

F. X. MALOCSAY.

CAR DOOR.

APPLICATION FILED DEC. 9, 1908.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 1.

942,862

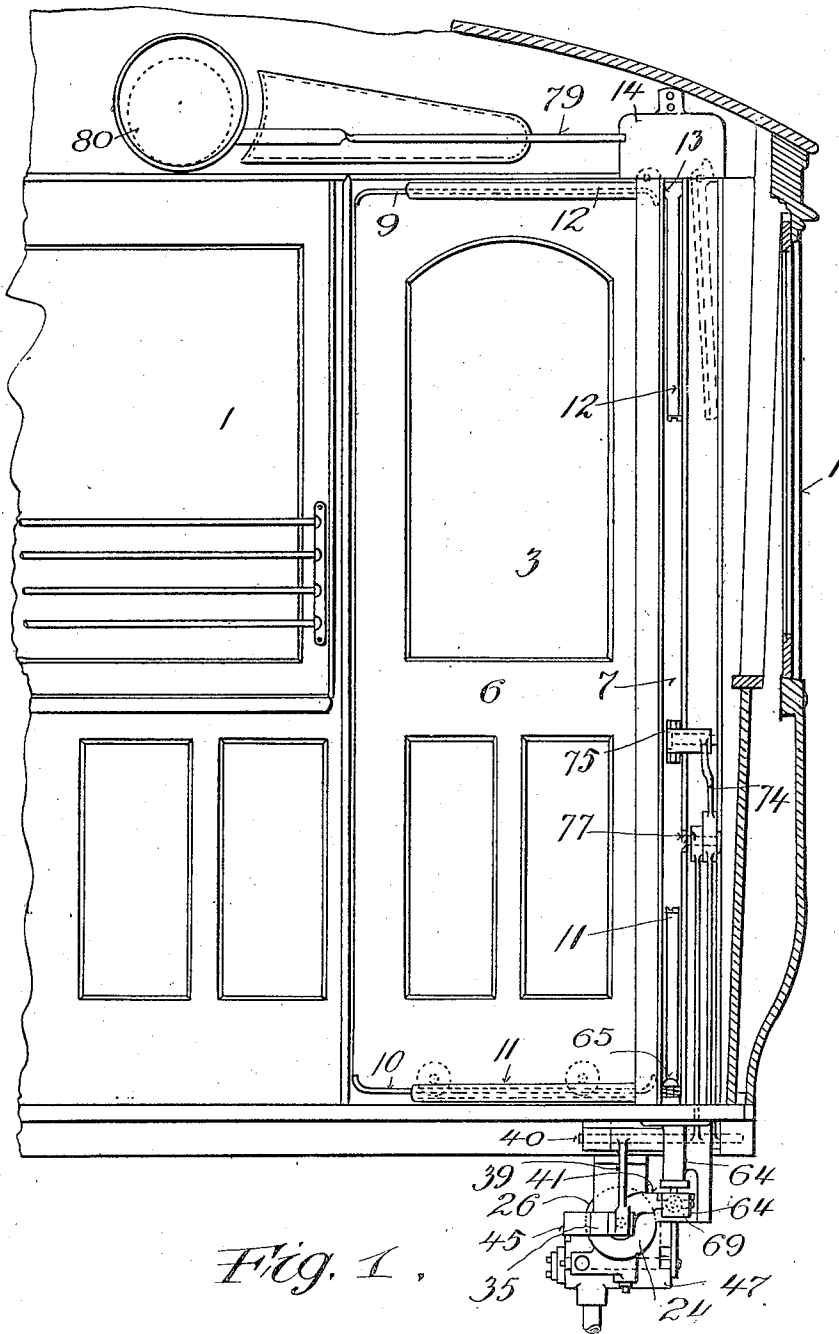


Fig. 1.

Witnesses:  
C. W. Benjamin  
G. J. Charnock

Inventor  
Francis X. Malocsay  
By his Attorney  
Joseph L. Levy

F. X. MALOCSAY.

CAR DOOR.

APPLICATION FILED DEC. 9, 1908.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 2.

942,862.

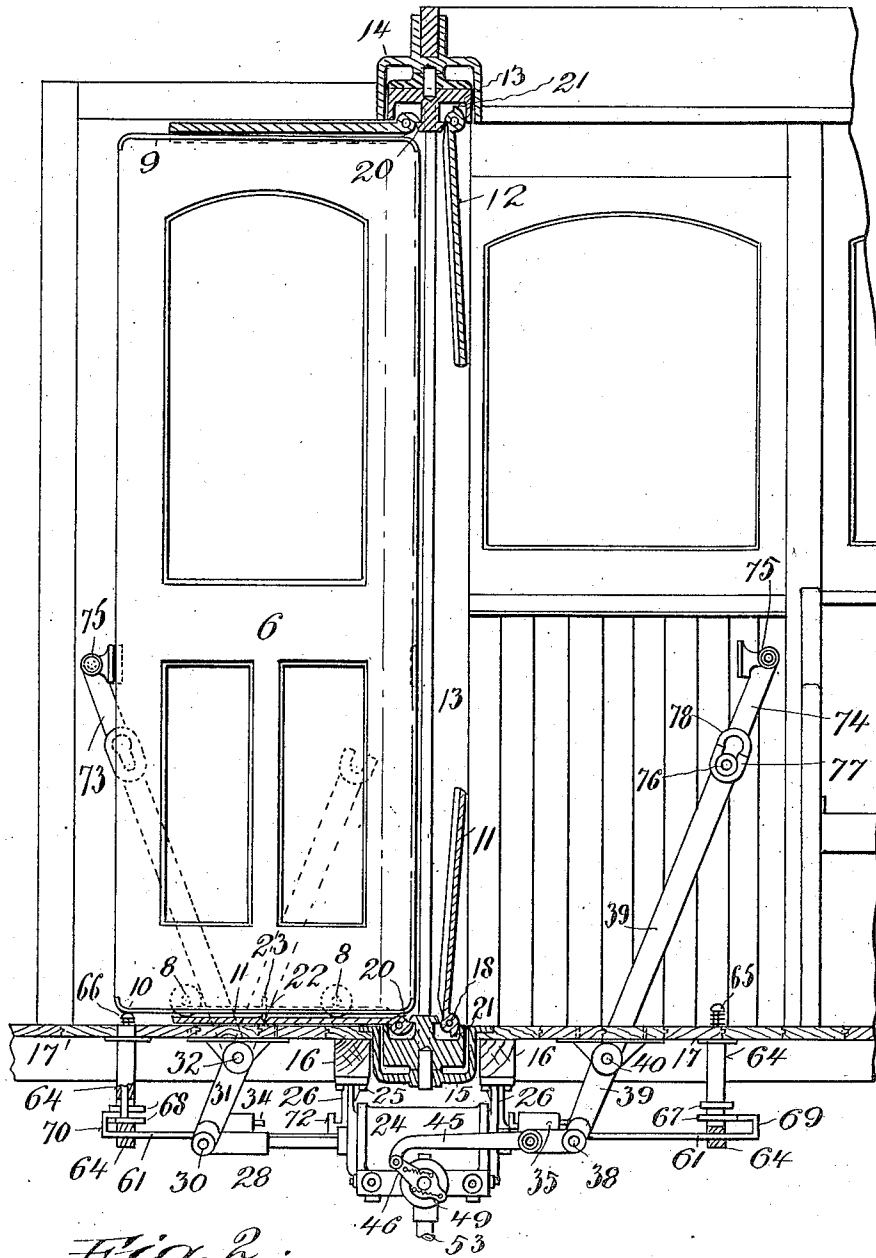


Fig. 2.

Witnesses:  
C. W. Benjamin  
G. J. Arnold

Inventor  
Francis X. Malocsay  
By his Attorney  
Joseph R. Levy

F. X. MALOCSAY.

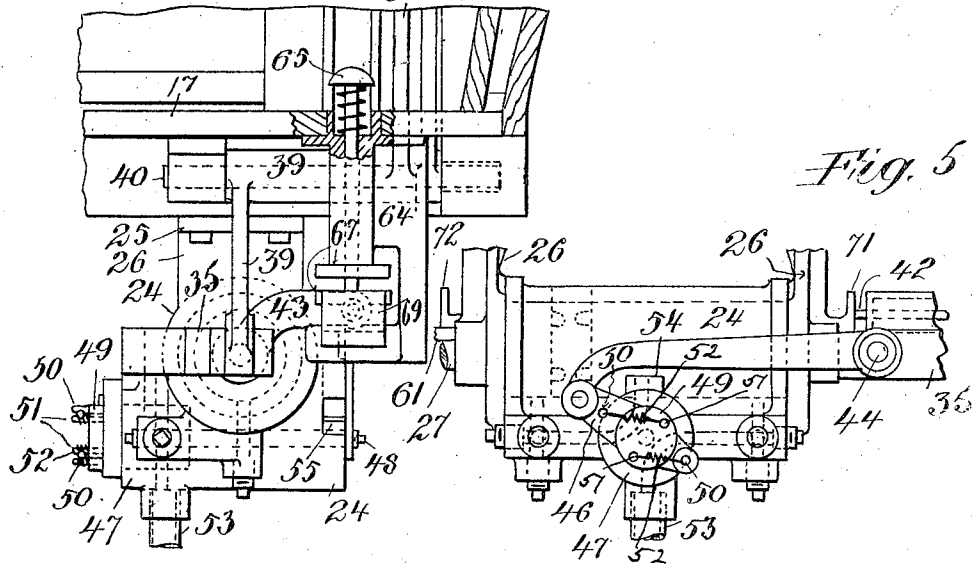
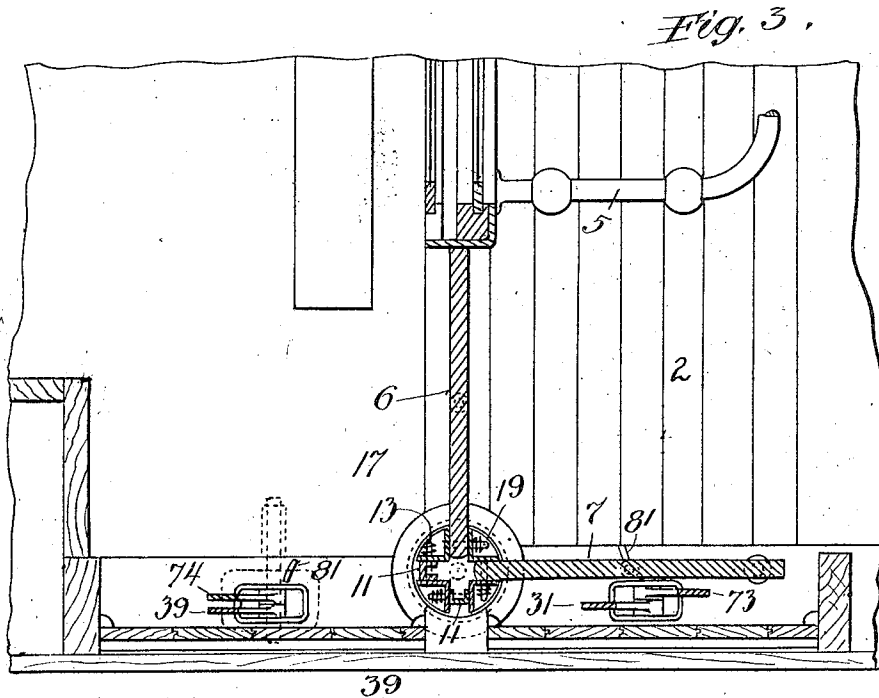
CAR DOOR.

APPLICATION FILED DEC. 9, 1908.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 3.

942,862.



*Fig. 4*

Witnesses:  
*Chas. Benjamin*  
*G. J. Leonard*

Inventor  
*Francis X. Malocsay*  
 By his Attorney  
*Joseph L. Perry*

F. X. MALOCSAY.

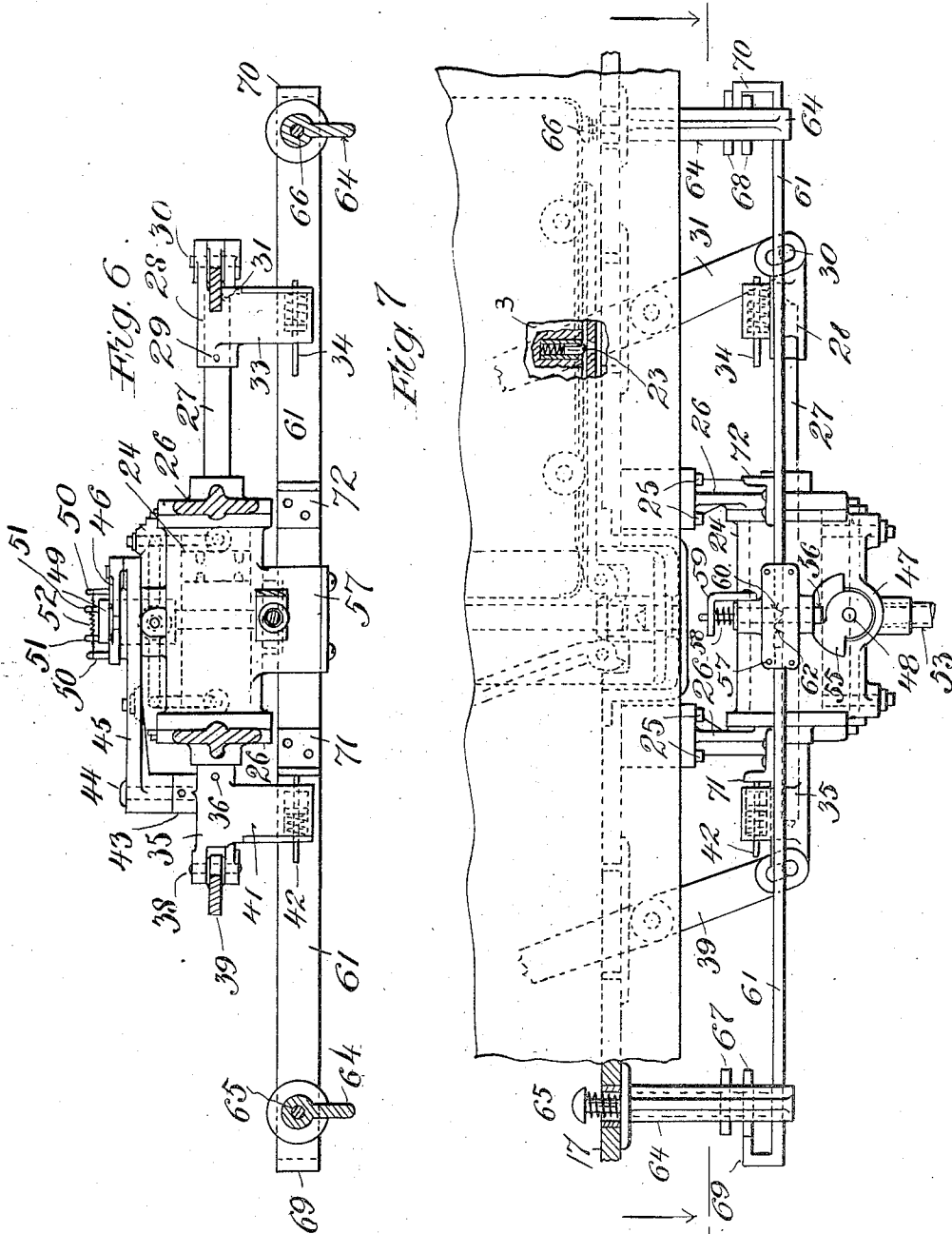
CAR DOOR.

APPLICATION FILED DEC. 9, 1908.

Patented Dec. 7, 1909.

4 SHEETS—SHEET 4.

942,862.



Witnesses:  
C. W. Benjamin  
G. J. Arnold

Inventor  
Francis X. Malocsay  
By his Attorney  
Joseph L. Perry

# UNITED STATES PATENT OFFICE.

FRANCIS X. MALOCSAY, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO WILLIAM H. HEULINGS, OF PHILADELPHIA, PENNSYLVANIA.

## CAR-DOOR.

942,862.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Original application filed September 1, 1908, Serial No. 451,161. Divided and this application filed December 9, 1908. Serial No. 466,618.

### *To all whom it may concern:*

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

The object of my invention is to provide a car of this class in which the doors are so arranged that at the rear end of the car, the regular entrance door will operate so as to permit passengers to enter the car, but not to leave the car, and the doors at the other end will permit the passengers to leave the car, and when the car runs in the opposite direction, the doors can be made to operate in the reverse manner, that is, the rear door which was the front door, will operate so as to admit passengers and the other door will operate so as to permit the egress of passengers.

This application is a division of my application filed September 1st, 1908; Ser. No. 451,161.

For a more particular description of this invention, reference is to be had to the accompanying drawings forming a part hereof, in which:

Figure 1 is a sectional view showing one embodiment of my invention, the section being taken through a portion of the interior of a car looking outwardly. Fig. 2 is a longitudinal section of the structure shown in Fig. 1. Fig. 3 is a sectional plan view of a portion of the car. Figs. 4, 5, 6 and 7 are detailed views showing portions of the mechanism for shifting the doors.

Throughout the various views of the drawings, similar reference characters designate similar parts.

As stated above, my invention is applicable to what are known as "pay-as-you-enter cars" 1 which have the usual large platforms 2, and doors 3.

The essence of my invention resides, as above pointed out, in the doors 3 and the parts adjacent thereto and connected therewith. These cars are also provided with the usual railing 5, behind which the conductor stands and which separates the passengers getting off from those getting on.

In the structure shown in Figs. 1 to 7 in-

clusive, the doors 3 are two in number and designated 6 and 7. They are identical in all respects so that a description of one will answer for both. Each of these doors is provided with suitable rollers 8 mounted at its bottom, and at its upper and lower edges, it is reinforced by metal strips 9 and 10 respectively. The rollers 8 run on a suitable guide 11, of which there are four, and the upper end of the door moves in a similar guide 12, of which there are four and all of them are similar to the guides 11.

The guides 11 are pivoted in the vertical pivot 13, which extends the length of the door and has two large slots at right angles running therethrough as will appear below. The upper end of the pivot 13 is suitably journaled in a socket 14 secured to a part of the car and the lower end is journaled in a bearing 15 which is below or flush with the floor 17 inserted between the cross sills 16 of the car. The pivots 18 of the guides 11 have the springs 19 secured thereto in such a manner that the guides 11 shift upwardly into a substantially vertical position well within the pivot 13 when they do not carry a door and the guides 12 fall by gravity when no door raises them. The pivot 13 is preferably provided with suitable stops 20 to engage with similar stops 21 on the guides 11 and 12 so that these guides will assume their correct positions when a door is between them. The guides 11 are also each provided with a perforation 22 adapted to receive a spring-pressed bolt 23 so that the door is securely held against improper movement.

The mechanism for shifting the doors is as follows: The cross sills 16 support an air cylinder 24 which is secured to them in any suitable manner, as by bolts 25 passing through ears 26 which are preferably integral with the cylinder heads. In this cylinder is mounted an ordinary piston provided with a piston-rod 27 which rod extends through the heads at each end of the cylinder in the conventional manner. One end of the piston 27 is provided with casting 28 which is fixed to said piston by a pin 29 and which also has a loose pivot 30 by which it is connected to a lever 31 fulcrumed at 32 and extending above the floor 17 as

will appear below. The casting is also provided with a projecting ear 33 in which is mounted a spring-pressed pin 34 for a purpose which will appear below. The other end of the piston rod 27 is provided with a similar casting 35 which is secured by a pin 36 to the piston rod 27 and has a loose pivot 38 which connects this casting with a lever 39 fulcrumed at 40 just below the floor 17 and this casting 35 is also provided with an ear 41 in which is mounted a spring-pressed bolt 42. Opposite the ear 41 is a projection 43 on which is a pivot 44 which carries a link 45 that is pivotally connected with a crank 46 of a valve 47. The crank 46 is loosely mounted on the valve-stem 48 of the valve 47 and a disk 49 is fixedly mounted thereon. The crank 46 is provided with pins 50 and the disk 49 with pins 51. The pins 50 and 51 are connected by springs 52 so that when the crank 46 is moved, the disk 49 at first has no movement and when it moves, it shifts rapidly thereby promptly reversing the valve. Valve 47 is the usual fourway valve, one port 53 being provided for the admission of air under pressure and another port 54 for the exhaust. The cylinder 24 is provided with the conventional ports which register with the ports in the valve 47 so that one end of the cylinder will be charged while the other end is exhausted. As these details are all of the conventional form, a more detailed description is unnecessary. The other end of the valve spindle 48 from the end with the disk 49 is provided with a segmental stop 55 which is fixed thereon in any suitable manner and adapted to impinge against a stop 56 in a casing 57 and normally held in its lowest position by a spring 58 pressing against a bracket 59 secured to the casing 57. The bolt 56 is provided with a central perforation and the upper wall of this perforation contains a downwardly extending projection 60 shown in dotted lines in Fig. 7, and the rod 61 slides in casing 57 and has a similar projection 62 passing through the slot in the bolt 56 and adapted to raise the said bolt against the tension of the spring 58 so that the bolt 56 is raised at times clear of the stop 55. The rod 61 is supported at each end by brackets 64, which brackets are supported from the floor 17 and are identical. These brackets are provided with spring-pressed rods 65 and 66 respectively, which rods carry parallel plates 67 and 68 respectively, the plates being separated by the thickness of the bar 61. The bar 61 is bent upwardly and then inwardly at each end to form hooks 69 and 70 which are adapted to pass between or abut against the plates 67 and 68 respectively. The bar 61 is also provided with stops 71 and 72 respectively, against which the spring-pressed bolts 42 and 34 are adapted to impinge.

The pivots 32 and 40 carry in addition to the levers 31 and 39 respectively, a second set of levers 73 and 74 respectively, each of which is provided with a pusher 75 which is adapted to shove the door 6 or 7 when the pusher is in operation. The pusher is only in operation when the lever on which it is mounted is connected to the other lever on the same fulcrum. In Fig. 2 the lever 39 is shown secured to the lever 54 by means of a bolt 76. Only one bolt 76 is provided in order that only one of the pushers 75 will operate. This bolt is adapted to have one part rest in a crotch 77 in the upper end of the lever 31 and it has another part resting in a key-slot 78 on the lever 74 or on lever 73.

The operation of my improved device is as follows: Assuming that the door 6 closes the entrance, a passenger passes by the railing 5 after paying his fare to the conductor, and swings the door on the pivot 13 until the door is parallel with the side wall of the car, that is, at right angles to the position which it occupies when closing the entrance. Meanwhile the door 7 has swung around behind the passenger and closed the entrance without leaving sufficient space for two passengers to get between the doors 6 and 7. When the door 6 is in the last position above described, its guide 11 is also parallel with the longitudinal axis of the car and the door itself impinges against the rod 65 thereby depressing it in its bracket 64. The depression of the rod 65 lowers its plate 67 and frees the rod 61 so that it can move in the direction of its length as it does under the action of the spring-pressed bolt 42 thereby raising the bolt 56 and permitting the stop 55 to pass under said bolt. At the same time the action of the spring-pressed bolt 42 causes the casting 45 to move toward the plates 67, that is to the left in the position shown in Figs. 6 and 7, whereby the valve 47 is immediately reversed thereby causing the piston 27 to move positively under air pressure and throwing the valve under the action of both air pressure and the action of the spring-pressed bolt 42 and the piston rod 27 continues its movement to the limit. As soon as the stop 55 has passed under the bolt 56 the spring 58 forces this bolt downward thereby securing the valve 47 against movement. Meanwhile the lever 31 has been inoperative although moved, but the lever 39 which is connected to the pusher 75 by the lever 74 has been operated, and has shoved the door 6 until it has gone through the pivot 13 and its spring-pressed bolt 23 has entered the perforation 22 in the slide 11 as shown in Fig. 2. When the bolt 66 is depressed the plates 68 are correspondingly lowered and then the hook end 70 of the bar 61 passes between them, as shown in Fig. 2 thereby permitting the bolt 34 to actuate said bar 61 in the opposite di-

rection in which the bolt 42 shifts the bar whereby the bolt 56 is again raised in the manner above described and the piston rod 27 is shifted sufficiently to shift the valve in the opposite direction and the lever 31 swings idly back and the lever 73 remains as shown in Fig. 2 and then the mechanism is thrown into the position indicated in Fig. 2 when the mechanism is ready for the next passenger. The pivot 13 is connected by a bar 79 or other suitable means to a cash register 80 so that every time this pivot 13 makes a quarter turn in the direction above described a fare is registered. A suitable ratchet, not shown, is provided to prevent the door and the pivot 13 from turning in the opposite direction. The above description is given to show how the door works for ingress. For egress it is obvious that it must work in the opposite direction and this is done by shifting the bolt 76 from the levers 39 and 74 to the levers 31 and 73 and by shifting the ratchet mechanism so that the levers 39 and 74 become inoperative and the levers 31 and 73 become operative.

This description sets forth how a door may be provided for "pay-as-you-enter cars" which operates either at the entrance or exit end of the car, as desired.

Cams 81 may be provided near the levers 31 and 39 and on the floor of the car, as shown in Fig. 3, to throw the doors into their proper position and hold them when thrown. These cams 81 rub against the under surface of the slides 11 and operate to shift the door whenever it is thrown on them.

While I have shown and described one embodiment of my invention, it is evident that it is not restricted thereto, but is broad enough to cover all structures that come within the scope of the annexed claims.

What I claim is:—

1. In a car of the class described, a door, guides mounted on pivots, said door having angularly disposed members, means for mounting and actuating said door so that it may be used for ingress purposes only and means for changing said door so that it may be used for exit purposes only, and means cooperating with said guides to lock the door against improper movement.

2. In a car of the class described, a door, guides mounted on pivots, said door having angularly disposed members, means for mounting and actuating said door so that it may be used for ingress purposes only and means for changing said door so that it may be used for exit purposes only, means cooperating with said guides to lock the door against improper movement, and springs secured to the pivots on said guides to shift them upwardly into a vertical position well within their pivot.

3. In a car of the class described, a car door comprising a pivot, panels adapted to

swing about and move through the same, pivotally mounted guides, and means for permitting them to close well within their pivot.

4. In a car of the class described, a door provided with a pivot, sliding panels supported by said pivot and held thereby at right angles to each other and adapted to slide through such pivot, pivotally mounted guides, and means for sliding the panels through said pivot.

5. In a car of the class described, a vertical pivot extending the length of the door and having right angled slots therethrough, guides pivoted in such vertical pivot, said pivot and guides having co-acting stops, and means for sliding said panels through said pivot.

6. In a car of the class described, a vertical pivot having right angled slots therethrough, guides pivoted in said vertical pivot, doors supported in said guides to turn through an angle of 180° while supported by said guides, and means for forcing the panels of the doors through said pivot.

7. In a car of the class described, a vertical pivot having stops therethrough at right angles to each other, guides pivoted in said vertical pivot, panels resting on some of the heads so said panels may swing about said pivot through an angle of 180° and then pass through the same, and means for forcing said panels to move through said pivot.

8. In a car of the class described, a vertical pivot having stops therethrough at right angles to each other, guides pivoted in said vertical pivot, panels resting on some of the slides so said panels may swing about said pivot through an angle of 180° and then pass through the same, and pneumatic means for forcing said panels to move through said pivot.

9. In a car of the class described, a door comprising a plurality of movably mounted panels and means for supporting the same so that said door will move through its pivot and permit passengers to pass in one direction only when used for an ingress door and means attached to said door whereby it can be changed so as to act as an exit door.

10. In a car of the class described, a door embodying a plurality of pivotally mounted panels and means for mounting the same so that it can open only in one direction and permit one person to pass at one opening.

11. In a car of the class described, a door embodying a plurality of pivotally mounted panels and means for mounting the same so that only one person can pass through said door at one opening and other means connected with said mounting adapted to operate when first mentioned means is inoperative to permit persons to pass through said door when leaving the car.

12. In a device of the class described, a

car door provided with two sliding panels held at right angles to each other, a pivot supporting said panels and means for forcing said panels to move through said pivot after turning about said pivot.

13. In a device of the class described, a door comprising two panels mounted by a common pivot and means for causing one of said doors to move through said pivot after turning about the same.

14. In a device of the class described, a car door, two panels and a pivot in which said panels are mounted and automatic means for forcing one of said doors through said pivot after the same has turned about said pivot.

15. In a device of the class described, a car door comprising a pair of panels held at an angle to each other, a common pivot by which said doors are mounted and about which they turn, and pneumatic, automatic means for forcing said panels to move

through said pivot after turning about the same.

16. In a device of the class described, a car door comprising two panels held at right angles to each other and mounted by a common pivot and means for forcing said doors through said pivot in either direction after turning about the same.

17. In a device of the class described, a car door, comprising two panels held at right angles to each other, a common pivot for supporting said panels, and levers adapted to move said doors through said pivot after they have revolved about said pivot and means for causing one or the other of said levers to shift said panels.

Signed at the city, county and State of New York, this 26th day of November, 1908.

FRANCIS X. MALOCSAY.

Witnesses:

GUSTAVE I. ARMOND,  
HARRY RADZINSKY.