

F. X. MALOCSAY.

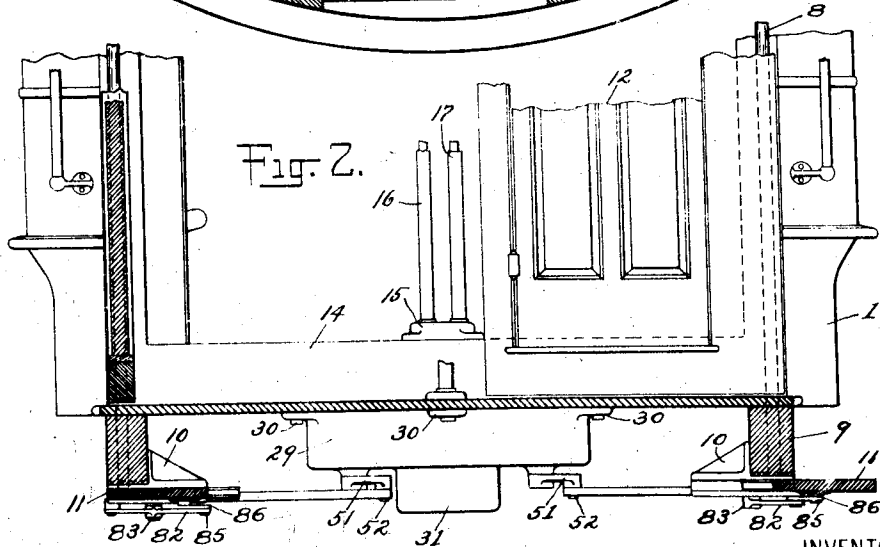
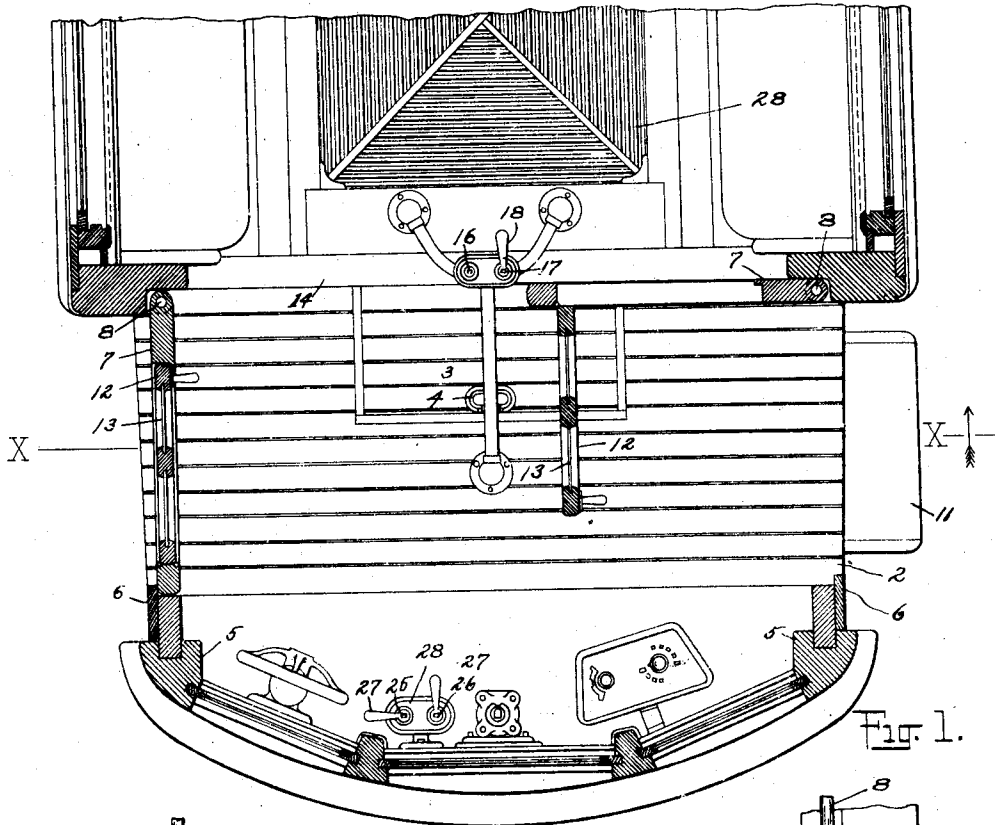
CAR.

APPLICATION FILED AUG. 15, 1910

990,574.

Patented Apr. 25, 1911.

4 SHEETS-SHEET 1.



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4 SHEETS—SHEET 2.

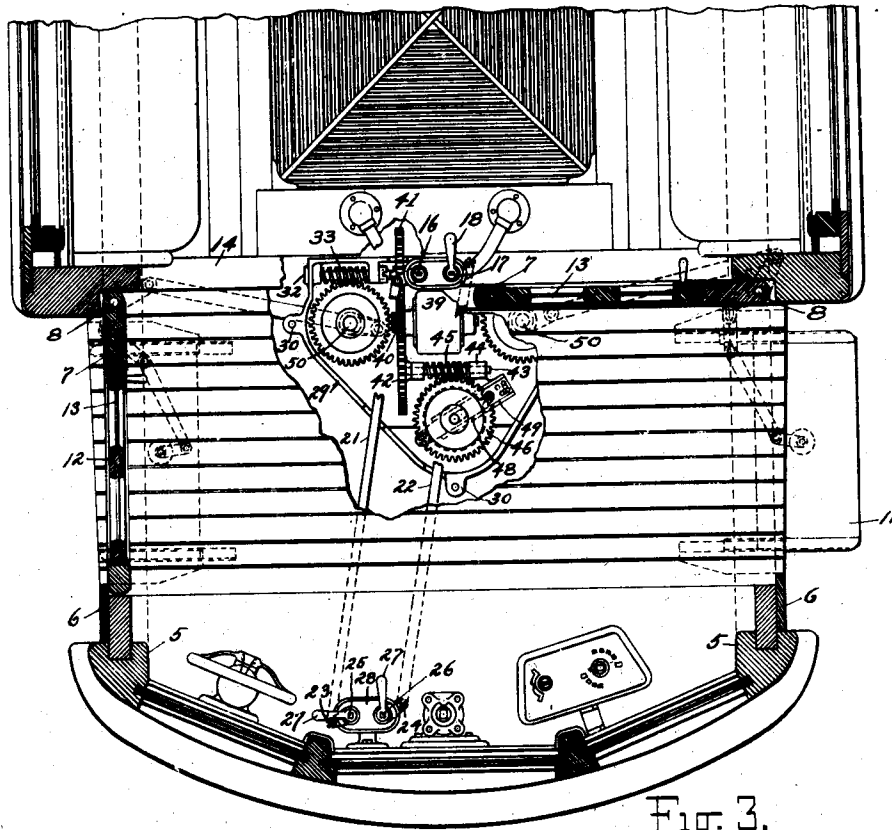


Fig. 3.

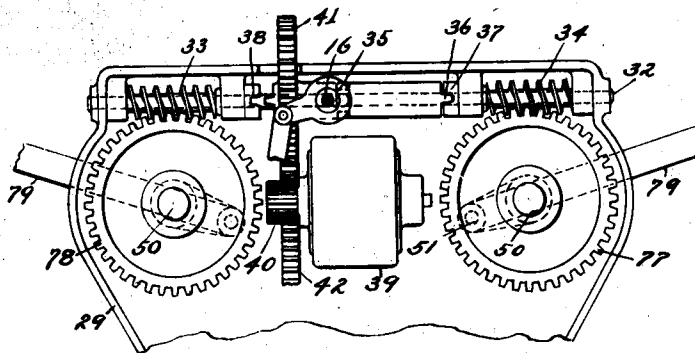


Fig. 4.

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4 SHEETS—SHEET 4.

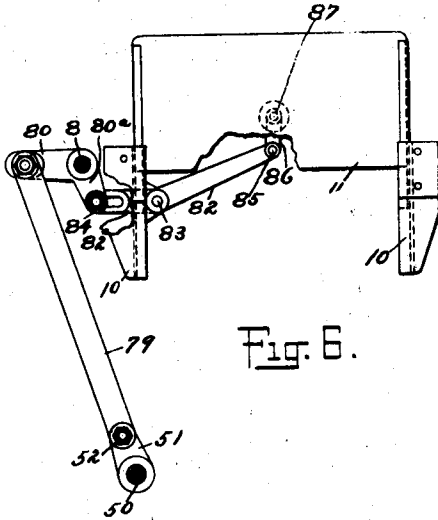


Fig. 6.

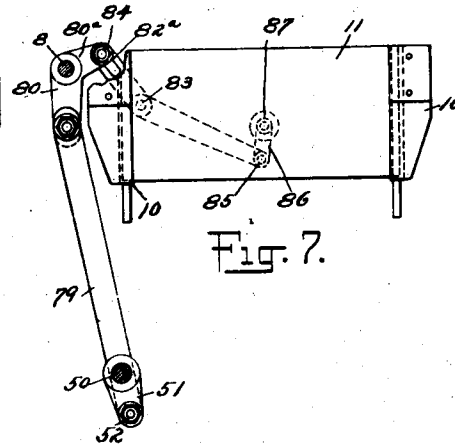


Fig. 7.

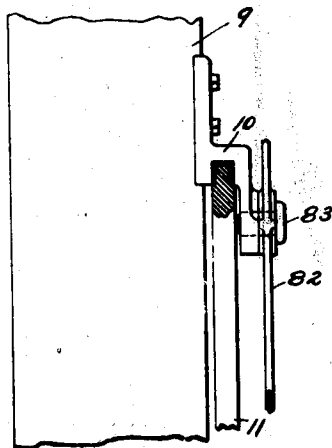


Fig. 8.

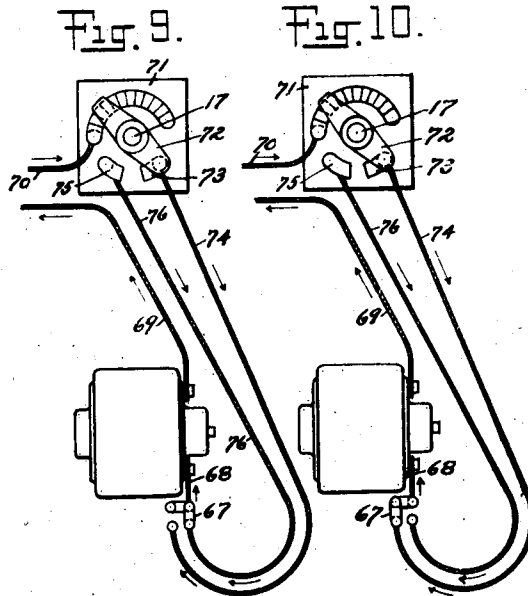


Fig. 9.

Fig. 10.

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# UNITED STATES PATENT OFFICE.

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## CAR.

990,574.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Original application filed December 29, 1909, Serial No. 535,413. Divided and this application filed August 15, 1910. Serial No. 577,217.

*To all whom it may concern:*

Be it known that I, FRANCIS X. MALOCSAY, a citizen of the United States, and a resident of the city of Jersey City, county of Hudson, and State of New Jersey, have invented new and useful Improvements in Cars, of which the following is a specification.

This invention relates to cars of the "pay-as-you-enter" type, is a division of my co-pending application, Serial Number 535,413, filed December 29, 1909, and has for its object to provide in a manner as hereinafter set forth a car of such class with means whereby the entrance or exit doors and the respective steps therefor are operated simultaneously and under the control of the conductor and motorman when standing at their respective ends of the car.

A further object of the invention is to provide a car of the class referred to having each of its ends provided with a pair of doors, either one of which is capable of being opened when occasion so requires, both of which provide a closed end for the car, and either one of which is provided with means whereby the end can be ventilated without swinging the door to open position.

A further object of the invention is to provide a car of the class referred to with a pair of doors at each end thereof, either one of which can be operated by the conductor or the motorman when occasion so requires and when opened by the motorman constituting an exit door and when opened by the conductor constituting what may be termed an entrance door.

Further objects of the invention are to provide a car of the "pay-as-you-enter" type with a pair of doors at each end and provided with means, in a manner as hereinafter set forth, for opening the doors by the conductor and motorman, said means being comparatively simple in its construction and arrangement, strong, durable, efficient in its use, conveniently operated, readily set up with respect to the bottom of the car and the doors and steps, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown one form of the

embodiment of the invention, but it is to be understood that any changes, variations and modifications can be resorted to when coming within the scope of the claims hereunto appended.

In describing the invention in detail, reference is had to the accompanying drawings wherein like reference characters denote corresponding parts throughout the several views and in which:

Figure 1 is a sectional plan of one end of a car in accordance with this invention, showing one of the doors open and the other closed. Fig. 2 is a section on line X—X, Fig. 1, looking in the direction of the arrow. Fig. 3 is a sectional plan of one end of a car in accordance with this invention and further broken away to show in full lines certain of the elements of the invention, this figure further showing in dotted lines other elements of the invention. Fig. 4 is a plan of the operating means for the door and step actuating mechanism. Fig. 5 is a sectional detail of the operating mechanism. Figs. 6, 7 and 8 illustrate the door and step actuating mechanism in various positions, and, Figs. 9 and 10 are diagrammatic views illustrating the electrical circuits.

Referring to the drawings in detail, 1 denotes a car body having a platform or vestibule at each end,—but one is shown and it is to be understood that the description of one applies to the other. The platform or vestibule consists of a floor 2 cut away to provide an opening below which are suspended certain of the elements of the operating mechanism for the door and step actuating means. The opening is closed by a cover 3 provided with a hand-hold 4.

5 denotes the wall of the vestibule which is open at each side and provided with a door jamb 6. The side openings in the walls of the vestibule are adapted to be closed by the doors 7 which are connected to the vertically disposed shafts 8, these latter acting as a fulcrum of the doors when the doors are swung from open to closed position.

The reference character 9 denotes a pair of sills each having attached to the lower face thereof a pair of guide brackets 10 which not only support a step 11 but constitute guides for the steps when moved from inoperative to operative position. The steps 11 when moved slide in the guides 10. The guides 10

project inwardly from the sills 9 and are of such length that when the steps 11 are shifted to inoperative position, these latter will be properly supported or suspended below the vestibule.

Each door 7 has a smaller door 12 hinged within the same and provided with suitable spring hinges so that it will normally tend to swing into and remain in the plane of its respective door where it may be secured by any suitable form of fastener. Each of the doors 12 is provided with suitable transparent panels 13. The doors 12 constitute ventilating ports for the vestibule, when both doors 7 are in closed position. The door 7 is adapted to swing and remain transversely of the car as shown at the right of Fig. 2 and when in this position the step 11 is extended as shown, or may swing to the position shown at the left of Fig. 2 when the step 11 is withdrawn and the car closed on this side. When the door 7 is in closed position, it swings against the jamb 6 and makes a tight joint.

The mechanism for controlling the doors and which also controls the steps is as follows: A rail 14 is secured to the car body and upon which is mounted a plate 15 provided with a pair of vertically extending parallel rods 16, 17 which also extend below the floor 1. The upper end of each of the rods 16 and 17 is preferably squared so as to receive a handle 18 by means of which either of the rods may be conveniently rotated. To the lower end of the rod 16 is a fixed stud arm 19 and to the lower end of the rod 17 is a fixed stud arm 20 (best shown in Fig. 5). The arm 19 is pivotally connected to a crank 21 and the arm 20 is pivotally connected to a link 22. The links 21 and 22 extend to stud arms 23, 24 carried on the lower ends of the vertical shafts 25, 26 which are provided with the handles 27 and which are supported by a plate 28 placed conveniently for the motorman so that it is easy for him to control the door and step mechanism when occasion so requires. The conductor may control the door and step mechanism by manipulating the rods 16 and 17. The rods 16 and 17 are placed in close proximity to a mat upon which the conductor stands, which mat is arranged in proximity to the rail 14.

Below the opening in the floor 2 is arranged a casting 29 secured in position by the hold-fast devices 30 and provided with a depending portion 31. The casting 29 is preferably triangular in general outline. A transversely-extending shaft 32 is journaled along one side of the casting 29 and is divided into three sections of which only two are operated at the same time, the third section remaining stationary. The two end sections of the shaft 32 are provided with worms 33, 34 respectively and the center section is provided with a clutch mechanism 35 by means

of which either the worm 33 or the worm 34 may be driven, but not both at once. In the embodiment shown, the clutch mechanism 35 is provided with projections 36 at each end which are adapted to enter into corresponding recesses 37 formed in collars 38 fixed to the inner ends of the end sections of the shaft 32, so that when one set of projections 36 enters one set of recesses 37, one or the other of the worm sections of the shaft 32 will be rotated simultaneously with the intermediate or clutch section of said shaft 32. A small electric motor 39 is mounted in the casting 29 and preferably in the depending portion 31 of said casting and the shaft of the motor 39 is provided with a pinion 40 which meshes with the gears 41, 42. The gear 42 is fixed to a small shaft 43 journaled in brackets 44 and carrying a worm 45 which meshes with a worm gear 46 disposed on a vertical axis 47 which carries a suitable switch throwing mechanism 48 for throwing a switch 49 from one pole to the other, as shown in Figs. 9 and 10, thereby breaking the circuit and stopping the motor and causing the motor to be reversed, when again energized. The circuits and switches by which this is brought about are as follows: The field circuits of the motor 39 are not shown or indicated as they are obvious. The current always passes through them in the same direction and is not changed. The armature circuit is controlled through the switch 49, a conductor 68 running therefrom to one of the brushes and a conductor 69 from the other brush to the source of supply. A conductor 70 extends from the source of supply to a rheostat and reversing switch 71. From the coils of this rheostat the circuit is continued through the rotating bar 72 and from there across to a contact strip 73 which is connected to a conductor 74 running to the switch 67 or else the bar 72 is in engagement with a second contact strip 75 which is connected with a conductor 76 that runs to the other pole of the switch 67.

In Fig. 9 the motor is shown connected so as to run in the reverse direction from that indicated in Fig. 10. The arm 72 is controlled directly by the handle 18 on the rod 17 or the handle 27 on the shaft 26.

When the motor 39 drives the pinion 40, as above stated, either the worm 33 or the worm 34 is rotated. In Fig. 3 the mechanism is shown so as to operate the worm 34, and this worm drives the gear 77 which is identical in all respects with a gear 78, the latter being adapted to be actuated by the worm 33.

Each of the gears 77 and 78 is fixed to a shaft 50 journaled in the casting 29 and provided with a crank arm 51 which is articulated as at 52 to a link 79. Fixed to each of the shafts 8 is a bell crank lever having its

arms indicated by the reference characters 80 and 80<sup>a</sup>. The arm 80 is articulated to a link 79 and the arm 80<sup>a</sup> is attached to the arm 82<sup>a</sup> of a bell crank lever mounted upon a fulcrum 83 supported by one of the guides 10. The connection between the arm 80<sup>a</sup> and the arm 82<sup>a</sup> is a slight pivotal one as at 84, the other arm of the bell crank lever which is fulcrumed as at 83 is indicated by the reference character 82 and is pivotally-connected as at 85 to a link 86 which is pivotally-connected as at 87 to the lower face of the step 11. It will be noted that the bell crank lever comprising the arms 80 and 80<sup>a</sup> is fixed to the shaft 8 so that the said lever will swing simultaneously with the opening and closing of the door whereby the step 11 through the medium of the connections between the step and the arm 80<sup>a</sup> will also be moved simultaneously with the door.

The mechanism as described provides means which causes the step 11 to move simultaneously with the door 7 and to be withdrawn when the door is in the position shown at the left of Fig. 3 and extended when the door is in the position shown at the right of Fig. 3 so that when the entrance is open, the step will be extended and ready for use.

From the foregoing construction it is obvious that by shifting the rod 25, one of the doors 7 and a step 11 will be moved in unison by the motorman.

What I claim is:

1. A step and means for mounting the same so that it will slide, a door and mechanism embodying linked connections parallel with the step for simultaneously sliding said step and moving said door.
2. A step and means for mounting the same so that it can slide, a door, an electrically-operated mechanism for simultaneously moving said door and sliding said step, and means for throwing said electrically-operated means into operation.
3. A step and means for mounting the same so that it will slide, a door, link and lever mechanism for simultaneously moving said door and sliding said step, an electrically driven means for operating said mechanism, and means for clutching said mechanism to said electrically driven means.
4. A step and means for mounting the

same so that it will slide, a door, link and lever mechanism for simultaneously moving said door and sliding said step, an electrically driven means for operating said mechanism, means for clutching said mechanism to said electrically driven means and means whereby said clutching means can be actuated from a plurality of points.

5. A pivotally-mounted door and means for mounting the same, a worm gear; and means for mounting the same, a link connecting said worm gear and door mounting, a worm for turning said worm gear and electric motor for driving said worm, a step mounted for movement with said door.

6. A pair of doors pivotally-mounted and means for mounting the same, a pair of worm gears and links connecting each of said gears with one of said mountings, worms adapted to drive said gears, a gear adapted to drive one or the other of said worms independent of each other, and an electric motor for driving said gear, a step mounted for movement with said door.

7. An electric motor, a gear driven by said motor, a worm driven by said gear, a worm gear driven by said worm, a movably mounted step, and means driven by said motor for opening and closing the door, and sliding said step.

8. Two pairs of shafts or rods, cranks thereon, a pair of links connecting the cranks of one pair of rods to the cranks of the other pair of rods, a slidably mounted step, doors and means for pivotally-mounting the same, and means controlled by said shafts or rods for positively opening or closing said doors and sliding said step.

9. A step and means for mounting the same so that it will slide, a door and an electrically-actuated mechanism for simultaneously sliding said step and moving said door.

10. A slidable step, a pivoted door actuating mechanism for the door and step connected to the pivot of the door and to the step, and an electrically-driven means for operating said actuating mechanism.

Signed at the city, county and State of New York, this 30th day of July, 1910.

FRANCIS XAVIER MALOCSAY.

Witnesses:

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H. RADZINSKY.