain this supplemental step by cutting away the upper or raised floor-section 6 at points between the seats, as shown at 7, and making a step at these places which is substantially on a level with the main portion 5 of the floor. This may be easily accomplished by placing at the portion 7 upon the side sill 8, which extends longitudinally of the car and which is at about the level of the main portion 5 of the car and on which said floor 5 rests, plates or steps 9. In mounting to the portion of the car having the raised floor, therefore, the passenger steps onto the running-board 4, as usual, then onto the step 9, and from there to the raised portion 6 of the floor.

The risers of the steps 9 may be formed of suitable metal castings 10, curved to the proper shape and bolted to the plates 9 and having suitable flanges 11, on which the flooring 6 rests. Any other suitable construction, however, may be employed without departing from the invention.

In Fig. 1 I have illustrated a truck having an outside motor—that is, a truck in which the motor is situated on the end of the truck toward the car end. With this form of truck and with the truck located as seen in Fig. 1 the raised portion 6 is formed to terminate immediately beneath the first and third seats 3' and 3^a, respectively. It will be seen, therefore, that when the car is moving to the right, Fig. 1, the occupants of the first seat 3' will sit with their feet on the floor having the lower level, while when said car is moving in the opposite direction and said seat is reversed the occupants thereof will sit with their feet resting on the floor 6 at a higher level. The same is true of seat 3^a, except that when the car is moving to the right, Fig. 1, the occupants sit with their feet on the elevated floor, while when the car is moving in the other direction the occupants sit with their feet on the floor of lower level. If the seats were stationary or non-adjustable, therefore, they would be high seats when the car was running in one direction and low seats when running in the opposite direction. To prevent this and make them capable of having the same elevation above the floor as the other seats of the car, I have made said seats vertically adjustable, so that whenever either seat is facing the raised portion 6 of the floor it may be elevated the same distance above said portion as the other seats are above the main portion 5 of the floor. Where the raised portion 6 extends from the first to the

third seat, the second seat 3^b will be fixed at the proper elevation above the floor 6.

I have herein illustrated my invention as embodied in a construction wherein the reversing of the seats 3' and 3^a operates to raise or lower them. One way in which this may be done is by providing each of said vertically-adjustable seats with the depending racks 12, which engage pinions 13 on the transverse shaft 14. Each shaft 14 extends clear across the car and is journaled in suitable bearings 15, supported by the usual tie-boards 16. Each vertically-adjustable seat may have any number of racks 12, though I consider three racks, one at each end of the seat and one in the center, as being sufficient to hold the seat firmly. The end of each shaft 14 is provided with a crank-arm 17, which is connected by a link 18 with a crank-pin 19, mounted in the swinging arm 20, to which the usual back 21 is fast. These arms 20 are usually pivoted to the uprights or posts 23, and I have placed the pin 19 eccentrically to the pivot pin or axis 22, about which the seat-backs swing. With this construction it will be observed that when the seat-back is swung from full-line position, Fig. 4, into dotted-line position the shaft 14 is turned through the link and crank-arm, thus lowering the seat 3^a, while when the seat-back is swung from the dotted-line position into the full-line position the seat is elevated. The construction is so designed that the amount which the seat is raised or lowered corresponds exactly to the distance which the elevated portion 6 of the floor is above the main portion 5.

It is very desirable that the backs of the vertically-adjustable seats should stand at the same inclination to the seat-boards when the seat is facing either way, as is the case with the ordinary fixed seats now employed in open cars. To accomplish this, I have made the arms 20, to which the backs of the vertically-adjustable seats are secured, of special construction, as shown in Fig. 4, so that the center about which said back swings is at one side of the plane perpendicular to said back, which bisects said back longitudinally, and I have so arranged the stops which limit the swinging movement of the seat-back that in either of its two positions it has the same inclination to a horizontal plane. Fig. 8, which is a section on line *m m*, Fig. 3, shows an arrangement of stops which will accomplish this. In said figure 48 is the casting or socket-piece, which is secured to the post 23 and to which the arm 20 is pivoted. This socket-piece is provided with the two stop-shoulders 49, with which coöperates a stop-lug 50, carried by the arm 20. The swinging movement of the seat-back in one direction is limited by the engagement of the lug 50 with one shoulder 49 and in the other direction by the engagement of said lug with the other shoulder, and these shoulders are so

arranged that in both positions the seat-back will have the same inclination to the seat-board.

I will preferably provide suitable guides 31 between the tie-boards 16, through which the racks 12 play and which serve to hold said racks in position, as seen in Fig. 5.

In Figs. 6 and 7 I have illustrated a slightly-different arrangement of steps for reaching the raised position 6 of the floor. In said figures, 4 designates the usual running-board, which is at the usual height above the street-level. Extending along the side of the car opposite the raised floor-sections 6 I provide a supplemental step 9^a, which is so arranged as to divide the distance between the running-board 4 and the raised floor-section 6 into two steps of moderate height. This supplemental step may be supported in any suitable way upon brackets 32, suspended from the sill of the car or supported in any other appropriate way, and it is illustrated as being of the same width as the running-board 6. In mounting to the elevated floor-section 6 in this form of my invention the passenger steps on the running-board 4 and from there onto the end of the step 9^a and from thence onto the elevated floor-section 6. With this form of the invention it is unnecessary to cut out the raised floor-sections 6, as at 7, as is done in Figs. 1, 2, and 3.

While in order to describe my invention I have made use of dimensions, I wish it understood that my invention is not limited to cars made with the main floor-sections 5 at any definite elevation above the tracks nor to placing the running-board 4 at any definite height above the rail-level.

I believe that I am the first to provide an electric car with a raised floor-section to accommodate the trucks and motors and to make the special arrangement of steps for leading to said elevated floor-section. I also believe that I am the first to provide in connection with a car having the raised floor-sections the vertically-adjustable seats at the ends of the raised floor-sections, so that all the seats in the car may be at the same distance from the floor immediately in front of them. It will be obvious, therefore, that many changes may be made in the construction of the car without in any way departing from the invention as expressed in the appended claims.

While I have herein shown my invention as applied to a car having seats which extend clear across the car and each of which accommodates a plurality of passengers, yet I do not wish to be limited to this form of the car, as my invention may also be applied to so-called "chair-cars" or those which have individual seats or, in fact, to cars having almost any arrangement of seats. I consider, therefore, that any car having the raised floor-sections to accommodate the trucks and motors and vertically-adjustable seats at the ends of said floor-sections, of

whatever construction said seats or trucks may be, as coming within my invention.

In case my invention is applied to a car having trucks with inside motors the raised portion 6 of the floor will have a different position than that shown in Fig. 1. Whatever the position of the raised portion of the floor I propose to make the seats at each end of said portion vertically adjustable for reasons set forth above.

By the term "reversible seat" as used in the specification and claims I mean a seat of any character which can be made to face either front or rear, as desired, whether this is accomplished by reversing the position of the seat-back or by reversing the entire seat.

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

1. A car having raised floor-sections over the trucks, and vertically-adjustable seats at each end of each of said raised sections.

2. A car having its floor made on two different levels, combined with a reversible, vertically-adjustable seat situated over the line of division between the two levels.

3. A car having a raised floor-section over the truck, and a vertically-adjustable seat at the end of said raised section.

4. A car having raised floor-sections over the trucks, and vertically-adjustable, reversible seats at each end of said raised sections.

5. A car having its floor made on two different elevations, combined with a reversible, vertically-adjustable seat situated over the line of division between the two levels, and means whereby the reversing of the seat raises and lowers the latter.

6. A car having its floor made on two different levels, combined with a reversible, vertically-adjustable seat situated over the line of division between the two levels, and means for simultaneously reversing the seat and vertically adjusting the same, whereby the seat-board is situated at the level above the floor in whichever direction it faces.

7. A car having raised floor-sections over the trucks, reversible seats extending transversely of the car, certain of said seats being situated over the ends of the raised floor-sections, and means to vertically adjust said latter seats.

8. A car having raised floor-sections over the trucks, a vertically-adjustable seat situated at each end of each floor-section, a swinging back for each seat, and means whereby the swinging of the backs to reverse the seats raises and lowers the seat-boards.

9. In a car, a vertically-adjustable, reversible seat, and means whereby the reversing of the seat operates to raise and lower the seat-board.

10. In a car, a reversible seat having racks depending therefrom, a shaft having pinions engaging said racks, and means whereby the reversing of the seat rotates the shaft and thus raises and lowers said seat.

11. In a car, a seat having a swinging back, racks depending from the seat-board, a shaft having pinions engaging said rack, and connections between the swinging back and shaft
5 whereby the swinging of the back turns the shaft and raises and lowers the seat.

12. In a car, a vertically-adjustable seat, a swinging back for said seat arranged to stand at the same angle to the seat in both the raised
10 and lowered positions of the latter.

13. In a car, a vertically-adjustable seat, and a swinging back for said seat mounted to turn about a fixed pivot, said back being arranged to stand at the same angle to the seat-board in both the raised and lowered posi-
15 tions of the latter.

14. A car having a raised floor-section over the truck, a vertically-adjustable seat extending across the car at one end of said raised
20 floor-section, and a swinging back for said seat mounted to turn about a fixed pivot, said back being constructed to stand at the same angle to the seat-board in both the raised and lowered positions of the latter.

25 15. A car having a portion of its floor raised above the level of the main floor, a running-board forming a step to the main floor, and a supplemental step to the raised floor-section.

30 16. A car having a vertically-adjustable seat, and a pivoted seat-back, the pivot for said back being at one side of the plane perpendicular to said back which bisects said back longitudinally.

35 17. In a car, a vertically-adjustable seat, and a pivoted seat-back, and means whereby the reversing of the seat-back raises and lowers the seat, the pivot about which said back swings being at one side of the plane perpendicular to the said back which bisects said

back longitudinally, whereby the seat-back 40 stands at the same inclination to the seat-board in either of its positions.

18. A car having a portion of its floor raised above the level of the main floor, seats situated over both the main floor and the raised
45 portion of the floor, a running-board forming a step to the main floor, and a supplemental step leading to the raised portion of the floor.

19. A car having its floor made on two different levels, a running-board forming a step
50 to the portion of the floor on the lower level, and a supplemental step leading to the portion of the floor on a higher level.

20. A car having its floor made on two different levels, a running-board forming a step
55 to the portion of the floor on a lower level, and a supplemental step leading to the portion of the floor on a higher level, combined with a reversible vertically-adjustable seat situated over the line of division between the
60 two floor-levels.

21. A car having a raised floor-section over the truck, a running-board forming a step leading to the main portion of the floor, and a supplemental step leading to the raised floor-
65 section.

22. A car having a portion of its floor raised above the level of the rest of the floor, a step leading to the floor on a lower level, and a supplemental step leading to the floor on a
70 higher level.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MYRON ROUNDS.

Witnesses:

LOUIS C. SMITH,
GEO. H. MAXWELL.