

F. F. UNCKRICH & C. L. SEELEY.

CAR DOOR OPERATOR.

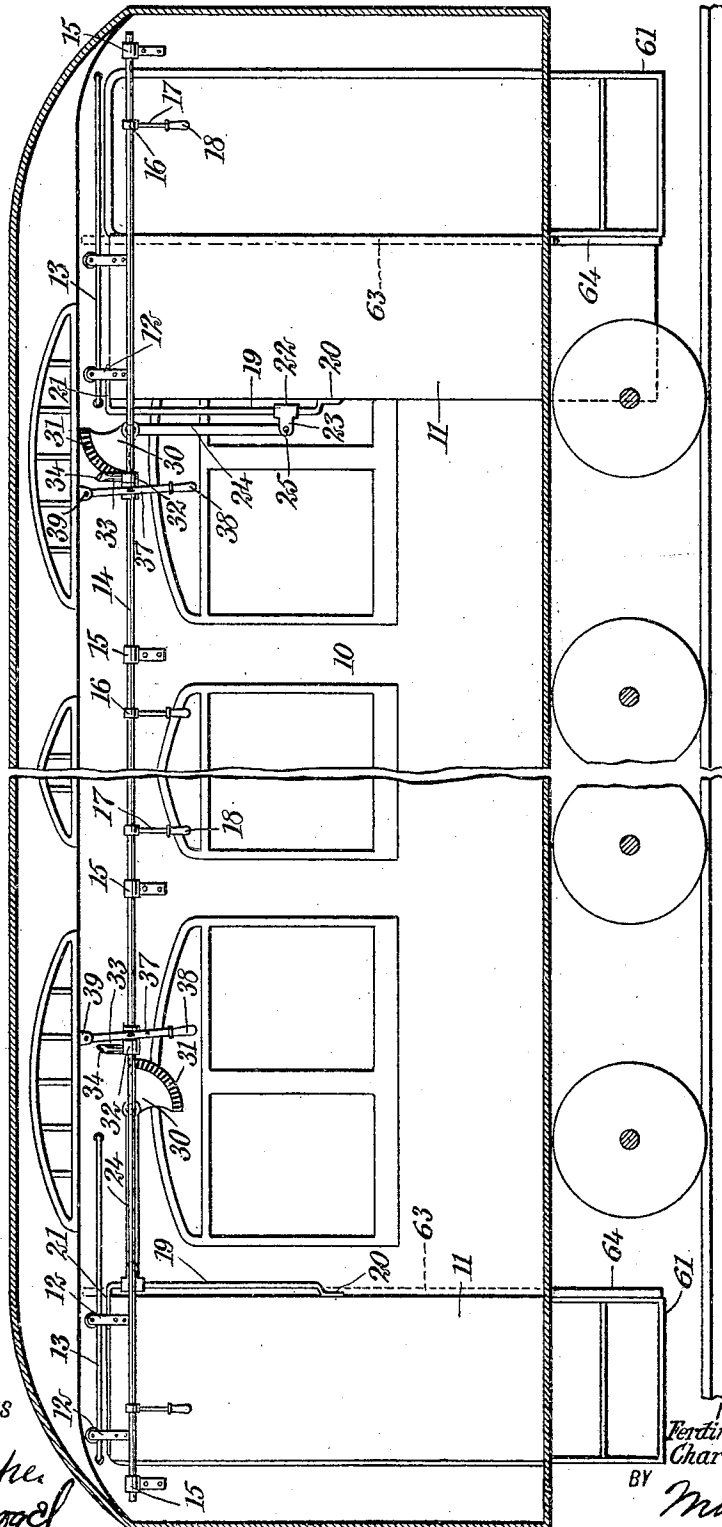
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932,836.

Patented Aug. 31, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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3 SHEETS—SHEET 2.

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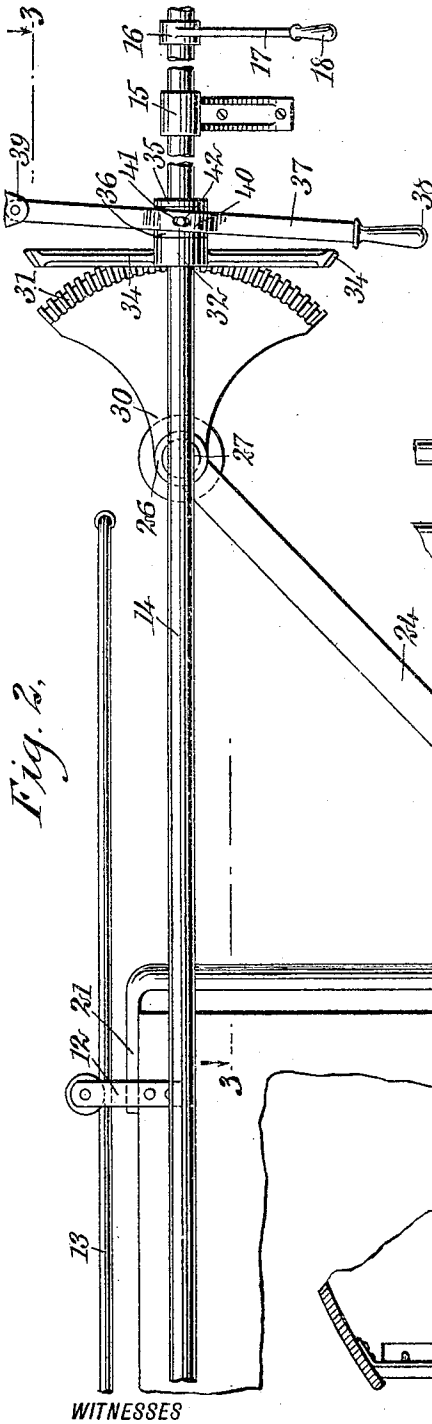


Fig. 2.

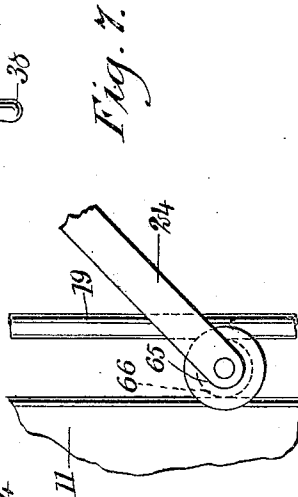


Fig. 7.

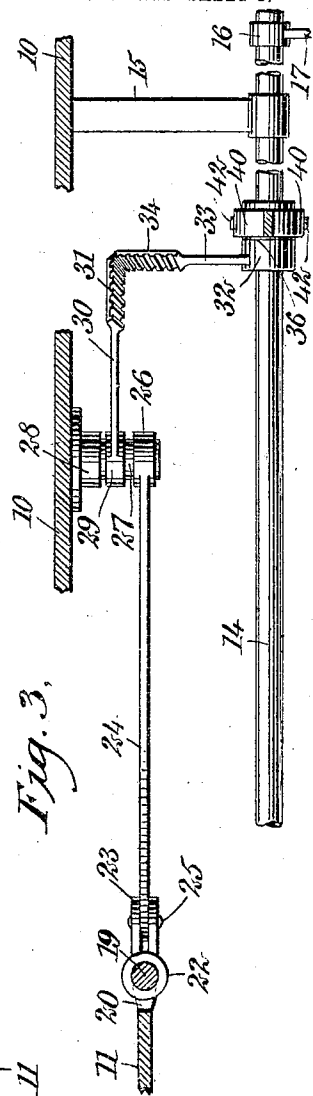


Fig. 3.

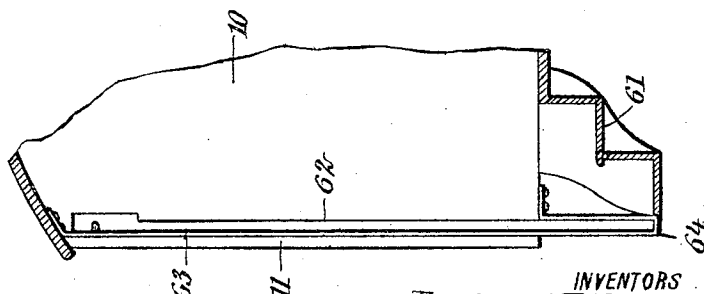


Fig. 6.

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3 SHEETS—SHEET 3.

Fig. 4.

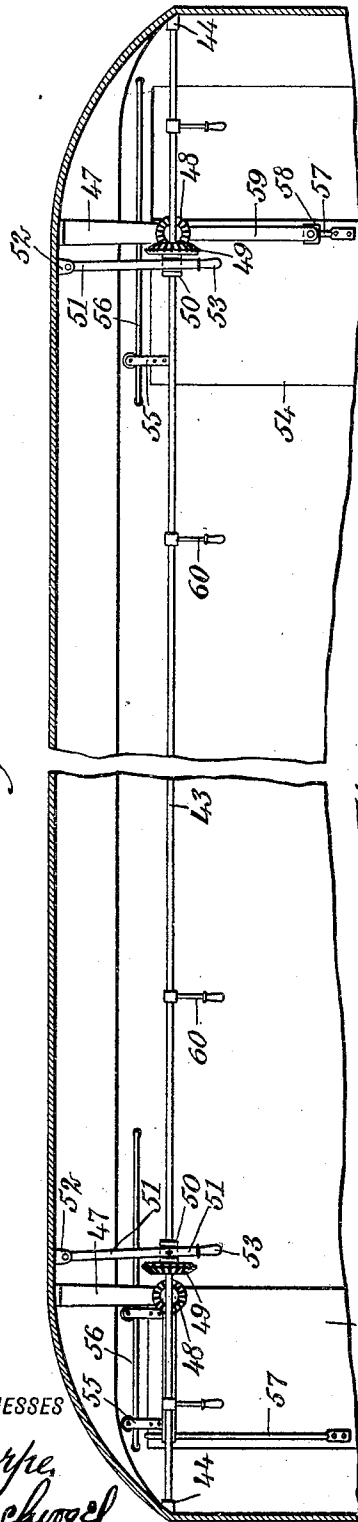
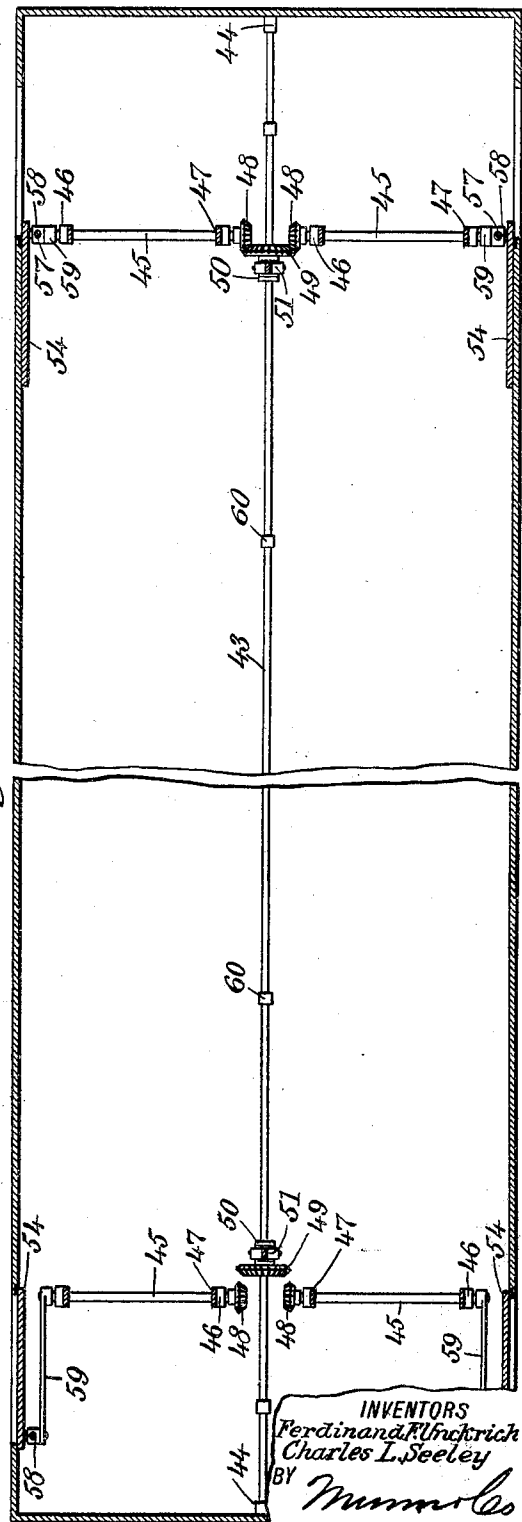


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CAR-DOOR OPERATOR.

932,836.

Specification of Letters Patent.

Patented Aug. 31, 1909.

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To all whom it may concern:

Be it known that we, FERDINAND F. UNCKRICH and CHARLES L. SEELEY, citizens of the United States, and both residents of Galion, in the county of Crawford and State of Ohio, have invented a new and Improved Car-Door Operator, of which the following is a full, clear, and exact description.

This invention relates to railway cars, and more particularly to a car having a plurality of doors, a controlling member, operable from various points of the car for simultaneously opening and closing the doors, and connections between the controlling member and the doors, parts of the connections being adapted to be inoperatively disposed so that the controlling member can be rendered inoperative with respect to any one of the doors.

An object of the invention is to provide a railway car having a plurality of sliding or like doors, in which the doors can be simultaneously opened and closed from various points of the car, with the expenditure of little effort and by a simple manipulation of the controlling mechanism, and in which the gearing between the controlling member and the doors can be adjusted so that when desired the controlling mechanism can be rendered inoperative with respect to the corresponding doors.

A further object of the invention is to provide a railway car having door-controlling mechanism of the class described, which is simple and efficient in operation, inexpensive to manufacture, compact in form, which cannot easily become disarranged, and which is applicable to various forms of railway and like cars.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a longitudinal section of a railway car having an embodiment of our invention applied thereto, and with parts broken away; Fig. 2 is an enlarged side elevation showing part of a car door and certain parts of the controlling and connecting mechanism; Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2; Fig. 4 is a longitudinal

section in elevation of the upper part of a railway car, showing an embodiment of our invention of modified form applied thereto and having parts broken away; Fig. 5 is a longitudinal section in plan of a railway car, having a modified form of our invention applied thereto and showing parts broken away; Fig. 6 is a cross section of a part of a car, showing a detail of construction; and Fig. 7 is a side elevation of a part of a door, showing a constructive detail.

Before proceeding to a more detailed explanation of our invention it should be clearly understood that the door-controlling mechanism can be applied with great advantage to various forms of railway cars, for example, to street railway, electric railway, steam railway and other similar cars.

It is customary to provide railway cars of certain types with doors near the ends of the cars, and these doors are preferably arranged to slide in the direction of the length of the car. It is usual to provide two doors at each end of a car, the doors being at opposite sides respectively, as is shown clearly for example, in Fig. 5. Cars having doors of this kind are largely employed on electric railway lines for urban and suburban service. We have found it of advantage to provide means for controlling these doors, that is, for opening and closing them from any desired point of each car, so that the operator does not have to assume a predetermined position in order to control the doors. However it is not always desirable to have all the doors opened or closed simultaneously, and for this purpose we have included in our controlling mechanism, means for rendering any one of the connections between the main controlling member and the respective doors inoperative, so that any desired door or doors can be allowed to remain open or closed independently of the opening and closing of the remaining doors.

Referring more particularly to the drawings, 10 represents a railway car having at each end at opposite sides, sliding doors 11 mounted by means of suitable roller hangers 12, upon brackets 13. A controlling member 14 extends longitudinally of the car at each side thereof and consists of a shaft journaled in suitable bearing brackets 15 arranged upon the sides of the car. At suitable points of the controlling members 14 are rigid collars 16 having levers 17 terminating in handles 18. These hand levers 17

permit the controlling members to be operated from various points of the car and permit the controlling members to be partly rotated for a purpose which will appear more clearly hereinafter. Each of the doors at a longitudinal edge thereof has a guide rod 19, the lower end 20 of which is offset and secured to the door, and the upper end 21 of which is laterally disposed and fastened at the upper edge of the door. In this way the guide rod is offset so that a sleeve 22 can move freely up and down upon it. The guide sleeves 22 have laterally extended ears 23 between which are pivoted the ends of arms 24 by means of suitable pivot pins 25. The free ends of the arms 24 have collars 26 rigidly secured upon hubs 27. The hubs are journaled in socket bearings 28 mounted upon the sides of the car and have rigid collars 29. Arms 30 are in turn rigid with the collars 29 and terminate in gear segments 31.

Each of the controlling members 14 adjacent to a door has a sleeve 32 slidable longitudinally thereof but constrained to rotate therewith. The sleeves 32 have rigid arms 33 terminating in gear sectors 34 adapted to mesh with adjacent sectors 31. The sleeves 32 have annular grooves 35 in which collars 36 are loosely mounted. Levers 37 terminating in handles 38 by means of which they can be manipulated, are pivoted at brackets 39 preferably mounted on the ceiling of the car. The levers are split intermediate the ends and have laterally offset parts 40 encompassing the collars 36, and provided with slots 41 adapted to receive pins 42 of the collars 36, so that the levers 37 control the gear sectors.

By means of one of the hand levers 17, one or the other of the controlling members 14 can be partly rotated. This movement of the controlling members swings the gear sectors carried thereby up or down. These gear sectors, if the levers 37 are so positioned that they are in mesh with the gear sectors 31, actuate the latter and these rotate the hubs 27. The hubs in turn cause the arms 24 to move up and down and owing to the sliding connections of the arms 24 with the doors, through the medium of the sleeves 22 and the guide rods 19, the doors are opened or closed. If one of the levers 37 is in such a position however, that the corresponding gear sector 34 is out of mesh with the adjacent sector 31, the corresponding door will remain open or closed, regardless of the movement of the controlling member. In this way the connections between the member and the doors can be rendered inoperative. When all the connections are operative, however, each member serves to open or close simultaneously, all the doors which it controls.

In the preferred form of our invention described above, a controlling member is pro-

vided at each side of the car, for the doors at that side of the car. In Figs. 4 and 5 we have illustrated a form of the device in which a single controlling member 43 is employed. This member 43 is arranged longitudinally of the car, preferably along the center of the same and is journaled in bearing brackets 44. Cross shafts 45 journaled in suitable bearings 46 carried by hangers 47 depending from the roof of the car, have at the ends adjacent to the controlling member 43, gears 48 adapted to mesh with gears 49 arranged slidably upon the controlling member, but constrained to rotate therewith. The gears 49 are controlled by sleeves 50 in turn controlled by hand levers 51 pivotally mounted upon bracket 52, and terminating in handles 53 by means of which they can be manipulated. The doors 54 of the car are slidably mounted by means of roller hangers 55 upon brackets 56. Each of the doors has a vertical offset guide 57 upon which is slidably arranged a sleeve 58. The sleeve 58 pivotally carries an arm 59, the other end of which is rigid with one of the cross shafts 45. It will be understood that as the cross shafts are partly rotated in one direction or the other, the doors are opened or closed owing to the sliding connection between the arms 59 and the door guide rods 57. The controlling member 43 has hand levers 60 by means of which it can be operated from different points of the car. By means of the levers 51, the gears 49 can be operatively disposed so that the controlling member 43 is inoperative with respect to certain of the doors, if for example it is desired to have the doors at one end of the car remain open or closed for a certain length of time, regardless of the doors at the other end.

In Fig. 6 is shown a part of the car with one of the doorways and the steps 61 at which the door is positioned. Preferably each door extends to the lower one of the steps. To provide a support for the wall at the doorway 62 through which the door slides, we provide a strap 63, preferably of iron or steel and having the upper end secured to the roof of the car. The strap extends downward and is bent upon itself at the lower end to form a U-shaped socket 64 in which the door moves, the free lower end of the strap being secured at the floor.

If so desired, the sleeve 22 can be dispensed with and a roller 65 substituted therefor. The roller preferably has the periphery provided with a groove 66 and is positioned between the door edge and guide rod, being in engagement with both of these.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. In a railway car a plurality of sliding doors, each of said doors having secured to

one edge thereof a rod parallel with the edge and offset therefrom, a shaft arranged longitudinally of the car, a link for each door, a connection between the links and the shaft for swinging said links, and a slidable connection between the links and the rods for moving the doors.

2. In a railway car, a plurality of sliding doors, a guide rod secured to one edge of each door parallel therewith and offset therefrom, a link for each door having a sliding connection at one end with the rod, a shaft journaled longitudinally of the car and provided at intervals with handles for rotating the same, and a connection between the shaft and the other end of each of said links for swinging the same to slide the doors.

3. In a railway car, a plurality of sliding doors, a guide rod secured to one edge of each door parallel therewith and offset therefrom, a link for each door having a sliding connection at one end with the rod, a shaft journaled longitudinally of the car and provided at intervals with handles for rotating the same, and a connection between the shaft and the other end of each of said links for swinging the same to slide the doors and means for disconnecting the shaft from any of said links.

4. In a railway car, a plurality of sliding doors, a guide rod secured to one edge of each door parallel therewith and offset therefrom, a link for each door having a sliding connection at one end with the rod, a shaft journaled longitudinally of the car and provided at intervals with handles for rotating the same, and a connection between the shaft and the other end of each of said links for swinging the same to slide the doors, and means for disconnecting the shaft from any of said links.

5. In a railway car, a plurality of sliding doors, a link for each door and having a sliding connection at one end therewith, a shaft journaled longitudinally of the car and provided at intervals with operating levers, and a connection between the shaft and the other end of each of said links for swinging the same.

6. In a railway car, a plurality of sliding doors, a link for each door and having a sliding connection at one end therewith, a shaft journaled longitudinally of the car and provided at intervals with operating levers, and a connection between the shaft and the other end of each of said links for swinging the same, and means for disconnecting any of said links from the shaft.

7. In a railway car, a plurality of sliding doors, a link for each door and having a sliding connection at one end therewith for moving the same when the link is swung, a gear wheel for swinging said link, a shaft arranged longitudinally of the car and provided at intervals with means for rotating the same, a gear wheel on the shaft meshing with each of said first named gear wheels, said last named gear wheels being slidable longitudinally of the shaft but constrained to rotate therewith, and means for moving said wheels.

8. In a railway car having a plurality of doors, a common controlling member journaled longitudinally of said car, hand levers rigid with said member, each of said doors having a guide rod, a sleeve slidable upon each of said guide rods, arms each pivotally connected with one of said sleeves, said arms having parts remote from said sleeves pivotally mounted upon a part of the car, gears rigid with said arms, sleeves slidably mounted upon said controlling member and constrained to rotate therewith, said last-mentioned sleeves having rigid arms carrying gears adapted to mesh with said first gears, said last-mentioned sleeves having grooves and collars in said grooves, and pivoted levers engaging said collars whereby they control said sleeves of said controlling member.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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CHARLES L. SEELEY.

Witnesses:

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JOSEPH KING.