

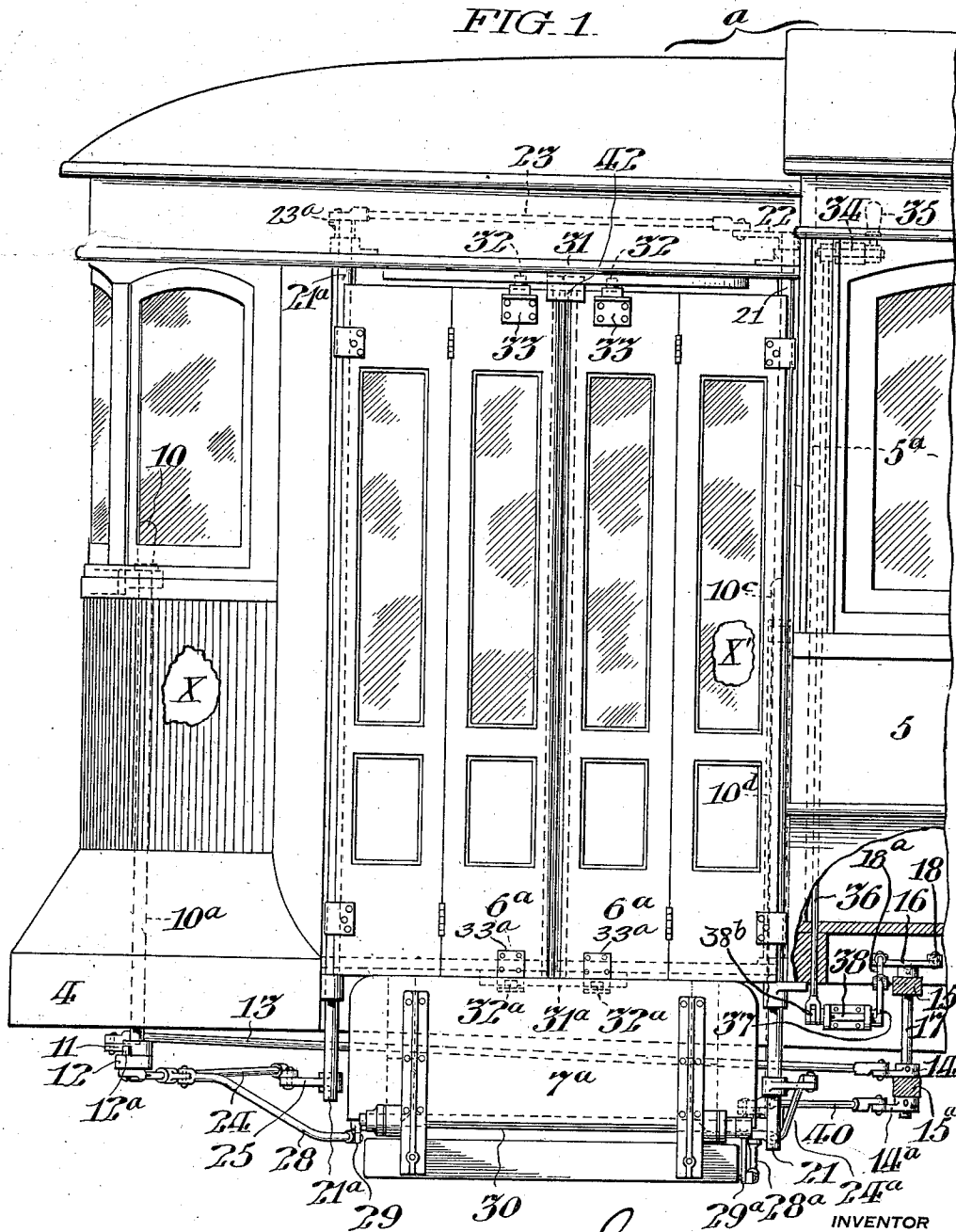
J. H. E. BRANSON,
DOOR AND STEP OPERATING MECHANISM FOR PASSENGER RAILWAY CARS.
1,014,863.

APPLICATION FILED MAR. 22, 1911.

Patented Jan. 16, 1912.

6 SHEETS—SHEET 1.

FIG. 1.



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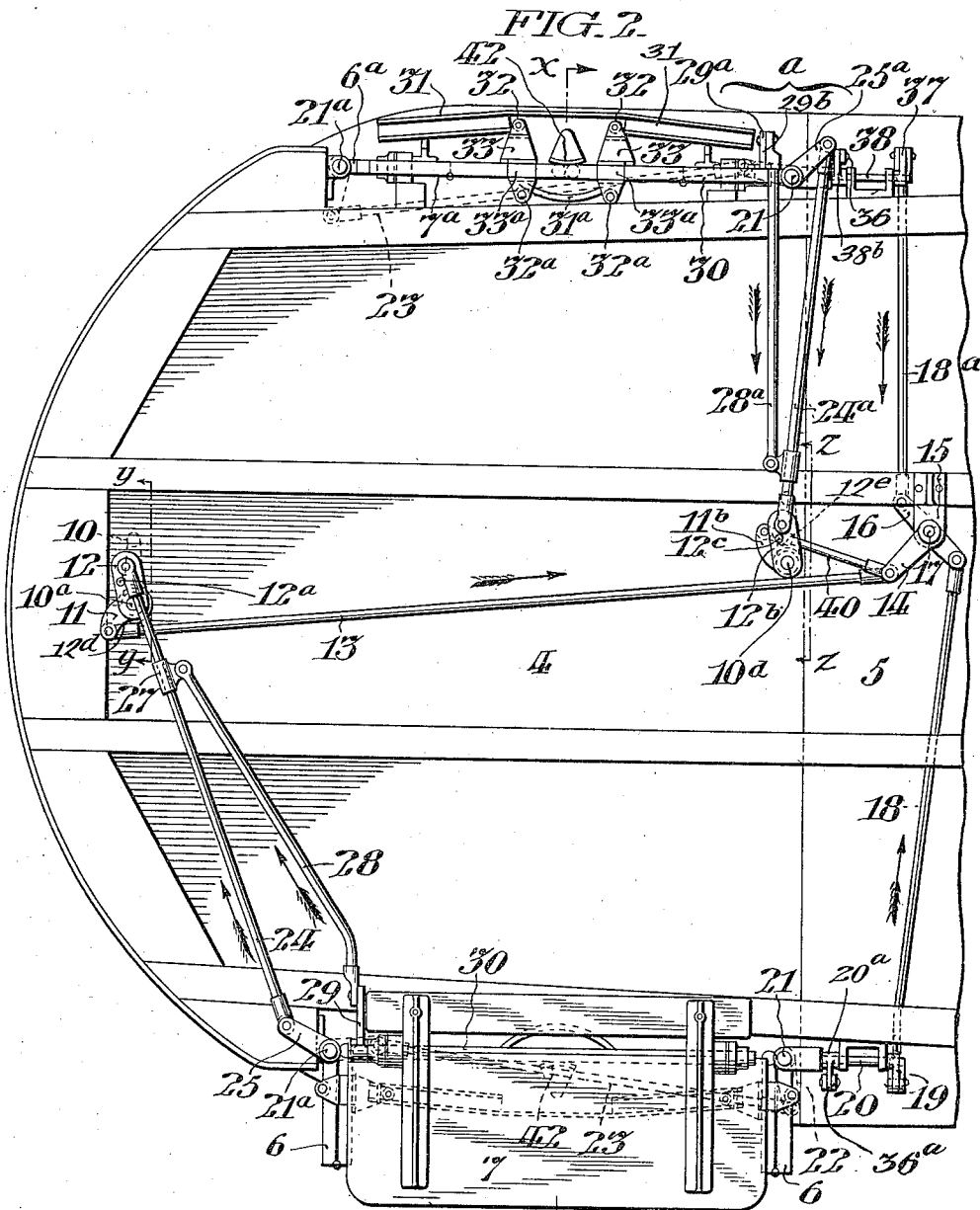
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6 SHEETS-SHEET 2.



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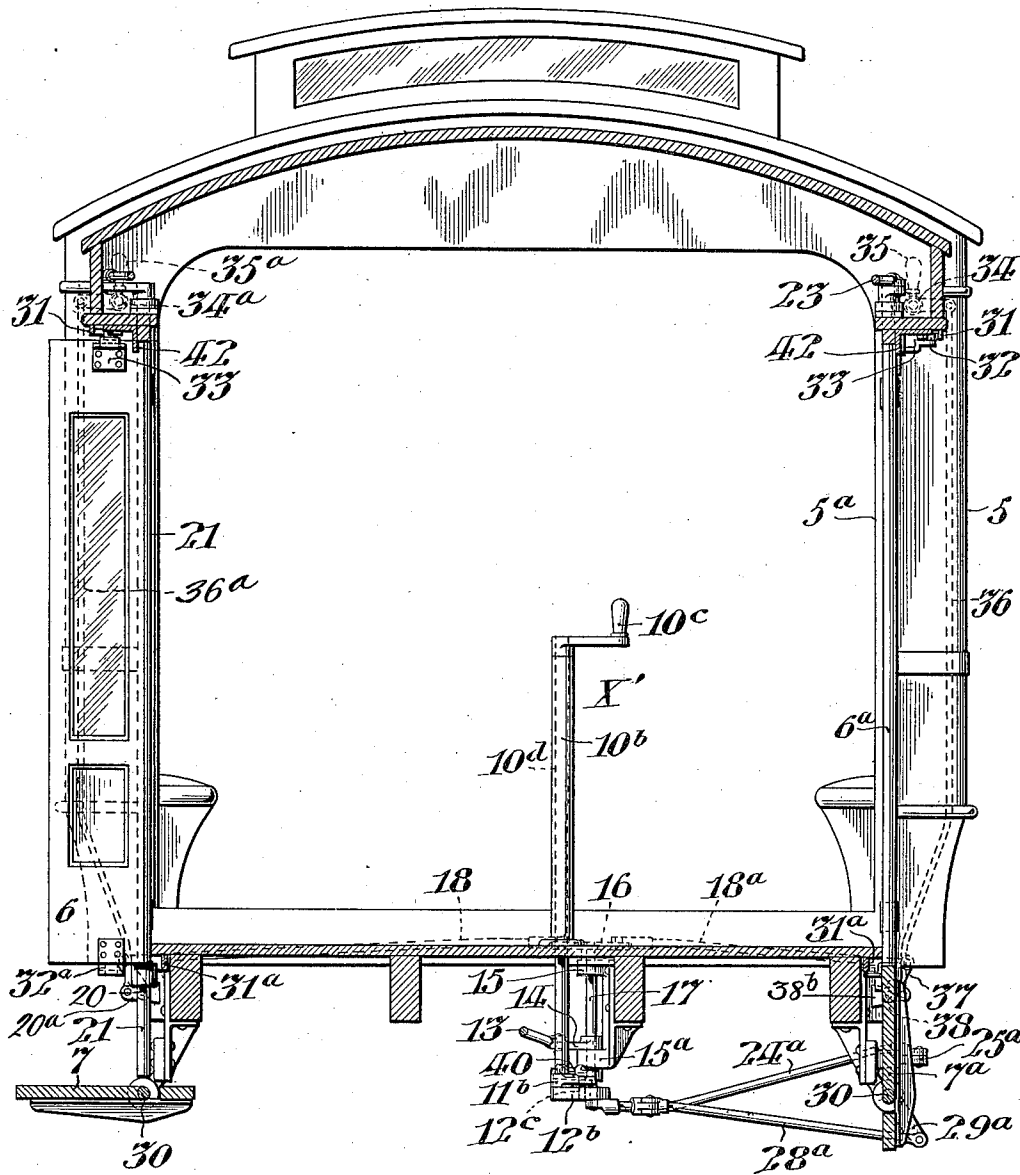
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6 SHEETS—SHEET 3.

FIG. 3.



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FIG. 7. FIG. 8.

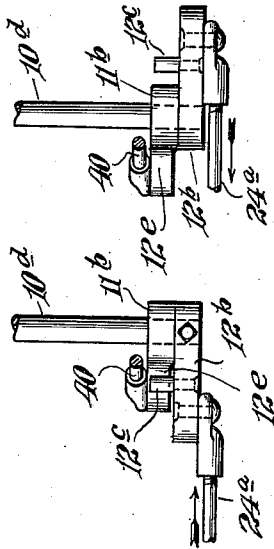


FIG. 5.

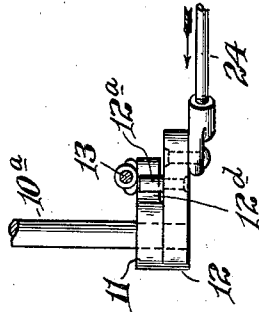


FIG. 4.

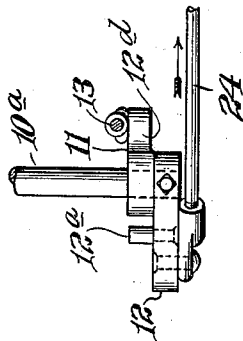


FIG. 9.

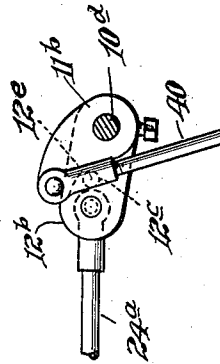
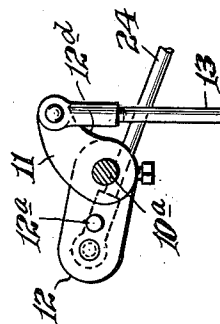


FIG. 6.



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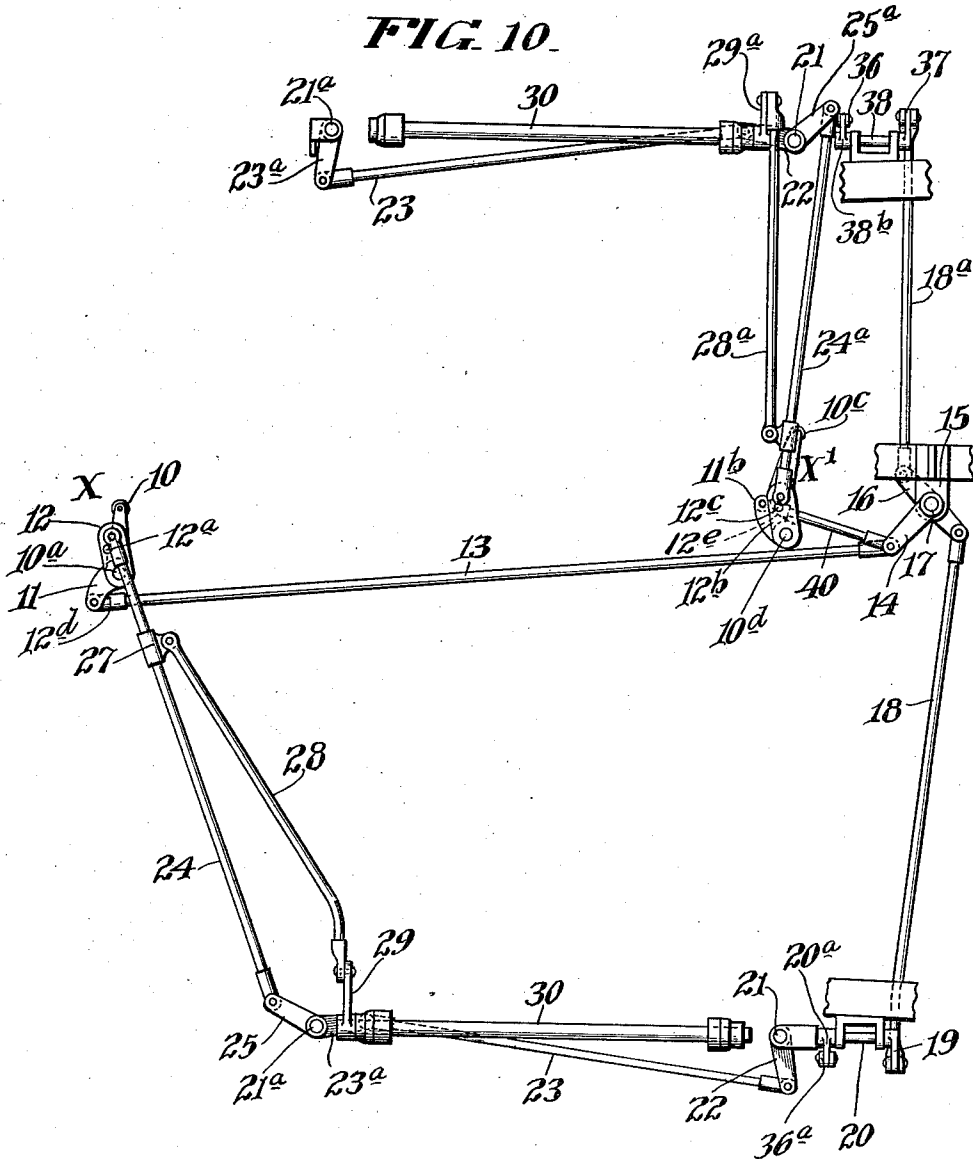
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6 SHEETS—SHEET 5.



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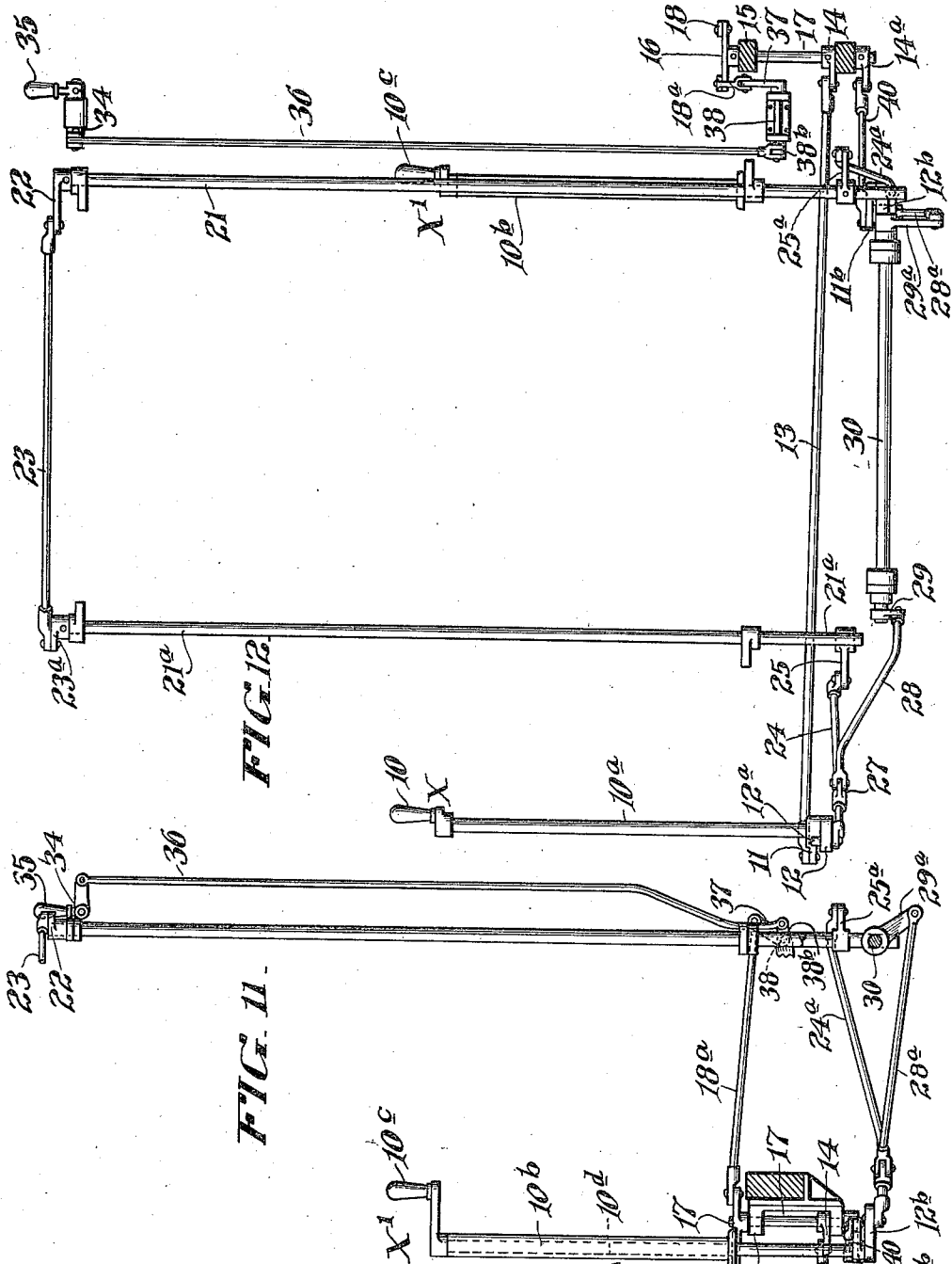
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6 SHEETS-SHEET 6.



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UNITED STATES PATENT OFFICE.

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DOOR AND STEP OPERATING MECHANISM FOR PASSENGER RAILWAY-CARS.

1,014,863.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed March 22, 1911. Serial No. 616,103.

To all whom it may concern:

Be it known that I, JAMES H. E. BRANSON, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Door and Step Operating Mechanism for Passenger Railway-Cars, of which the following is a specification.

My invention has relation to manual means for operating mechanism to open and close car doors and a movable step in closable platform railway cars of a type which have become known as "pay-within-cars," either from a motorman's station, or a conductor's station or in case of emergency, to open the doors and lower the steps on both sides of the car by a person from within the car or by a person outside of the car, to enable passengers to be quickly freed from the car.

The principal object of my present invention is to provide a closable platform passenger car with hinged double-twin doors shiftable with a movable step to provide safe entrance or exit for passengers to or from the car, the arrangement being such as that opening of the hinged double-twin doors and step on one side is effected simultaneously from a motorman's station on the platform or the hinged double-twin doors opened and a step lowered on the opposite side from the conductor's station in the rear of the platform or in case of emergency the hinged double-twin doors opened and the steps lowered on both sides of the platform by a passenger from inside of the car or by a stranger outside of the car, to enable passengers to be quickly and safely freed from the car.

My invention stated in general terms, consists of a passenger railway-car, constructively arranged in substantially the manner hereinafter described and claimed.

The nature and scope of my present invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, in which—

Figure 1, is a fragmentary side elevation of a passenger railway car and in broken section of one side to show parts of an emergency mechanism operative from the inside of the car to open doors and lower a step,

embodying main features of my present invention. Fig. 2, is a bottom plan view of operating mechanisms for platform doors and steps of the car operative from the motorman's station or conductor's station or a passenger in the car or a person outside the car, to open the platform doors and lower a step. Fig. 3, is a vertical sectional view on the line *x, x*, of Fig. 2. Figs. 4 and 5, are respectively, enlarged sectional-elevational views on the line *y, y*, of Fig. 2, of the locking-means located about motorman's station for controlling the mechanism to operate one set of doors and a step on one side of the car and also showing in section one of the rods and crank and lock-pin of said means in connection with the emergency means of the car; the said views showing the said locking means in two different positions at the said motorman's station. Fig. 6, is a top or plan view of Fig. 4. Figs. 7 and 8, are respectively, enlarged sectional-elevational views on the line *z, z*, of Fig. 2, of the said locking means, located about the conductor's station for controlling the mechanism to operate one set of doors and a step on the opposite side of the car and also showing in section one of the rods and crank and lock-pin of said means in connection with the emergency means of the car; the said views showing said locking-means in two different positions at the said conductor's station. Fig. 9, is a top or plan view of Fig. 7. Fig. 10, is a bottom plan view, similar to Fig. 2, with the car frame-work removed to expose more fully the mechanisms actuated from respectively the motorman and conductor stations, for controlling the doors and steps of the car, and also in this view is shown the emergency operating mechanism, for opening the doors on both sides of the car and lowering the steps thereof. Fig. 11, is a sectional-elevational view similar to Fig. 3, except that the car frame-work is removed in order to disclose the conductor's station and mechanism connected therewith for actuating the doors and a step on one side of the car, and also showing one of the emergency operating means for opening the doors on the respective sides of a car and lowering the steps thereof; and Fig. 12, is a similar view to Fig. 1, except that the car frame-work is removed in order to more fully dis-

close respectively the motorman and conductor stations and also the emergency operating means for opening the doors on both sides of a car and lowering the steps thereof.

5 Referring to the drawings 4, is a platform of a closed type of car.

5, represents a portion of the main body of the car.

6, is a set of hinged double-shiftable twin doors on one side of the platform; and 7, is an infolding step located beneath the same. Both doors 6 and step 7, operate in unison and are controlled from the motorman's station X, located on the platform 4.

15 6^a, is a set of hinged double-twin doors on the opposite side of the platform from the doors 6. 7^a, is an infolding step located beneath the said doors. Both doors 6^a and step 7^a, operate in unison and are controlled from the conductor's station X¹, located where the main body of the car merges into the platform as indicated by the bracket *a*, at the upper portion in Figs. 1 and 2.

I have further provided an emergency means, which may be operated from either inside the body of the car or outside thereof.

I will first confine myself to the means for operating the doors 6 and the step 7, from the motorman's station X. 10 is a hand-crank removably secured to a vertical rotatable shaft 10^a, provided on the platform. On the bottom of the shaft 10^a, and below the platform of the car is secured a crank 12, to the outer end of which is pivoted a connecting-rod 24. This rod is pivoted to one end of a crank 25, the opposite end of which is secured to a vertical rotatable shaft 21^a. This shaft is held in suitable bearings at the top and bottom of the car and has one section of the hinged double-twin doors 6, secured thereto. On the opposite side of the doors 6, and adjacent to the car body is arranged a vertically rotatable shaft 21, similar to the shaft 21^a, and this shaft has secured thereto another section of the hinged doors 6. The shaft 21^a, has secured at its upper end a crank 23^a, as clearly shown in Figs. 10 and 12. The shaft 21, has secured to its upper end a crank 22. The outer ends of these cranks are connected by a rod 23, Figs. 10 and 12, so that rotation of one shaft will cause a corresponding rotation of the other. Secured to the connecting-rod 24, at 27, is a connecting-rod 28, which is pivoted to the outer end of a crank 29, the opposite end of said crank being secured to a rotatable horizontal shaft 30, held in bearings on the side of the platform 4. Secured to this shaft 30, by suitable means is the infolding step 7, clearly shown in Figs. 2 and 3, in which the doors are shown open and the step down. At the top and bottom of the doors, I have provided brackets 33 and 33^a, which carry rollers 32 and 32^a. The rollers 32, are adapted to

enter guides or trackways 31, at the top of the car, and thus to guide the inner sections of the doors into infolded condition onto the outer sections thereof in their open positions and when the doors are in closed position to lock the same against being opened until the shafts 21 and 21^a, are operated from either station X or X¹. The rollers 32^a, are adapted to fit back of a curved guide 31^a, when the doors are in their closed position and thus to effectively lock the same at the bottom against any outward movement. Inward movement is prevented by the doors closing against the platform of the car as will be apparent from Fig. 3.

Referring to Fig. 2, if a motorman is required to close the doors and fold the step he turns the operating handle 10, to the right which through the shaft 10^a, will turn the crank 12, about its axis thus pushing on the rods 24 and 28. The rod 24, will turn the crank 25, and thus rotate the vertical shaft 21^a, and as before explained through the connecting-rod 23, the shaft 21, will also be turned. The outer ends of the sections of the doors secured to the respective shafts must necessarily move toward the center of the door, and as the other sections are controlled by the rollers 32, in the guideways 31, they must rotate on their hinges which secure them to the first named sections and thus a closing effect of the doors is obtained. With the movement of the rod 28, the crank 29, is rotated about its axis which turns the shaft 30, and the step secured thereto until this step is folded under the doors, as clearly shown in Fig. 3.

The doors 6^a and step 7^a, are operated from the conductor's station X¹, in exactly the same manner as those operated from the motorman's station. These doors are shown closed in Figs. 1, 2 and 3, and the step infolded.

10^c, is a hand-crank removably secured to a vertical rotatable shaft 10^d, provided with suitable bearings for supporting the same in position. On the bottom of said shaft is secured a crank 12^b, to the outer end of which is pivoted a connecting-rod 24^a. This rod is pivoted to one end of a crank 25^a, the opposite end of which is secured to a vertical rotatable shaft 21, which is a duplicate of the shaft 21, as hereinbefore described. Through the shaft 21, crank 22, connecting-rod 23, crank 23^a, and vertical rotatable shaft 21^a, the doors are opened and closed. Through the rod 28^a, and horizontal shaft 30, the step is operated.

Referring to Figs. 2 and 3 of the drawings, if the conductor is required to open the doors and lower the step he turns the hand-crank 10^c, to the right, which through the shaft 10^d, will turn the crank 12^b, about its axis thus pulling on the rods 24^a and 28^a. The rod 24^a, will turn the crank 25^a, 130

and thus rotate the vertical shaft 21, and through the connecting-rod 23, and cranks 22 and 23^a, the vertical shaft 21^a, is rotated. The movement of the doors 6^a and step 7^a, is then exactly the same, as the movement described, for the doors 6 and step 7.

By rotating the cranks 12 and 25, about their axes to a point where the connecting-rod 24 is practically on a dead center or slightly past such position I have established a locking-means, whereby the doors can only be closed or the step infolded by actually turning the hand-crank 10. The same locking-means is provided and operative through the cranks 12^b and 25^a, and rod 24^a, of the conductor's station.

It may be necessary at times in case of panic or other occurrences to operate both the doors 6 and 6^a, at the same time and this can readily be done from inside or outside of the car, in the following manner:—A pin 12^a, extends upward and is carried by the crank 12, at the "motorman's station." Loosely mounted on the vertical shaft 10^a, and in alinement with the pin 12^a, is a crank 11, which is preferably curved and has what is termed a pocket 12^d. To the outer end of the crank 11, is pivoted a rod 13, the opposite end of which is secured to an arm 14, of a bell-crank lever 17, which is pivoted to a bracket 15. The crank 12^b, at the conductor's station X¹, also carries a projecting pin 12^c, secured to the vertical shaft 10^a, and in alinement with said pin is a crank 11^b, which is also curved to provide a pocket 12^e. A rod 40, connects the outer end of the crank 11^b, with the outer end of the arm 14, of the bell-crank lever 17. To each arm 16, of the bell-crank lever 17, are connected rods 18 and 18^a, respectively, the other ends of which rods engage the outer end of cranks 19 and 37. The inner end of the cranks 19 and 37, are secured to shafts 20 and 38, and on the opposite ends of said shafts 20 and 38, are secured other cranks 20^a and 38^b, respectively, the outer ends of which engage vertical rods 36 and 36^a. These rods are respectively attached to one of the arms of bell-crank levers 34 and 34^a. The other arms of said bell-crank levers terminate in handles 35 and 35^a. It will thus be seen by referring to Figs. 10, 11 and 12, that by pulling down on the handle 35, an upward movement will be imparted to the rod 36, which through the crank 38^b, will rotate the shaft 38, and by means of the crank 37, push on the rod 18^a, to operate the bell-crank lever 17, to which is connected the rods 13 and 40, and thus to cause a pull upon the said rods, which in turn will rotate the cranks 11 and 11^b, around their pivots, and if both doors are closed a pressure will be exerted against the pins 12^a and 12^c, to cause rotation of the cranks 12 and 12^b, and hence of the operation of both sets of doors

and steps, and the same result will be derived by operating the handle 35^a, to cause the connecting-rod 36^a, to be actuated and thereby the shaft 20, crank 19 and rod 18 connected to one arm of the bell-crank lever 17. Should a pressure be exerted against the crank 19 or 37, sufficient to push the crank past its locking-center, a pressure is exerted against the rod 18 or 18^a, which in turn operates the arm 14, of the bell-crank lever 17, to cause the doors on both sides of the car to open and the step beneath to be lowered into a position to step thereon. A full understanding of the arrangement of the aforesaid locking-device will be had upon reference to Figs. 4 to 9, inclusive of the drawings.

It will be manifestly obvious in respect to the foregoing detailed arrangement of my invention that modifications may be made in some of the details without departing from the real scope of my said invention, provided the operation of the doors and a step in unison are effected manually on one side of the platform from the motorman's station X, or the doors and a step on the other side of the platform in unison are effected manually from the conductor's station X¹, or in case of emergency, the doors and steps on both sides are manually operated by a passenger from inside the car or by a person outside of the said car.

Having thus described the nature and objects of my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A passenger railway-car provided with a platform having shiftable doors and movable steps, an operating station on the platform, an operating station in rear of the platform and mechanism connected with said stations and doors and steps, the doors and step on one side being operative from the station of said platform and the doors and step on the other side being operative from the station in rear of said platform, and an emergency means in operative relation with said mechanism and arranged both inside and outside of the car to operate both sets of said doors, and steps.

2. A passenger railway-car provided with a platform having hinged double-twin doors and movable steps, a motorman's station on the platform, a conductor's station in rear of the platform, mechanism connected with both of said stations and doors and steps, the doors and step on one side being operative from said motorman's station, and the doors and step on the other side being operative from the conductor's station, and emergency means inside and outside of the car, in operative relation with said mechanism, to actuate the doors and steps on both sides of said car.

3. A passenger railway-car provided with a platform having hinged doors and fold-

ing steps, a motorman's station on the platform, a conductor's station in the rear of the platform, mechanism connected with said stations and doors and steps, the doors
5 and step on one side being operative from said motorman's station and the doors and step on the other side being operative from said conductor's station, locking-means connected with said mechanism to prevent,
10 when the doors are open and a step is lowered, the movement of the doors and a step on either side of said car until manually

operated from either the said motorman's or conductor's station, emergency connections and means connected with the same to operate the doors and steps on both sides of
15 said car.

*
In witness whereof, I have hereunto set my signature in the presence of two subscribing witnesses.

JAMES H. E. BRANSON.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
