P. N. JONES.

PASSENGER CAR.

APPLICATION FILED DEC. 16, 1909.

964,269. Patented July 12, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

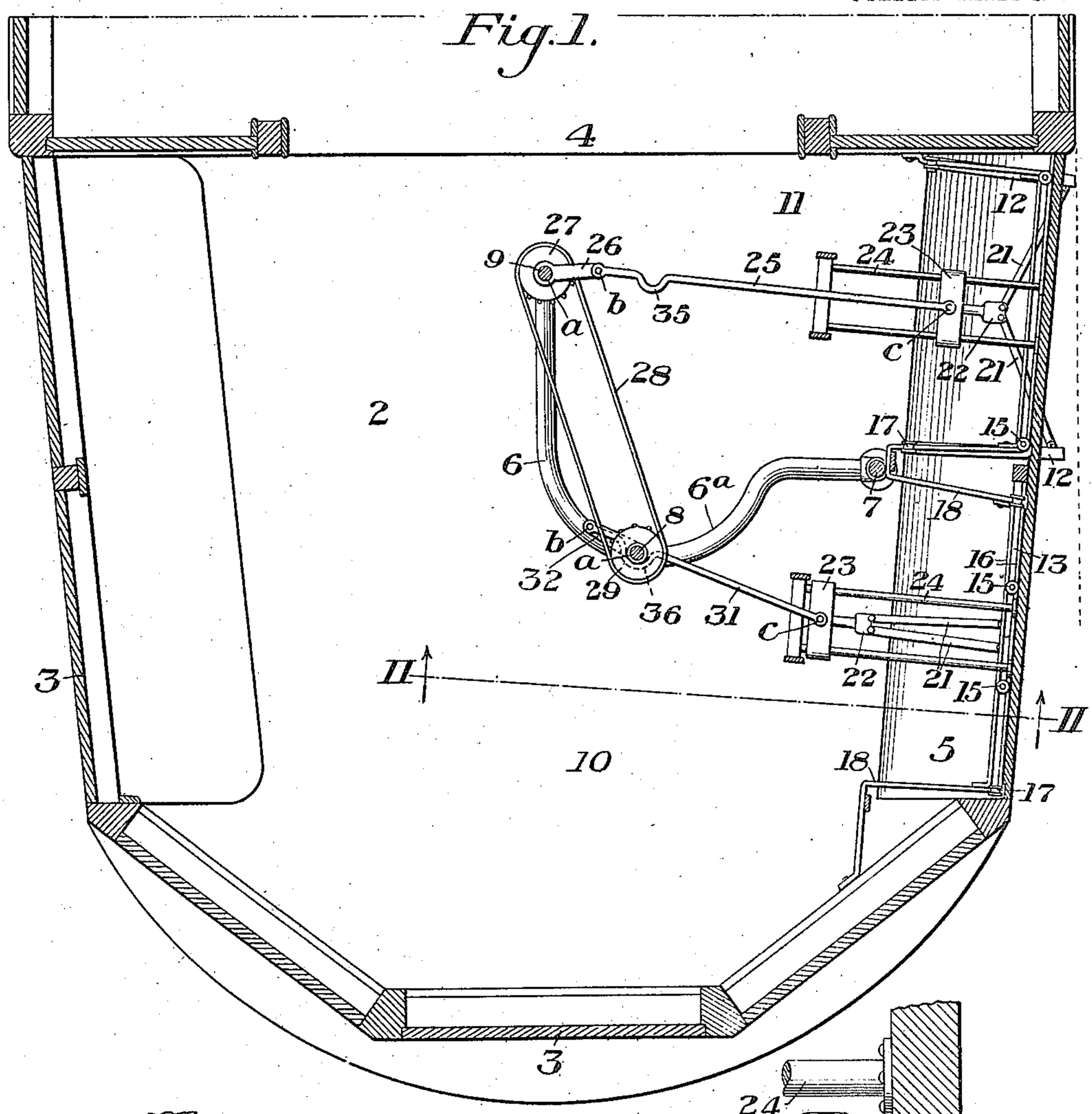


Fig. 3.

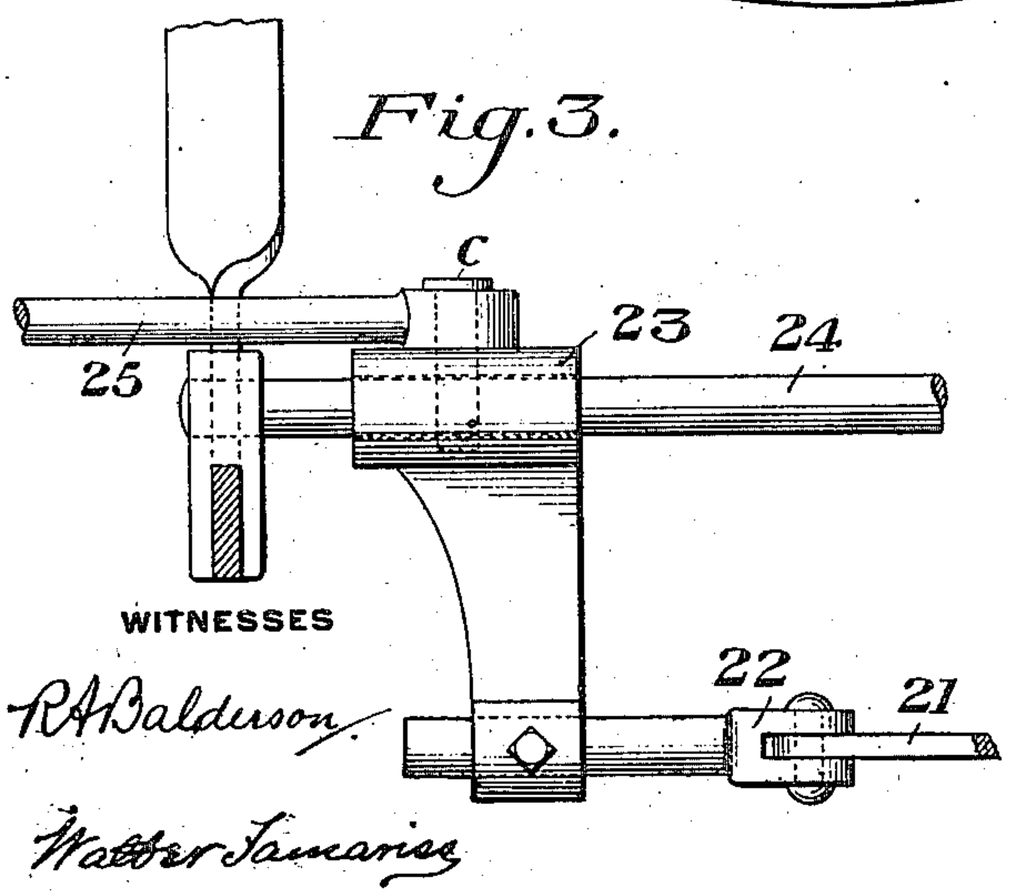
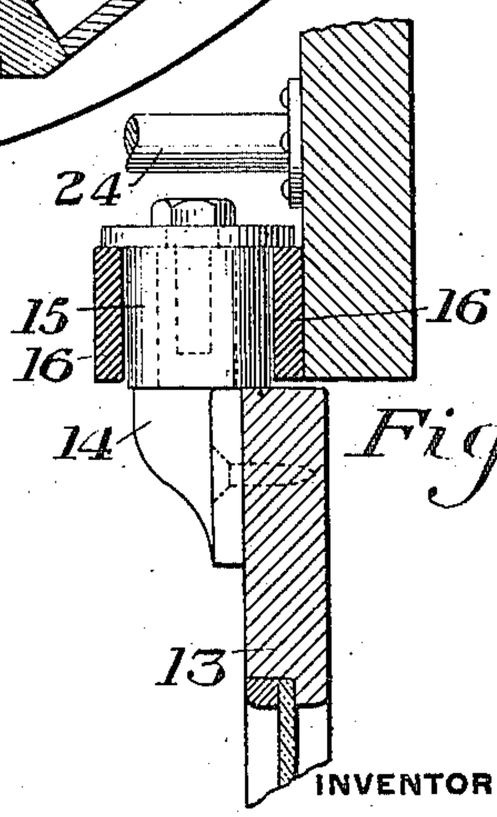


Fig. 4.



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2

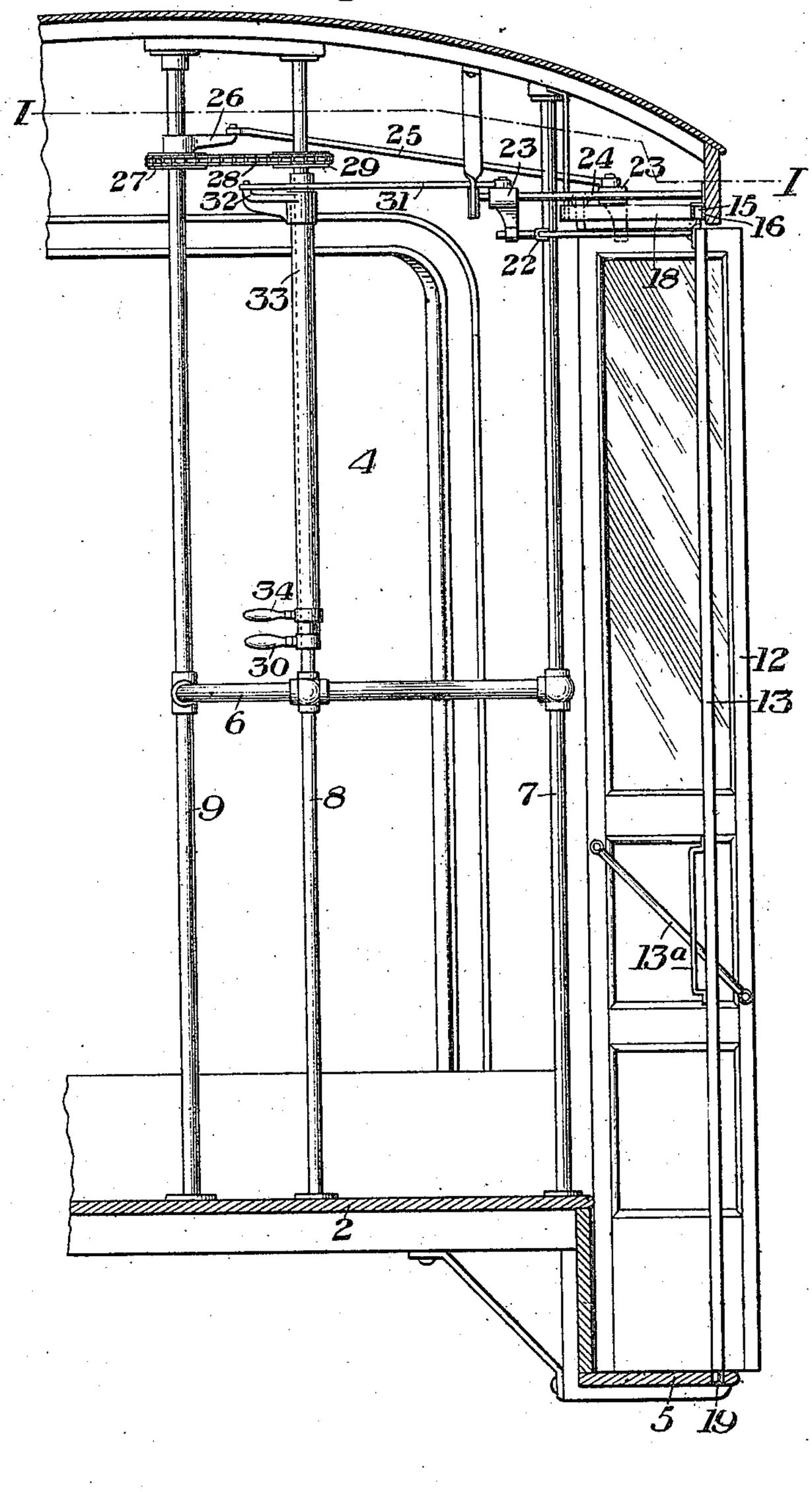


Fig. 5.

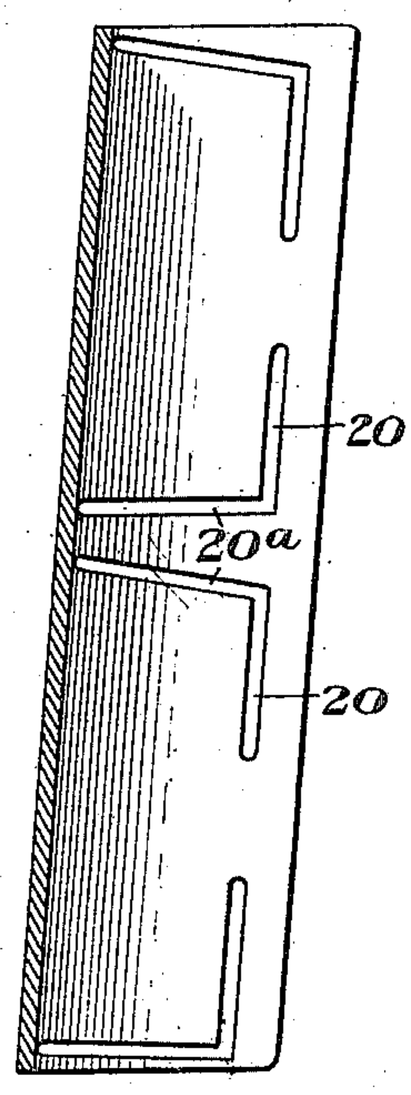
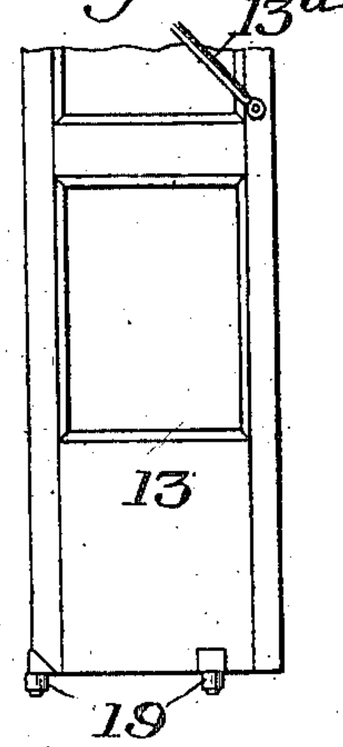


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

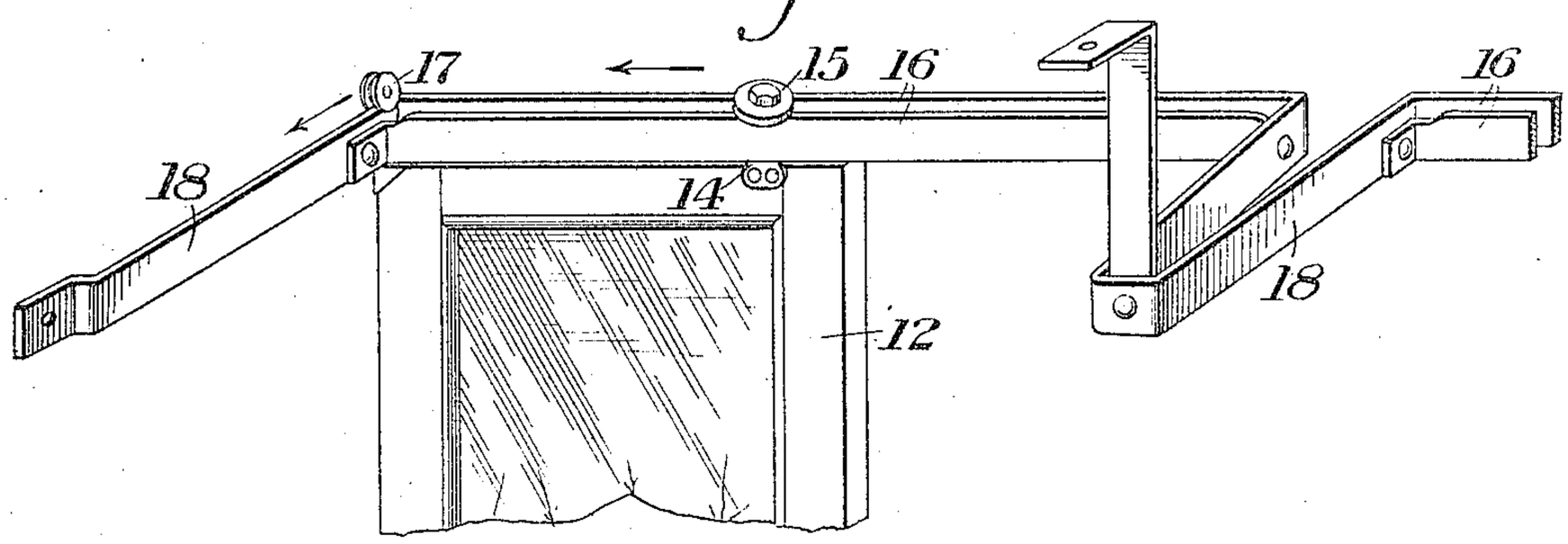

Fig. 8.

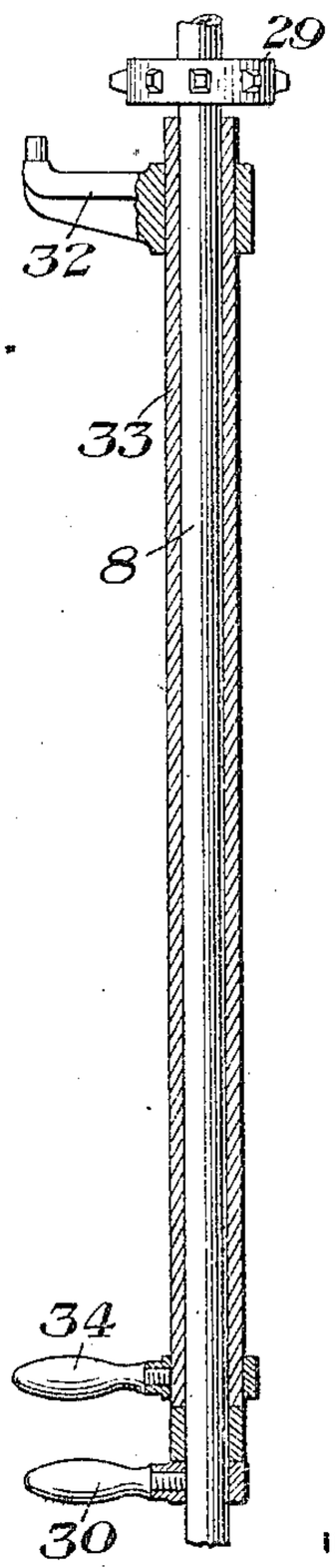

Fig. 9.

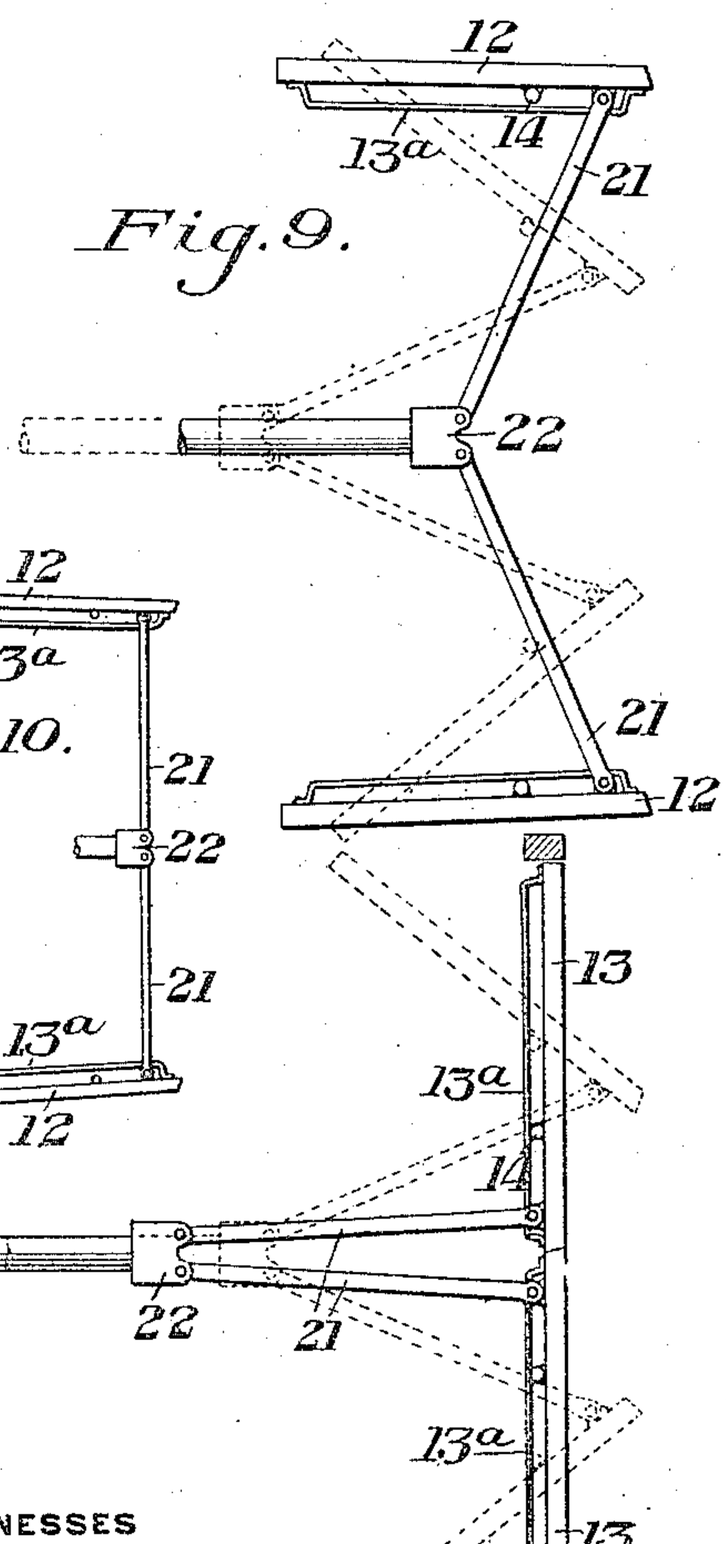

Fig 10.

WITNESSES

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UNITED STATES PATENT OFFICE.

PEARL N. JONES, OF PITTSBURG, PENNSYLVANIA.

PASSENGER-CAR.

964,269. Specification of Letters Patent. Patented July 12, 1910.

Application filed December 16, 1909. Serial No. 533,357.

To all whom it may concern:

Be it known that I, PEARL N. JONES, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Passenger-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional plan view of the rear platform of a passenger car, the section being taken on the line I—I of Fig. 2. In this figure, the entrance doors are shown closed, while the exit doors are in their open positions; Fig. 2 is a vertical section on the line II—II of Fig. 1; Fig. 3 is a detail view of a portion of the door-operating mechanism; Fig. 4 is a detail view showing the pivot roller for one of the doors; Fig. 5 is a plan view of the car step; Fig. 6 is an elevation of a portion of one of the doors; Fig. 7 is a perspective view showa portion of one of the doors and a portion of the upper track for the doors; Fig. 8 is a detail sectional view showing part of the door-operating mechanism; and Fig. 9 is a diagram illustrating the door movements. Fig. 10 is a diagram showing a modification.

My invention has relation to passenger cars, and more particularly electric street cars, and has especial reference to the platform and door arrangement, together with means for operating the doors.

My invention is designed to provide doors for the entrance and exit of cars, capable of separate and independent operation, and which will not only close the entrance to and exit from the car platform or vestibule, but will also prevent access to the car step when closed.

A further object of my invention is to provide doors which will in both their open and closed positions be without substantial projection beyond the side lines of the car and which can be opened and closed in a manner which will encroach but little upon the space of the platform or vestibule.

A still further object of my invention is to provide door mechanism which can be readily controlled by the conductor of the car, and which is simple and effective in its character.

The precise nature of my invention will be best understood by reference to the accompanying drawings, in which I have illustrated the preferred embodiment thereof and which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the various parts, without departing from the spirit and scope of my invention as defined in the appended claims.

In these drawings, the numeral 2 designates the platform of a car structure, which is inclosed or yestibuled at one side and at the rear, as shown at 3.

4 is an opening communicating with the interior of the car and which is preferably without doors.

5 designates the car step arranged at one side of the platform or vestibule.

6 designates a bent rail or guard supported by the vertical posts 7, 8 and 9, and which separates the entrance space or passage 10 from the exit space or passage 11.

12 designates two doors which control the exit, and 13 two other doors which control the entrance. These doors extend from a point near the car roof downwardly to the floor of the car step 5. In order to give clearance in turning corners and to bring these doors well within the side lines of the car, the vestibule and platform are of gradually decreasing width toward the rear end, and the doors, together with the step, are set in the inclined plane of the side lines of the vestibule. Each door is provided at its upper end with a bracket 14, secured thereto and carrying a flanged roller 15, which is mounted to travel between and upon parallel track bars 16, as best shown in Fig. 7. The top of each door is also provided with a roller 17, which is adapted to travel on a portion 18 of the track, which extends inwardly at an obtuse angle to the track rail 16. The lower edge portion of each door is also provided with the two antifriction guide rollers 19, which are arranged to travel in ways or grooves in the floor of the car step 5, each of these ways or grooves having a longitudinal portion 20, and another portion 20^a, extending inwardly at an oblique angle to the portion 20 and corresponding to the portions 18 of the upper tracks. Connected to the outer or closing edge of each door is a link 21, the two links from each pair of doors being connected at their inner ends to a head 22, which is, in turn, connected to a slide 23, mounted on the parallel slide rods 24. It will be understood

from Fig. 1 that one pair of the slide rods 24 is provided for the exit doors and a similar pair for the entrance doors.

The slide 23 which is connected to the exit doors, is connected by a link 25 with a crank arm 26, on a sprocket wheel 27, which is loosely mounted on the vertical post 9. This sprocket wheel is connected by a chain 28 with another sprocket wheel 29, which is rigidly secured to the vertical rod or post 8. This rod or post is journaled at its upper and lower ends to act as a shaft and is provided with an operating handle 30, within convenient reach of the conductor who stands adjacent to the railing 6. The slide 23 which controls the entrance doors is connected by a link 31 with a crank arm 32, which is rigidly secured to a sleeve 33, loosely mounted on the rod or post 8, and which is provided with an operating handle 34, adjacent to the handle 30, and also within convenient reach of the conductor.

The operation of the doors will be readily understood by reference to the diagram shown in Fig. 9. In this figure, the exit doors are shown as open in full lines, while the entrance doors are shown in their closed positions, the actuating connections for the respective doors being also partially shown in their proper positions. Assuming the entrance doors to be closed and that it is desired to open them, the conductor grasps the handle 34, thereby rotating the sleeve 33 on the rod or post 8. This causes the crank arm 32 to actuate the link 31, and thereby the corresponding slide 23. This moves the slide 23 outwardly on the guide rolls 24, and through the links 21 causes the doors to turn on the pivots formed by the rollers 15 and the corresponding bottom rollers 19. At the same time the doors turn on these pivots, they slide backwardly and inwardly on the rollers 17 and corresponding bottom rollers 19, on the angular portions 18 and 20^a of the tracks or ways, and until they assume the full open position. This full open position corresponds to the open position shown for the exit doors in Fig. 1. Inclosing the doors, the operation is the reverse, the slide 23 being moved back into the position shown in Fig. 1. The exit doors are operated in the same manner by means of the handle 30. This movement of the doors causes the grab handles 13^a to be on the inside of the doors when closed, so that they can not be grasped from the outside.

It will be observed that at no time during the opening and closing movement of the doors do their outer edges project beyond the side lines of the car; also that their movement is such in opening and closing as to encroach but little upon the entrance and exit spaces or passages. Each pair of doors is under the separate and complete control of the conductor, who usually stands within the bent portion 6^a of the railing or guard 6, for the purpose of collecting fares.

The connecting link 25 is provided with a bend or offset 35, and the link 31 has a similar bend or offset 36. The bend or offset 35 is arranged to fit around the post or rod 9, when the exit doors are closed, in such a manner as to bring the centers of the connections between the wheel 27 and the slide 23, into such relation as to secure the doors in their closed positions. These centers, which are designated *a*, *b* and *c*, in Fig. 1, are also brought into such relation when the doors are in their open position, as to resist any tendency for them to accidentally move toward their closed positions. The links 21 may also be arranged, as shown in Fig. 10, so as to assume locking position for the doors when opened. The bend or offset 26 in the link 31 acts in a similar manner with respect to the rod or post 8, as will be seen in Fig. 1.

By the described arrangement of the doors, in which they are made to extend downwardly when in their closed positions to a point adjacent to the outer edge of the step, they effectively prevent access to the step and thus prevent accidents due to persons jumping upon the step while the car is still in motion and before the doors have been opened. The door-actuating mechanism is simple and positive in its character, and enables the conductor to readily control the entrance and exit of passengers. A similar arrangement of doors may be provided at each end of the car.

It will be obvious that many changes may be made in the details of construction and arrangement of the parts. Thus, the doors may be hung and supported in different ways, the details of the actuating means may be changed, air or other power means may be employed instead of hand-operated connections, and various other changes may be made without departing from the spirit and scope of my invention.

I claim:

1. In a passenger car, doors extending downwardly below the car platform to the outer edge portion of the step, supporting and guiding means for the doors upon which they have a combined swinging and sliding movement and means for opening and closing the doors, substantially as described.

2. A passenger car having a separate exit and entrance arranged side by side, doors for controlling the exit and entrance, and means for separately opening and closing said doors by a combined swinging and sliding movement, substantially as described.

3. A pasenger car having a vestibuled platform, a guard dividing the platform into entrance and exit spaces or passages, a pair of doors for closing each of said passages, and separate means for actuating each

pair of doors, said doors being substantially within the side lines of the car in both their open and closed position, substantially as described.

4. A passenger car having a step, a pair of doors arranged over said step, said doors being mounted to have a combined swinging and sliding movement, and actuating means for opening and closing the doors, substantially as described.

5. In a passenger car, a door mounted for combined swinging and sliding movement, said door being over the outer edge of the car step when closed, and guides on which the door moves from its closed position to a position substantially at right angles thereto when opened, and the door having a grab handle which is on the inner face of the door in its closed position, and is on its outer face in the opened position, substantially as described.

6. A passenger car having a fixed step whose outer edge is substantially within the side line of the car, a door which is over the outer edge portion of the step when closed, and supporting and actuating mechanism for the door whereby it can be moved from its closed position to an open position at substantially right angles thereto within the side lines of the car, the inner face of the door in its closed position becoming the outer face in the opened position, substantially as described.

7. A passenger car, having entrance and exit passages arranged side by side, a fixed step at the outer end of said passages and substantially within the side line of the car, a plurality of doors which are over the outer edge portion of the step when in their closed position, means for supporting and actuating the doors whereby they can be moved from their closed positions to open positions substantially at right angles to their closed positions, and separate actuating connections for the entrance and exit doors, substantially as described.

8. In a passenger car, having entrance and exit openings arranged side by side, a pair of doors controlling each of said openings, said doors being mounted to have a combined swinging and sliding movement, a guard dividing the entrance and exit passages, vertical posts which support said guard, and actuating means for the door of which the said posts form a part, substantially as described.

9. In a passenger car having a step, a pair of doors extending downwardly to the outer edge portion of the step, the step having guides in which the lower portions of the doors are mounted to have a combined swinging and sliding movement, and similar guides and mountings for the upper portions of the doors, substantially as described.

10. In a passenger car having a step, a pair of doors extending downwardly to the outer edge portion of the step, the step having therein angular guideways and the lower portion of each door having rollers for engagement with the guideways, angular tracks supported above the doors, and rollers carried by the doors and engaging said tracks, substantially as described.

11. In a passenger car, a door mounted for combined swinging and sliding movement, the door being adjacent to the outer edge of the car step when closed, and assuming an edgewise position when opened substantially perpendicular to its closed position, substantially as described.

In testimony whereof, I have hereunto set my hand.

P. N. JONES.

Witnesses:
GEO. H. PARMELEE,
H. M. CORWIN.