(No Model.)

2 Sheets—Sheet 1.

C. A. PRESTON.

PASSENGER CAR.

No. 446,554. Patented Feb. 17, 1891.

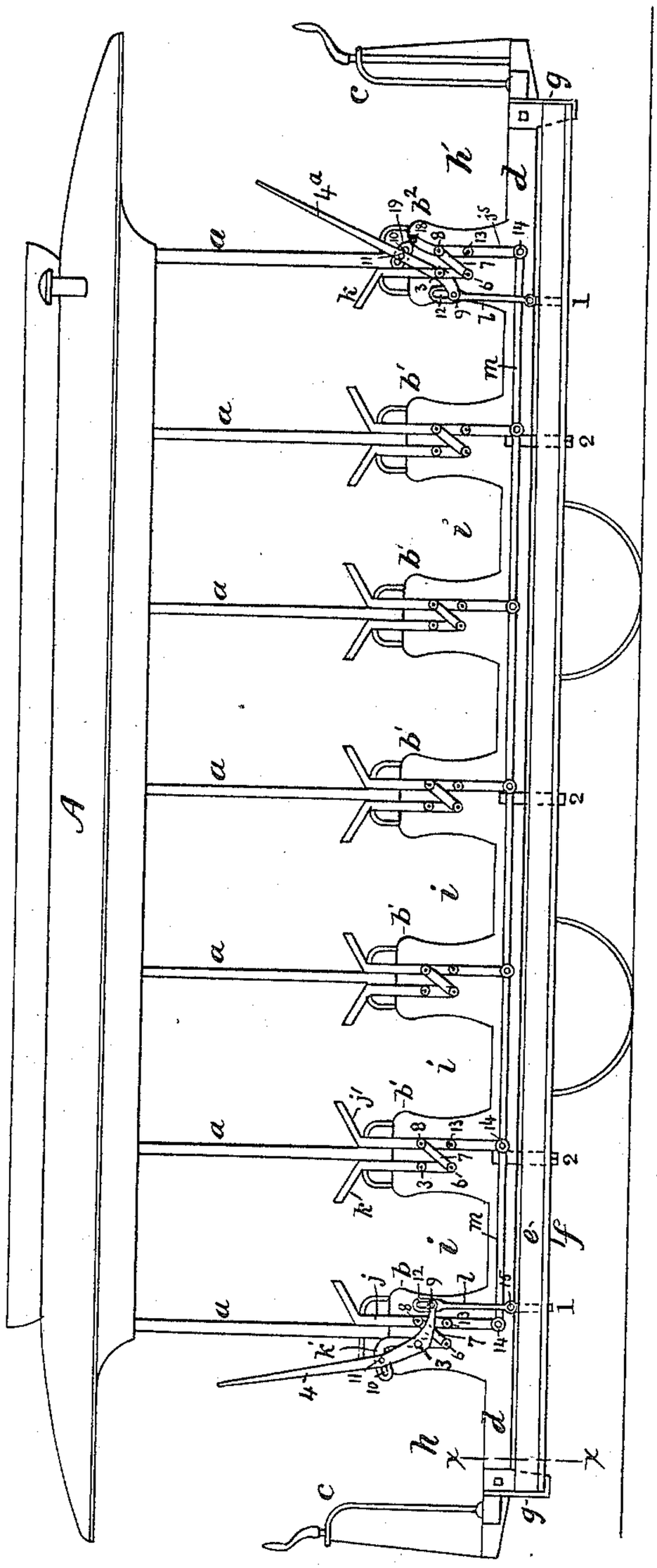

Fig. 1.

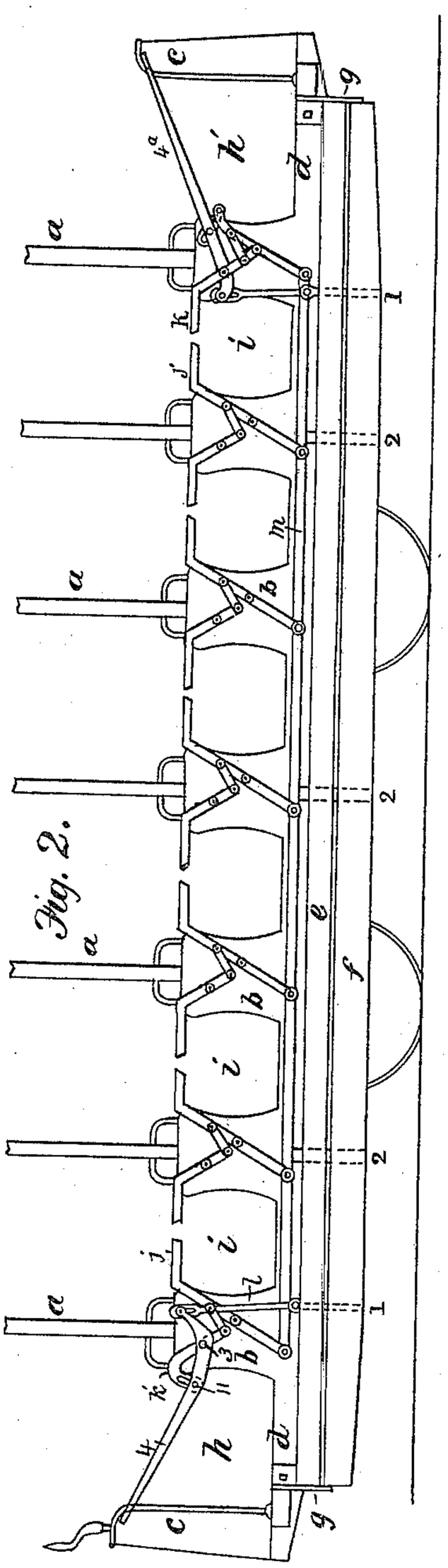

Fig. 2.

Witnesses.
E. E. Ingalls
M. A. Pierce,

Inventor
Charles A Preston,
by Geo Willis Pierce, attorney.

(No Model.)

2 Sheets—Sheet 2.

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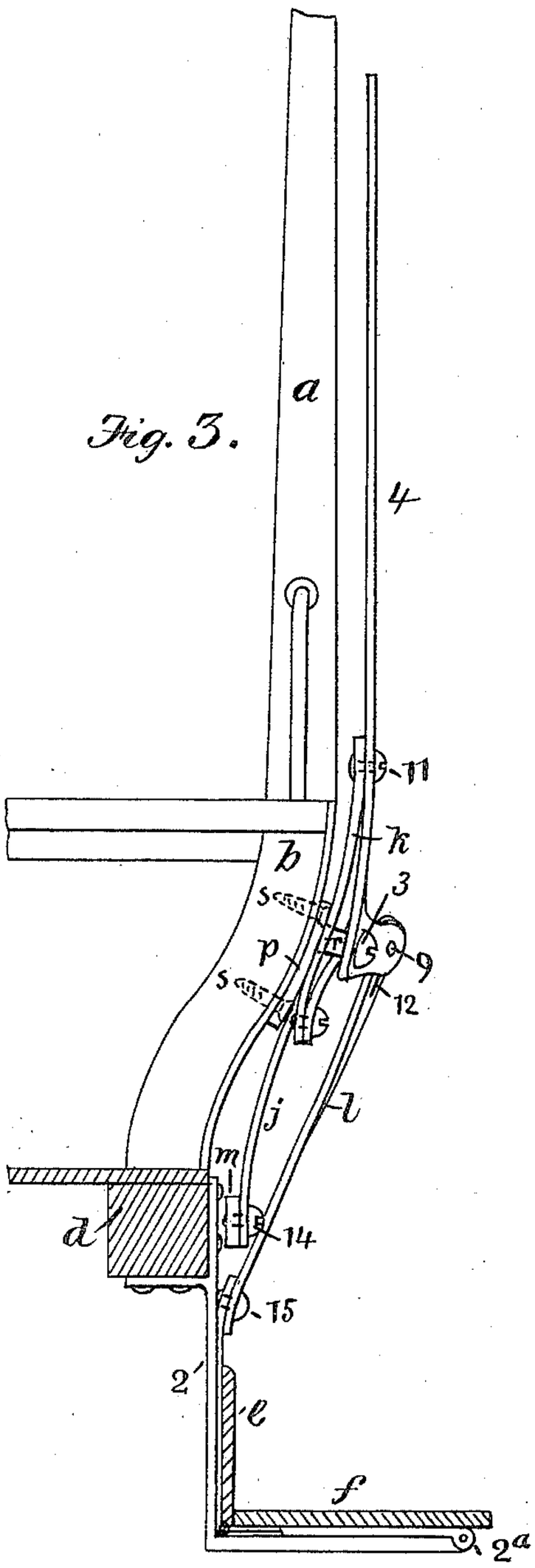

Fig. 3.

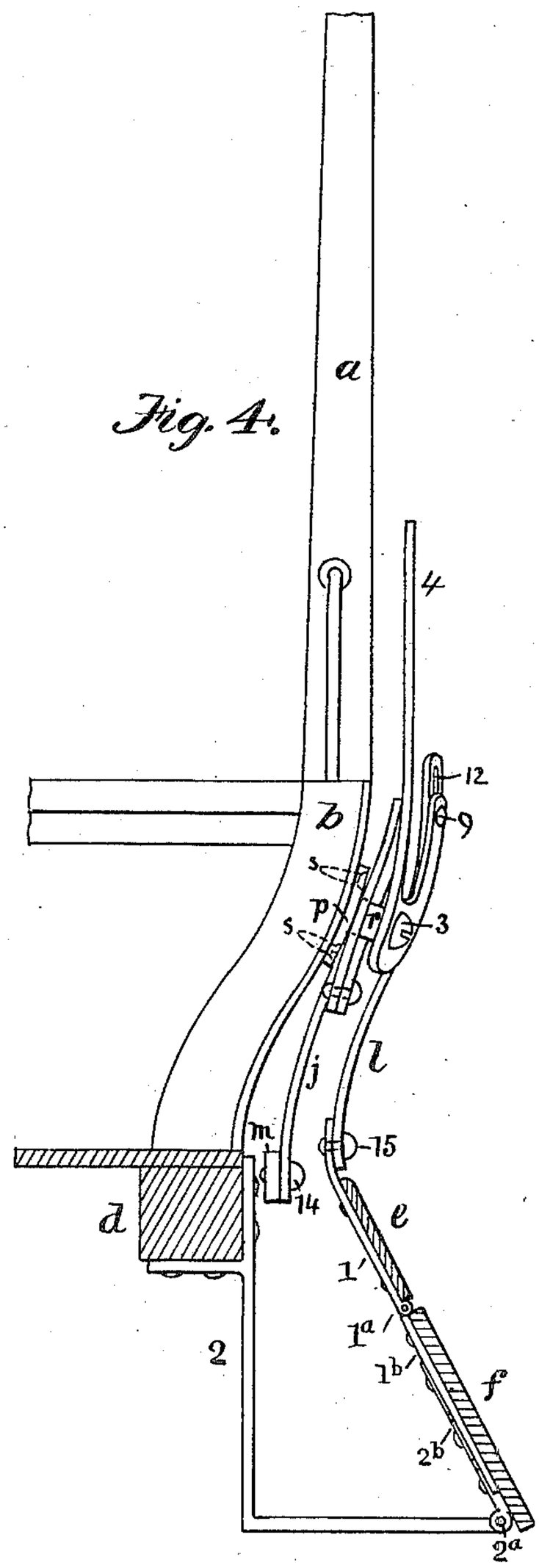

Fig. 4.

Witnesses.
E. E. Ingalls
M. A. Pierce.

Inventor,
Charles A. Preston,
by Geo. Willis Pierce, attorney.

UNITED STATES PATENT OFFICE.

CHARLES A. PRESTON, OF CAMBRIDGE, ASSIGNOR OF THREE-FOURTHS TO GEO. WILLIS PIERCE, TRUSTEE, OF BOSTON, MASSACHUSETTS.

PASSENGER-CAR.

SPECIFICATION forming part of Letters Patent No. 446,554, dated February 17, 1891.

Application filed August 16, 1890. Serial No. 362,158. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. PRESTON, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Passenger-Cars, of which the following is a specification.

This invention relates to street-cars employed for carrying passengers, and particularly to those denominated "summer" or "open" cars, which have several seats extending crosswise of the car, entrances being made thereto from the sides of the car, although my invention is applicable to any cars in which it is desirable to close and open two or more entrances simultaneously. Such cars have extending the entire length thereof on each side a foot or running board serving as a common step, by means of which passengers enter and leave the car. In cars of this description there is great danger to life and limb from the passengers attempting to get on or off while the car is in motion, and frequent accidents occur, such as passengers falling from the foot-board or by being jolted from the seats of the car. These danger liabilities are greatly increased by reason of the high rate of speed adopted by railroads employing electric and other motors.

The object of my invention is to eliminate such dangers and to provide means to be attached to all open and side-entrance cars which will render them safe.

To this end my invention consists in means—such as gates or bars—at the entrances to the car and car-seats on each side of the car which lock or bar the way out or in thereto, which can only be opened and closed from each end of the car, arranged in such manner that no person can by accident fall from the car.

My invention consists, secondly, in means whereby each foot or running board may be independently turned or tilted up at an angle against the side of the car when not in use, so that it cannot be used as a step for any one to stand upon or to jump upon from the ground when the car is in motion, and whereby it can be turned back to form a step when required for such use.

My invention contemplates an arrangement of the said means in order that they may operate simultaneously or in unison with one another, so that when the foot-board is lowered to form a step the entrance-gate shall at the same time be opened and when the foot-board is raised or tilted against the side of the car the gates shall be closed at the same time. The conductor and driver of the car will thus be provided with means, operated from either end of the car, by which gates to the car-entrances can be opened or closed and the foot-board can be raised or lowered on each side of the car simultaneously or independently, all of which I will now proceed to describe, and point out in the claims.

In the drawings accompanying this specification, Figure 1 is a side elevation of a street-car embodying my invention, the gates to the seat-entrances being shown opened and the foot-board shown as lowered for use as a step. Fig. 2 is a partial side elevation of the same with the gates closed and the foot-board raised or tilted up at an angle. Figs. 3 and 4 are enlarged sectional views upon line *x x* of Fig. 1.

Referring to Figs. 1 and 4, A is an open street-car provided with seats *b b'* crosswise therewith, having entrances *i i* between the seats for passengers to enter.

d is the platform upon which the seats are arranged and secured.

a a are posts or stanchions supporting the car-roof.

g g are brackets at each end of the car, and 2 2 2 are also brackets at intermediate places on the side of the platform to support the foot or running board *f*.

I will first describe the mechanism for closing the entrances *i i* to the seats *b b'* and to the end-platform entrances *h* and *h'*. On the end of each seat *b* is secured a plate *p*. (Shown in Fig. 3.) To this plate are pivoted at the points 3 and 13 the gate-bars *k* and *j*. These bars are connected to each other at the pivot-points 6 and 8 by the bar 7. The bar *j* extends downwardly beyond the pivot 13 and at its end is pivoted to a horizontal bar *m*, extending along the side of the platform *d*. The bars *j* on each seat end are likewise pivoted thereto at the points 14. The upper ends of each gate-bar *k*, and *j* are bent, as shown, for a purpose which will hereinafter appear.

The foregoing description answers gener-

ally for the mechanism on the end of each seat; but that on the terminal or end seats differs slightly, as I will now explain. Looking first at the end seat to the left of Fig. 1, the pivoted bar k' has its upper end turned to the left and has a slot 10 formed therein to serve as a guide and fulcrum for the pin 11 on the lever 4. This lever is pivoted at the point 3, which is common to it and the lever k'. One arm of the lever 4 extends upward to serve as a handle, while the other end bears upon its end a pin 9, which plays in the slot 12 of the upright lever l, which is connected to the foot-board f and its side or guard board e. At the right-hand end seat the lever 4 is pivoted at point 3, as before described, of the left-hand end seat, and its lower end pin 9 plays in a slot 12 of the upright foot-board lever l, while its pin 11 works in the slot 10 of a short lever 19, which is pivoted at one end to the point 18 of the upper part of the lever j^5, whose lower end is pivoted to the bar m, as are all of the said levers j. The connections of the two levers 4 and 4^a differ, for the reason that they have to perform the same functions while the levers are operated in opposite directions.

The mechanism to operate the foot-boards is as follows, referring to all of the figures: the foot or running board is composed of the boards f and e, extending the entire length of the car-platform, and are supported thereto by the brackets $g\,g$ at the ends. These brackets simply support the ends of the board f when it is lowered to serve as a step. The principal supports are the brackets 2, which are secured at one end to the car-platform d, the other end being bent at a right angle and terminating in a hinge 2^a, to which is hinged a bar 2^b, which is secured to the under side of the foot-board f. When used as a step and lowered, the foot-board is in the position shown in Figs. 1 and 3, and when raised it is in the position shown by Figs. 2 and 4. As before described, the lower end of the levers 4 and 4^a engage by pins 9 with the slots 12 of the upright levers l. These levers are pivoted at point 15 to bars 1, secured to the rear side of the upright guard-board e. These bars 1 are hinged at 1^a to the bars 1^b, which are secured to the under side of the boards f.

The operation of the before-described mechanism for opening and closing the entrances to the seats of the car is as follows, referring to Figs. 1 and 2: Suppose the left-hand lever 4 to be operated to close the gates, for it is quite evident that they must be closed from one end or the other, as no intermediate means are shown. The lever is pressed downward until it assumes the position shown in Fig. 2. As it rotates upon its pivot 3 its pin 11 moves in the slot 10 of the lever k' until it reaches the end thereof, when it carries or turns the lever with it. The opposite end of the lever k', by means of the short lever 7, pushes the upper end of the lever j over into the position shown in Figs. 2 and 4, and as the lower end of the lever j is pivoted to the bar m, to which are pivoted the lower ends of all the intermediate levers j, they are also moved, and as they rotate upon their pivots 13 they in turn, by means of the short levers 7, cause the gate-levers k to move, the gate-bars or levers j moving in one direction and the gate bars or levers k moving in the opposite direction, and at the right-hand end seat as the bar m moves to the left it carries the lever j^5 over, swinging the lever 4^a down by means of the connected short lever 19 and closing the gate-bar k by means of the connected short lever 7, and when the movement of the lever 4 has terminated the end entrances h and h' are closed by the levers 4 and 4^a, respectively, and the intermediate-seat entrances i are closed by the gates or bars k and j, as shown in Fig. 2. To open the gates the operation is reversed. The lever 4 is pushed upward, and the connected levers reverse their positions, as will be readily understood.

To operate the mechanism from the right-hand end of the car, the lever 4^a is pushed down and the pin 11 on the lever 4^a slides in the slot 10 of the lever 19 until it strikes its end, when it pushes the lever 19, which in turn, as it rotates upon the pivot 18, pushes over the upper end of lever j^5, which, rotating on its pivot 13, moves its lower end to the left, carrying with it the bar m, which causes all of the connected gate-levers to perfect their operations and close the gates j and k.

To operate the foot-boards from either end of the car, either lever 4 or 4^a is depressed. The pin 9 on the end thereof travels in the slot 12 until its end is reached, when the lever l is raised. This action also raises or tilts the foot-board f and the guard-board e into the position shown in Figs. 2 and 4 when the lever 4 or 4^a has been swung into position. When in the raised or tilted position the foot-board f is not capable of use as a step and is in the nature of a danger-signal.

To cause the foot-board to serve as a step, the lever 4 or 4^a is pushed upward, thus causing the levers l to descend and force the boards e and f into the positions shown in Figs. 1 and 4.

If desired, locking devices can be provided at the ends of the levers 4 and 4^a, whereby they may be secured to the dashers c. In fact I have so secured them.

I have hereinbefore described the operations and mechanisms for closing and opening the gate and those for raising and lowering the foot-boards as independent and separate, and so they are when the levers 4 and 4^a are properly manipulated. In the operation of the levers 4 and 4^a their pins 11 and 9 are so timed relatively to the slots 10 and 12 in the levers k and l that the gates k and j are operated and closed (when the said levers 4 and 4^a are depressed) before the foot-board is raised, and the last movement of the said levers 4 and 4^a is to pull up the levers l and raise the foot-board into the inclined po-

sition shown in Figs. 2 and 4, and when the levers 4 and 4ª are partially raised the foot-board is lowered to serve as a step, and as the levers 4 and 4ª are fully raised the gates are opened. By this arrangement and timing of the operations of the several connected levers I am enabled to close the gates and leave the foot-board in a position to serve as a step and afterward to tilt it up, so that it cannot be used; or when the gates are closed and the foot-board is tilted up I may lower the foot-board for use and have the seat or car entrances closed by the gates. It will be seen that the gates are closed and the foot-board tilted up simultaneously and by the same means when it is so desired, and that the operations are or can be made independent of each other, as described. I do not, however, confine myself to the precise form and arrangement of the levers shown, as I may use any other arrangement under the claims of my invention and the spirit thereof.

I claim—

1. The combination, with an open car, of movable gates connected as a series along the side of the car and movable simultaneously to open and close the entrances, operating-levers connected with the series of gates at the ends of the car, whereby the gates may be moved simultaneously, a hinged foot-board extending lengthwise of the car below the floor thereof, and connections between said foot-board and the gate-operating devices, whereby the foot-board is turned to its inoperative position when the gates are closed, as set forth.

2. The combination, with a car having seats extending across the same, with entrances thereto from the sides of the car, and foot-boards extending the entire length of the car, of a rod extending lengthwise of the car below the floor-level and at one side thereof, levers at each end of the car adapted to operate the said rod, arms pivoted to the ends of the seats of the car and adapted when in one position to close the entrances between said seats, and when in another position to remain in line with the ends of said seats, leaving said entrance open, and connections between said arms and the said rod, whereby the arms are operated by said rod, as set forth.

3. The combination, with a car having seats across the same, with entrances thereto from the sides of the car, of bars or gates adapted to close or open said entrances, a rod extending lengthwise of the car below the floor-level and at one side thereof, levers at each end of the car adapted to operate the said rod, foot-boards extending the entire length of the car, said foot-boards being hinged at their outer edges to the outer edge of a bracket projecting from the car below the floor-level thereof, and connections between the inner edges of said foot-boards and the said end levers, whereby said foot-boards are moved from a horizontal to a substantially vertical position after the said bars or gates have been moved to close the entrances to the said car, as set forth.

4. The combination, with a car having seats extending across the same, with entrances thereto from the sides of the car, of a rod extending lengthwise of the car below the floor-level and at one side thereof, levers at each end of the car adapted to operate the said rod, arms pivoted to the ends of the said seats and adapted when in one position to close the entrances therebetween and when in another position to be in line with said seats and to leave said entrances unobstructed, foot-boards extending the entire length of the car and hinged at their outer edge to a bracket projecting outwardly from the car below the floor-level thereof, and connections between the said arms and the said rod and between the said foot-boards and the said end levers, whereby the arms may be moved from their inoperative position to the position they occupy in closing the entrances to the car and the foot-boards may be moved from a horizontal to a substantially vertical or inoperative position, as set forth.

5. The combination, with a car having seats extending across the same, with entrances thereto from the sides of the car, of a rod *m*, extending lengthwise of the car, levers at each end of the car by which said rod may be moved, the bars or levers 8, pivoted to the ends of the seats and having their lower ends attached to said rod *m*, the bars or levers 3, pivoted to the ends of said seats, the bars 7, connecting the lower ends of the bars 3 with the bars 8, the foot-boards *f*, the brackets *g g*, to which the outer edges of the foot-boards *f* are hinged, the guard-boards *e*, to which the inner edges of the foot-boards are hinged, the levers *l*, connecting the said guard-boards with the said lever 4 at one end of the car and the lever 4ª at the other end of the car, and suitable connections between said levers and the rod *m*, whereby either of said levers is adapted to move the said rod and, through the described connections, operate the entrance-closing bars 3 and 8 and the foot-board *f*, so as to cause the bars to close or leave unobstructed the said entrances and to cause the foot-boards to take their inoperative or operative position, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 14th day of August, 1890.

CHARLES A. PRESTON.

Witnesses:
D. B. HALLETT,
GEO. WILLIS PIERCE.