

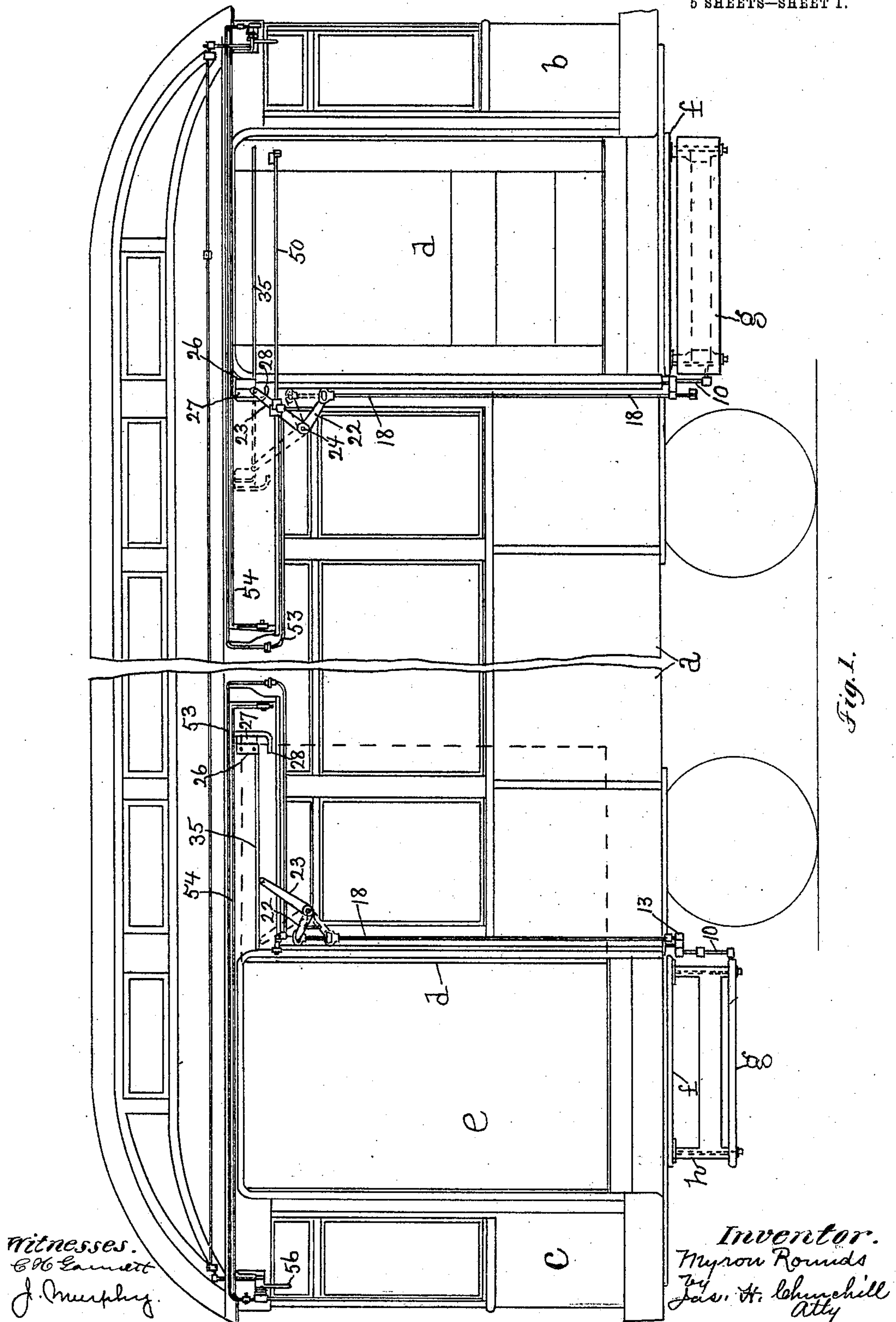
No. 824,209.

PATENTED JUNE 26, 1906.

M. ROUNDS.
RAILWAY CAR.

APPLICATION FILED JAN. 12, 1906.

5 SHEETS—SHEET 1.



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5 SHEETS—SHEET 2.

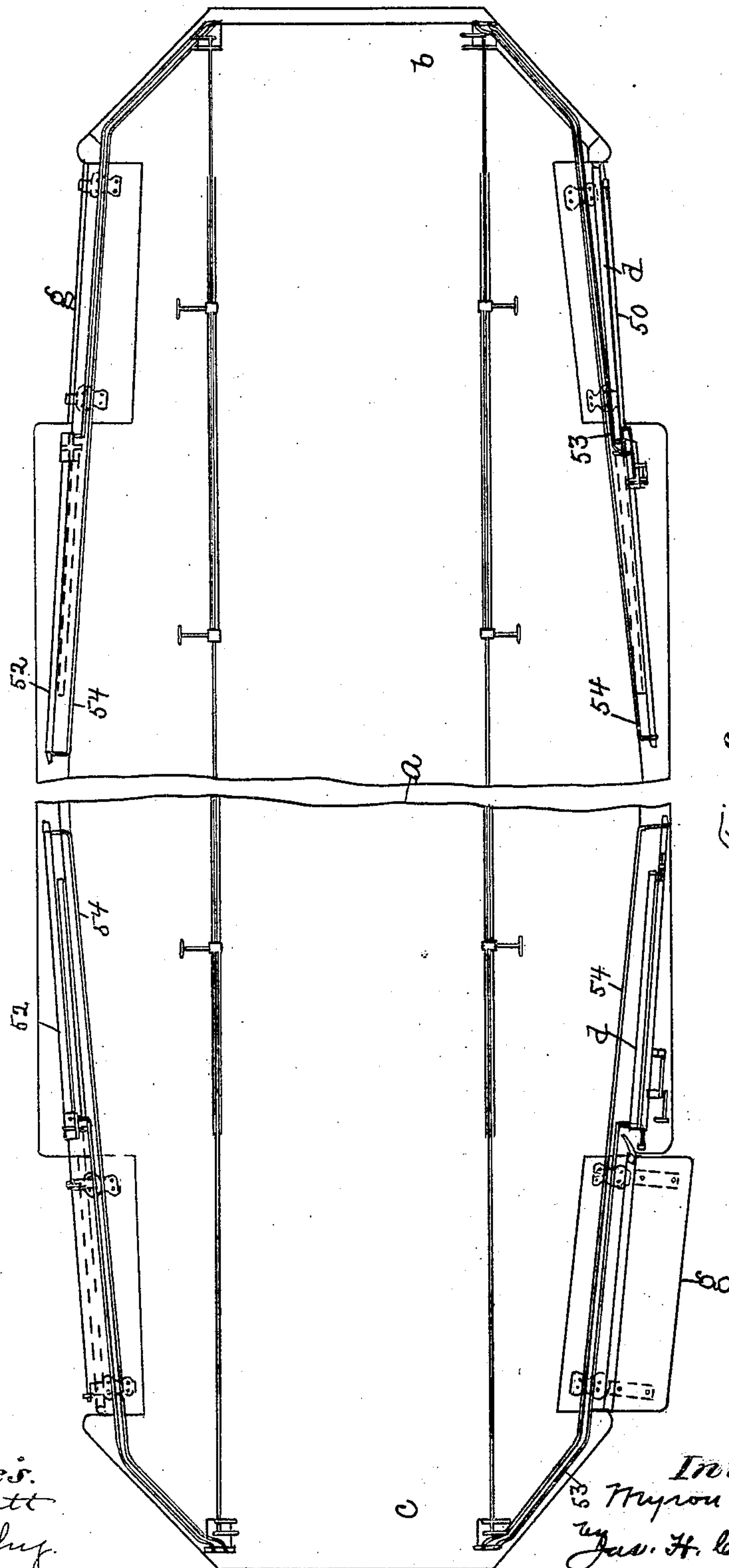


Fig. 2.

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5 SHEETS—SHEET 3.

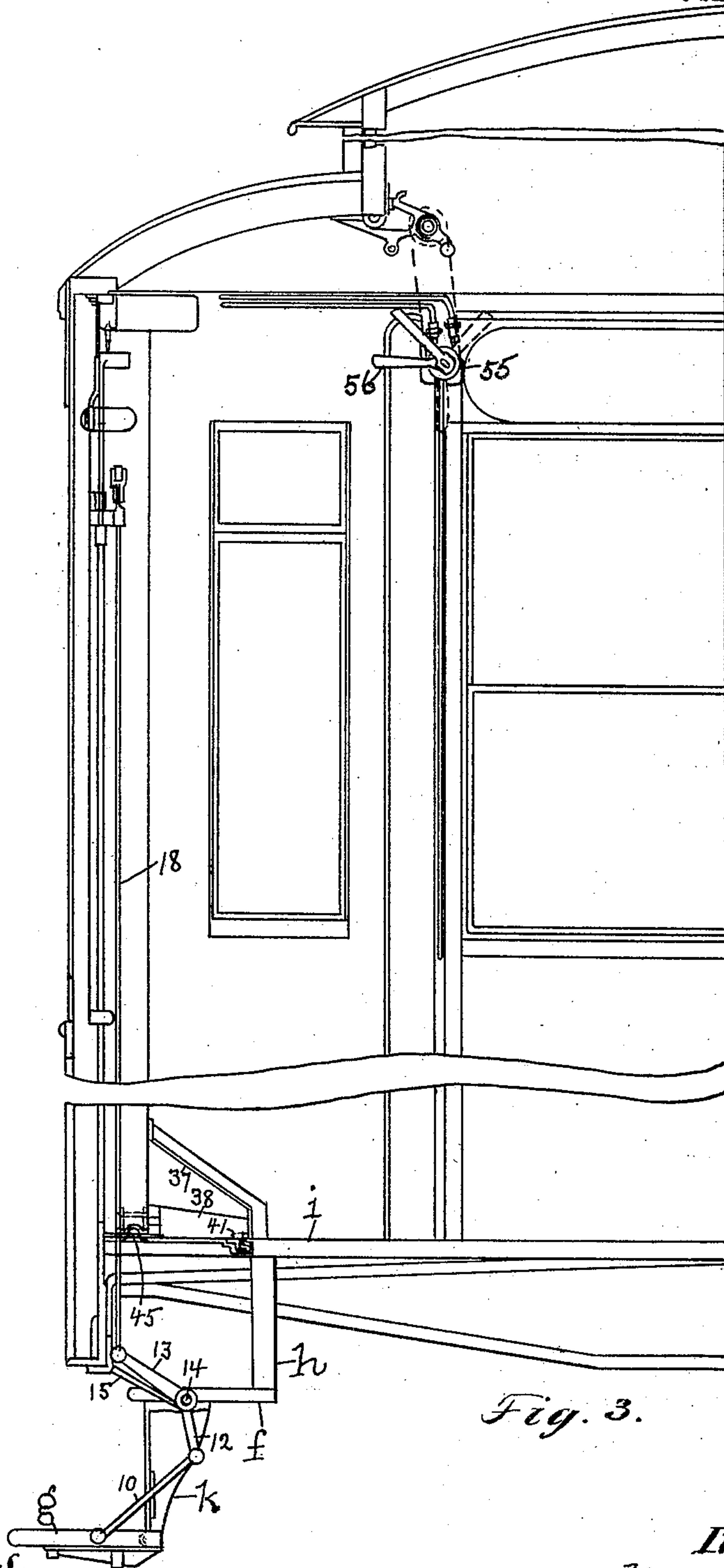


Fig. 3.

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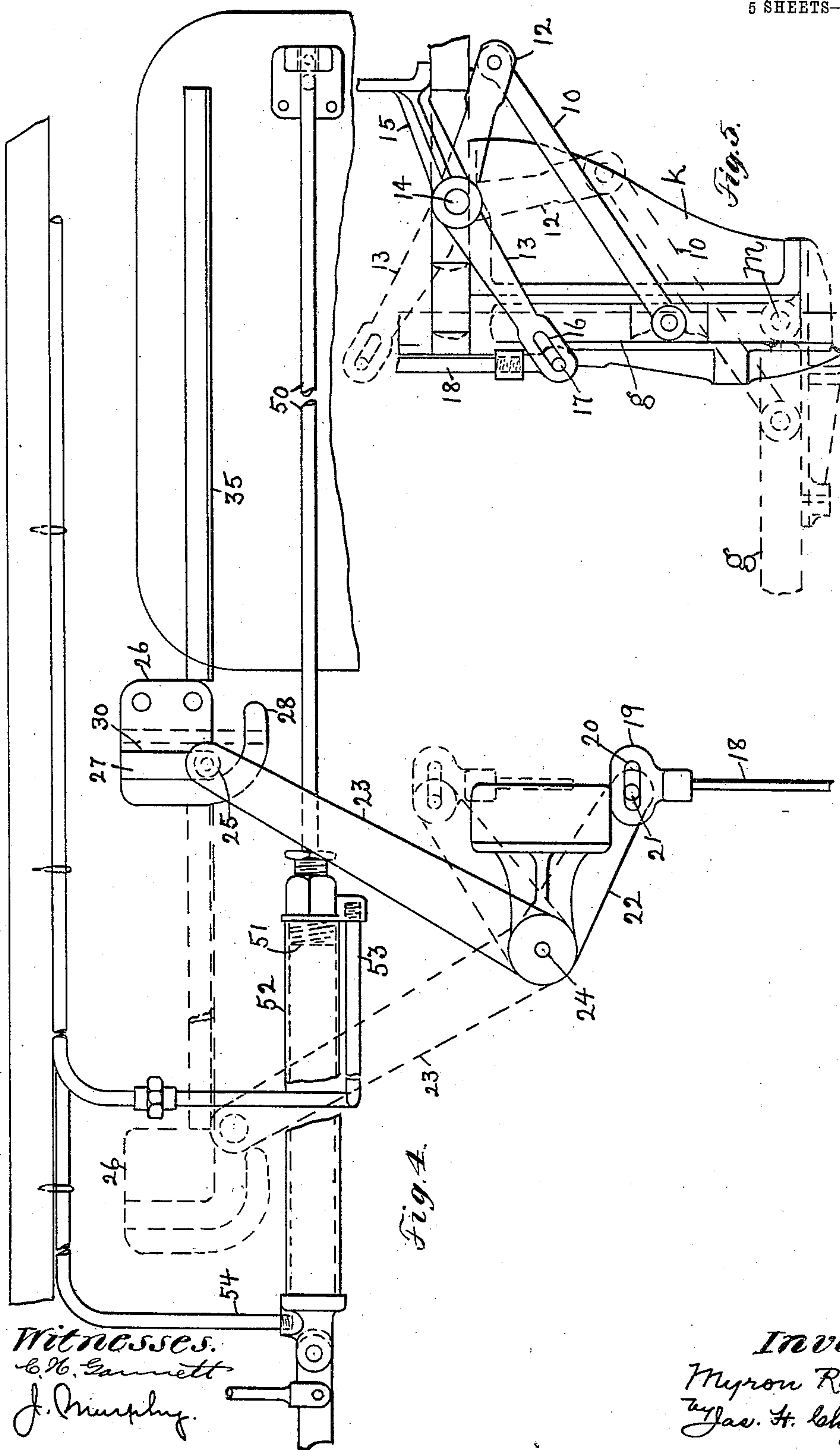
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5 SHEETS—SHEET 5.

Fig. 6.

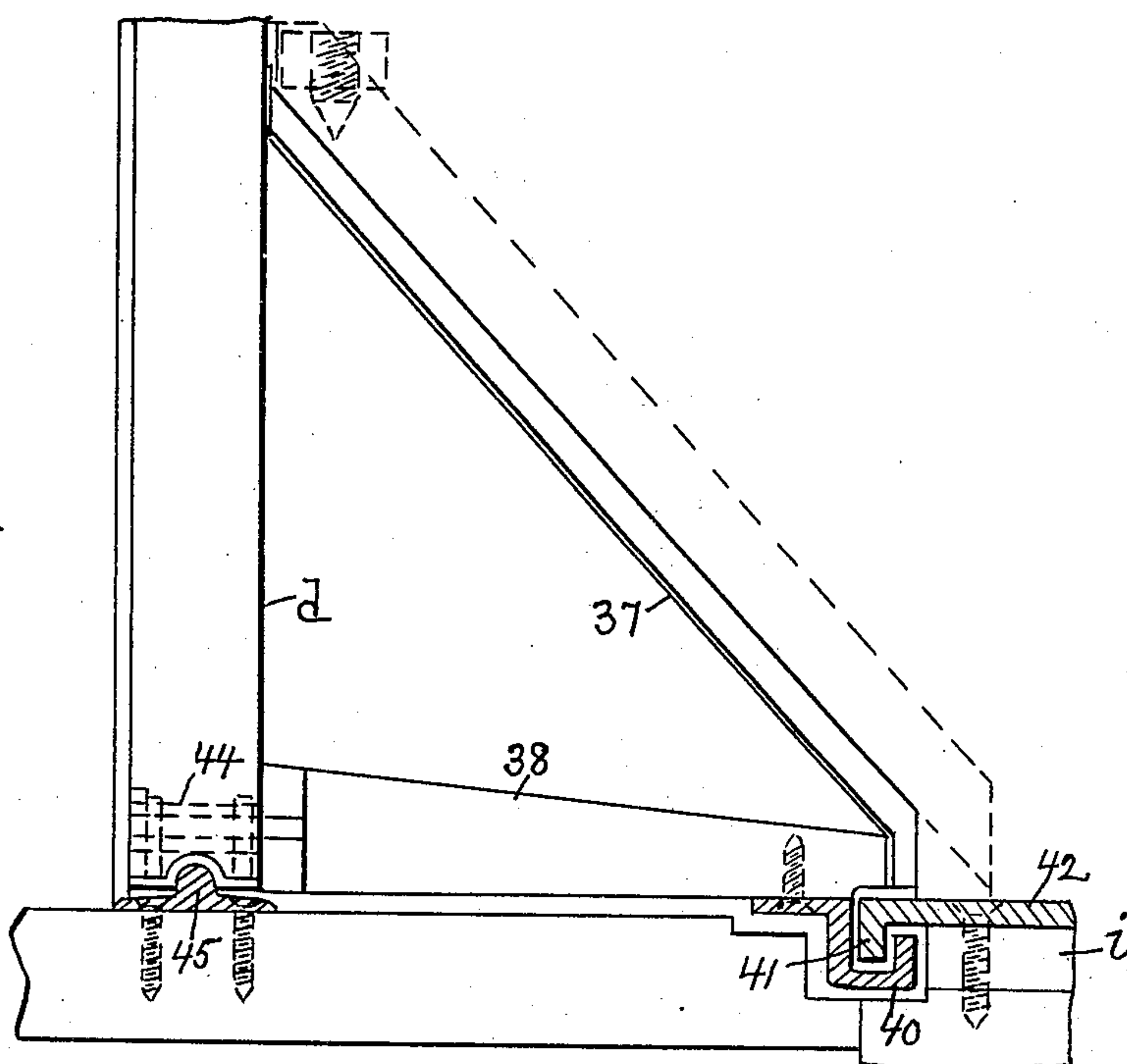
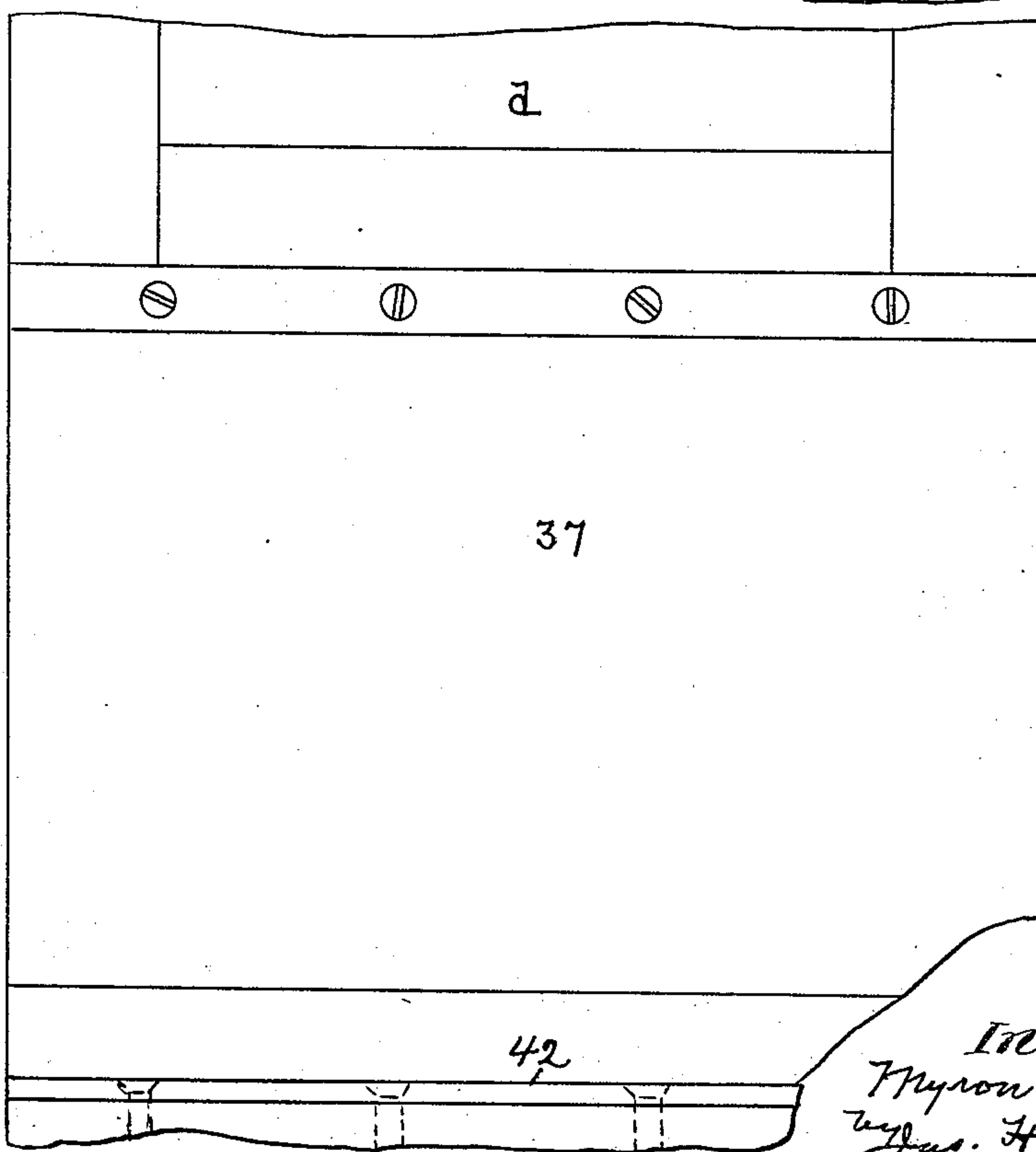


Fig. 7.



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UNITED STATES PATENT OFFICE.

MYRON ROUNDS, OF BOSTON, MASSACHUSETTS.

RAILWAY-CAR.

No. 824,209.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed January 12, 1906. Serial No. 295,694.

To all whom it may concern:

Be it known that I, MYRON ROUNDS, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Railway-Cars, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 This invention relates to a railway-car, and is herein shown as embodied in a car provided with a vestibule and with a step leading from said vestibule.

The present invention has for its object to provide a car of the class described in which the step leading from the vestibule is connected with the door thereof, so that when the door is moved into its opened position the step is automatically lowered, and when the door is moved into its closed position the step is automatically raised or folded up into an inoperative position. Provision is made for operating the step at the initial movement of the door from its closed into its open position and at the latter part of the movement of the door from its opened into its closed position. The door may be operated by power under control of the operator within the vestibule. Provision is also made for closing the opening above the step when the door is closed.

These and other features of this invention will be pointed out in the claims at the end of this specification.

35 Figure 1 is a side elevation with parts broken away of a railway-car embodying this invention; Fig. 2, a plan of the car shown in Fig. 1; Fig. 3, an end elevation with parts in section of the car shown in Fig. 1; Figs. 4 and 5, details, on an enlarged scale, of the step-operating mechanism; and Figs. 6 and 7, enlarged details to be referred to.

Referring to the drawings, *a* represents a railway-car, such as is employed on electric railways and which is provided at its opposite ends with vestibules *b c*, having doors *d* on opposite sides of said car. The doors *d* cooperate with doorways *e*, from which lead down steps, herein shown as two in number and marked *f g*, and which may be designated the "upper" and "lower" step, respectively. The upper step *f* may be supported by hangers *h*, (see Fig. 3,) which are rigidly secured to the car-body below the platform or floor *i* of the vestibule, so that the said step comes within the side of the car-

body, and the lower step *g* is pivotally secured to hangers *k*, attached to the upper step *f*, the lower step being pivoted near its end, as at *m*, (see Fig. 5,) so as to be capable of being turned or folded up into a vertical position substantially in line with the side of the car-body, so that when the car-doors are closed the lower step *g* does not project beyond the sides of the car-body. Provision is made for automatically moving the step *g* from its lowered or operative position into its folded or inoperative position by means of the door *d*. For this purpose the step *g* is operatively connected with the door *d*, and in the present instance one form of mechanism for accomplishing this result is herein shown.

Referring more particularly to Figs. 3, 4, and 5, the step *g* has connected to it one end of a link 10, having its other end joined to one arm 12 of a lever 13, pivoted at 14 in a bracket 15, secured to the car-body. The lever 13 is provided with a slot 16, into which extends a stud or pin 17 on the end of an upright link or rod 18, having an enlarged head 19, which is provided with a slot 20, into which extends a pin or stud 21 on an arm 22 of a lever 23, pivoted at 24, and operatively connected with the car-door *d*. In the present instance the lever 23 is operatively connected with the door *d*, so that the said lever is operated by the door while the latter is moving a portion of its travel and is not operated by said door during another portion of its travel in the same direction.

In practice it is preferred to have the step *g* lowered while the door is being opened about twelve inches of its travel and to be raised while the door is being closed and during the last twelve inches of its travel. In the present instance one construction of mechanism is shown for accomplishing this result. To this end the door *d* has attached to it a device for engaging a stud or roller 25 on the upper end of the lever 23, which device is herein shown as a plate or casting 26, provided with a passage-way or slot 27, into which the stud or roller 25 may move, and with a curved finger 28. When the door is closed, the stud 25 is in the passage-way or slot 27, as shown in Fig. 4. When the door is being opened, the wall 30 of the slot 27 engages the stud or roller 25 and turns the lever 23 on its pivot from its full into its dotted line position, Fig. 4, and during this movement of the lever 23 the rod 18 is moved up-

ward and turns the lever 13 from its position indicated by full lines, Fig. 5, into that indicated by dotted lines, thereby through the link 10 turning the step *g* down into its horizontal or operative position. The step *g* assumes its horizontal position at or about the time the door has been opened about one foot, and at such time the lever 23 has been turned so that the stud 25 is disengaged from the slot 27 and on the further movement of the door passes under a guard or stop, herein shown as an angle iron or bar 35, which extends across the door and is secured thereto. The guard or stop 35 constitutes one form of means for preventing the step *g* being accidentally or maliciously folded or turned up while the door is open, thereby avoiding accidents from this source.

On the return or closing movement of the door the step *g* remains lowered until the door has been closed except about one foot or it may be any other desired distance deemed insufficient for the passage of a person into or from the car, and at or about this time the curved finger 28 engages the roller 25 and on the further movement of the door causes the lever 23 to be turned from its dotted-line position, Fig. 4, into its full-line position, thereby through the link 18, lever 13, and link 10 turning the step *g* up into its inoperative or full-line position. (Shown in Fig. 5.) Provision is also made for covering the space which is above the upper step *f* when the door is closed, said space being open or uncovered when the door is open. This result may be accomplished, as herein shown, (see Figs. 6 and 7,) by means of a cover or section, which may be made as herein shown, and consists of an inclined piece 37 and a horizontal piece 38, secured to the inner side of the door at or near the bottom of the same. The inclined piece 38 extends from the door down to near the upper surface of the platform or floor *i* of the vestibule and serves to prevent passengers standing on the cover or section, which might interfere with the operation of the door. Provision is made for guiding the free end of the cover or section 37, and for this purpose a hook-shaped piece 40 is secured to the underside of the horizontal piece 38 and embraces a depending flange or rib 41 on a plate 42, secured to the vestibule platform or floor *i*, as clearly shown in Fig. 6. The door *d* may be provided with rollers 44, which run on a track 45. The car-body on its inner side is formed so as to permit the cover 37 to pass within the car when the door is opened.

The door *d* may be operated by hand, but it may be preferred to operate the same by power, which may be accomplished, as herein shown, by attaching to the door one end of the rod 50 of a piston 51, located in a cylinder 52, which is attached to the car-body and is supplied with air under pressure which is

admitted into the opposite ends of the cylinder by pipes 53 54, which lead to a valve-casing 55, containing a suitable valve having a handle 56, by turning which either end of the cylinder may be connected with a suitable source of pressure carried by the car and not herein shown.

In Fig. 2 the car is represented as provided with four doors, two on each side, and three of these are closed while the fourth is open, and by reference to Fig. 2 it will be seen that only one step *g* is in its lowered position.

The hooked plate 40, attached to the bottom of the cover 37 and movable with the door extends substantially the width of the door and coöperates with the flange 41 on the plate 42, so as to lock the door against lateral movement. In practice the track 45, on which the door runs, extends but a short distance into the doorway, and the hooked plate serves to hold the doorway when in its closed position against displacement by internal pressure in a lateral direction.

The invention is herein shown as embodied in a railway-car having a vestibule; but it is not desired to limit the invention in this respect.

I claim—

1. In a railway-car provided with doorways in its sides, doors coöperating with said doorways to open and close the same, steps leading to said doorways and pivoted to be folded into a substantially upright position and to be lowered into a substantially horizontal position, power-operated means for moving said doors into their opened and closed positions, and mechanism actuated by said doors for automatically moving said steps into their folded and lowered positions, substantially as described.

2. In a railway-car provided with doorways in its sides, doors coöperating with said doorways to open and close the same, steps leading to said doorways and pivoted to be folded into a substantially upright position and to be lowered into a substantially horizontal position, power-operated means for moving said doors into their opened and closed positions, mechanism actuated by said doors for automatically moving said steps into their folded and lowered positions, and means to prevent the steps being folded up while the doors are in their open positions, substantially as described.

3. In a railway-car provided with a doorway, a door coöperating with said doorway, a step leading from said doorway and movable into an operative and inoperative position with relation to said doorway, power-operated means for moving said door into its opened and closed positions, and mechanism for automatically moving said step into its operative and inoperative positions, said mechanism being actuated by said power-operated means, substantially as described.

4. In a railway-car provided with a doorway, a sliding door cooperating with said doorway, a step leading from said doorway and movable into an operative and inoperative position with relation to said doorway, mechanism for operatively connecting said door with said step, said mechanism having provision for permitting the door to slide in opposite directions for a portion of its travel without effecting movement of said step, substantially as described.

5. In a railway-car provided with a doorway, a door cooperating with said doorway, a step leading from said doorway and movable into an operative and inoperative position with relation to said doorway, and mechanism actuated by said door for operating said step, said mechanism having provision for permitting the door to be moved for a portion of its travel without effecting movement of said step, substantially as described.

6. In a railway-car provided with a doorway, a door cooperating with said doorway, a step leading from said doorway and movable into an operative and inoperative position with relation to said doorway, mechanism connected with said step, and an actuating device for said mechanism movable with said door and adapted to be engaged with and disengaged from said mechanism during the travel of the door, substantially as described.

7. In a railway-car provided with a doorway, a door cooperating with said doorway, a step leading from said doorway and movable into an operative and inoperative position with relation to said doorway, mechanism connected with said step, an actuating device for said mechanism movable with said door and adapted to be engaged with and disengaged from said mechanism during the travel of the door, and means cooperating with said mechanism when disengaged from said actuating device to prevent said step being moved into its inoperative position, substantially as described.

8. In a railway-car provided with a platform and with a doorway leading from said platform, a step located below said platform within the sides of the car, a sliding door cooperating with said doorway, and a cover for the open space above said step attached to the

door to slide therewith, substantially as described.

9. In a railway-car provided with a platform and with a doorway leading from said platform, a step located below said platform within the sides of the car, a sliding door cooperating with said doorway, a cover for the open space above said step attached to the door to slide therewith, and means attached to said cover for holding said door against lateral movement when in its closed position, substantially as described.

10. In a railway-car provided with a vestibule at its end having a doorway in its side, a sliding door cooperating with said doorway, a step leading from said doorway and pivoted to permit it to be moved into an operative and inoperative position, a lever operatively connected with said step and sliding door to turn said step on its pivot when said door is slid into its opened and closed positions, substantially as described.

11. In a railway-car provided with a doorway, a step leading from said doorway and pivoted to be moved into its operative and inoperative positions, a sliding door cooperating with said doorway, a lever carried by the car near said step and operatively connected with the latter, a second lever carried by the car near the upper end of the doorway, and means to connect said levers, substantially as described.

12. In a railway-car provided with a doorway, a step leading from said doorway and pivoted to be moved into its operative and inoperative positions, a sliding door cooperating with said doorway, a lever carried by the car near said step and operatively connected with the latter, a second lever carried by the car near the upper end of the doorway, and means to connect said levers, and power-operated means for moving said door and levers, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MYRON ROUNDS.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.