No. 846,594. PATENTED MAR. 12, 1907.

R. MOBLEY.

CAR DOOR.

APPLICATION FILED NOV. 9, 1904.

2 SHEETS—SHEET 1.

FIG. 3.

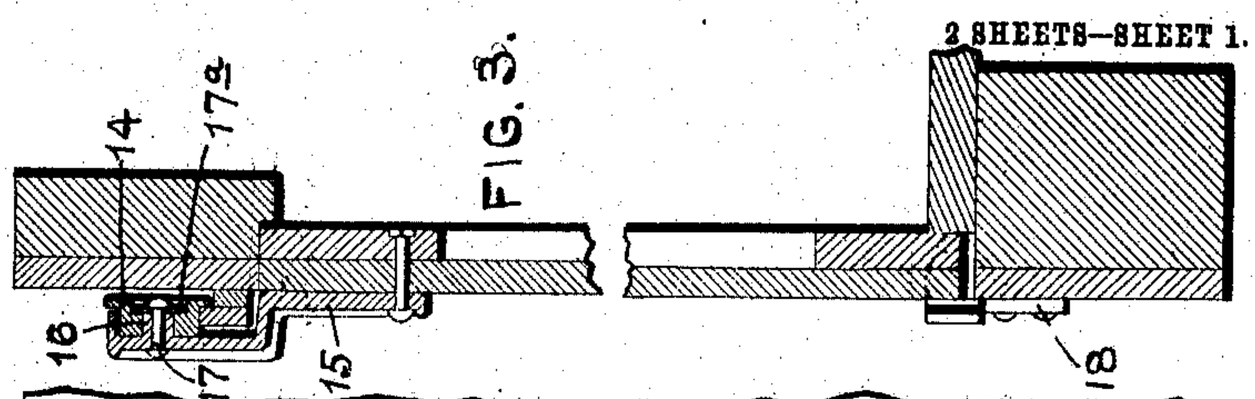

FIG. 1.

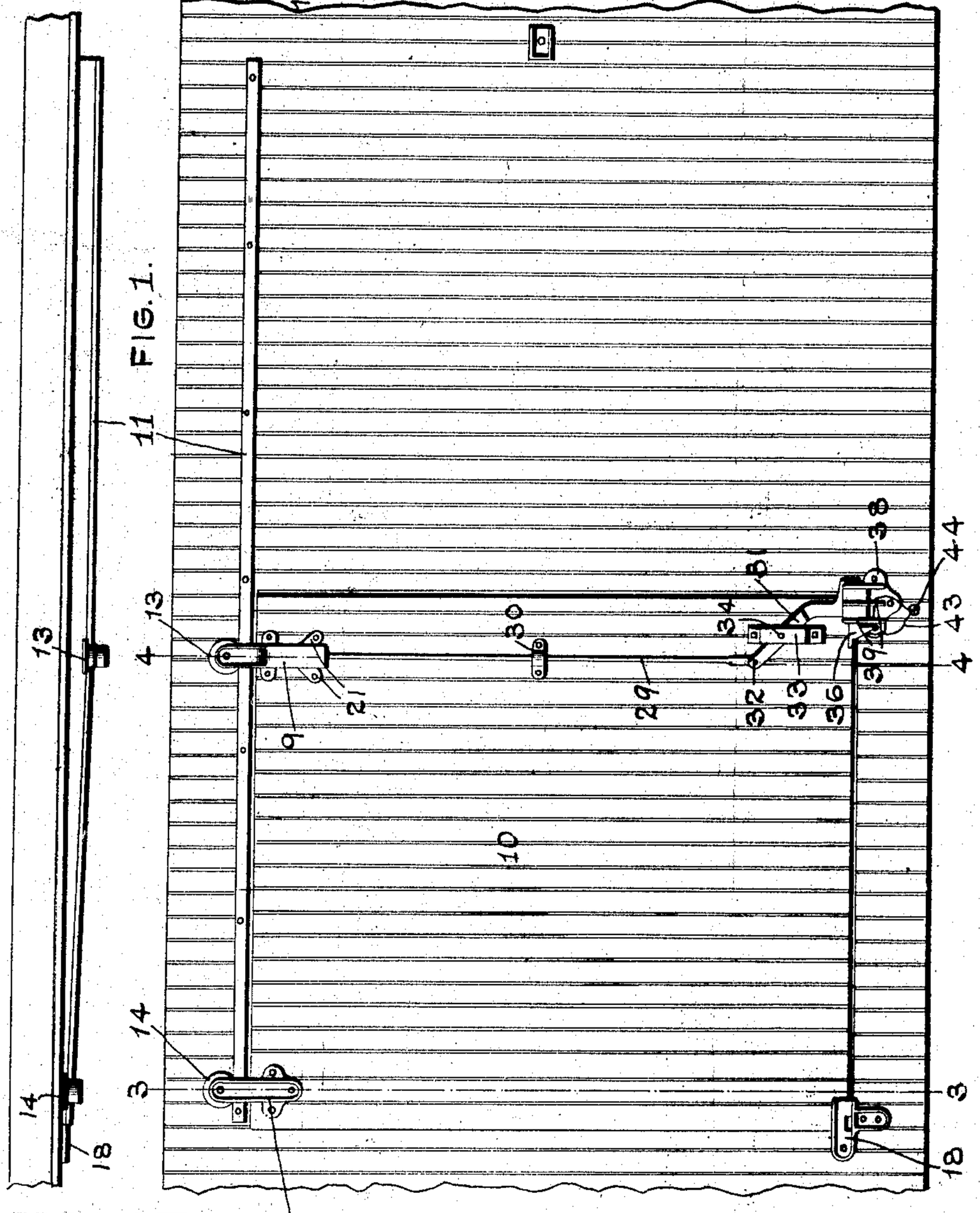

FIG. 2.

ATTEST

a J. McCauley

Alfred Klein

INVENTOR:-

Richard Mobley.-

BY Higdon & Longan & Hopkins

ATTYS.

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2 SHEETS—SHEET 2.

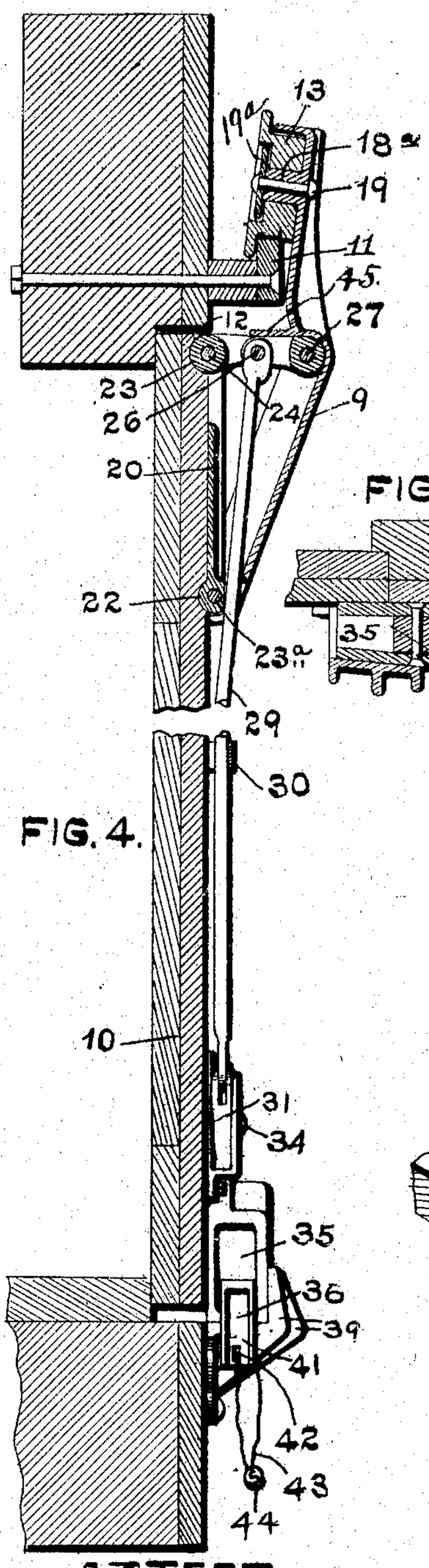

FIG. 4.

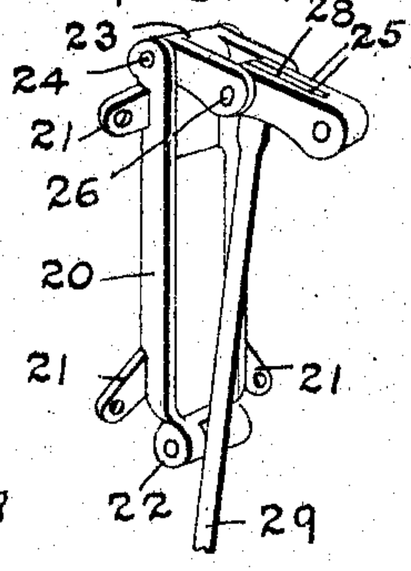

FIG. 7.

FIG. 8.

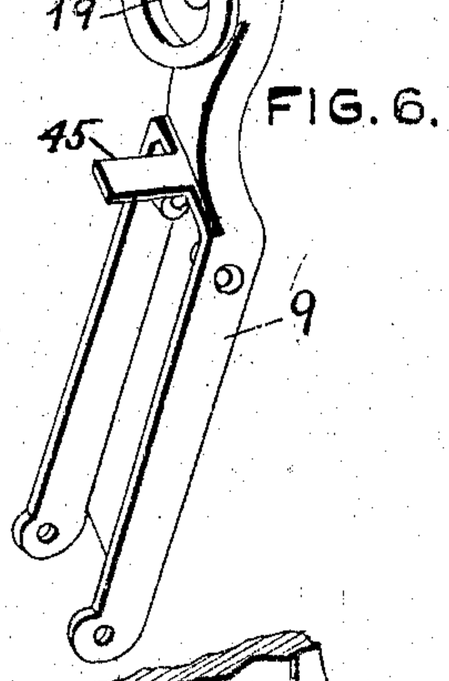

FIG. 6.

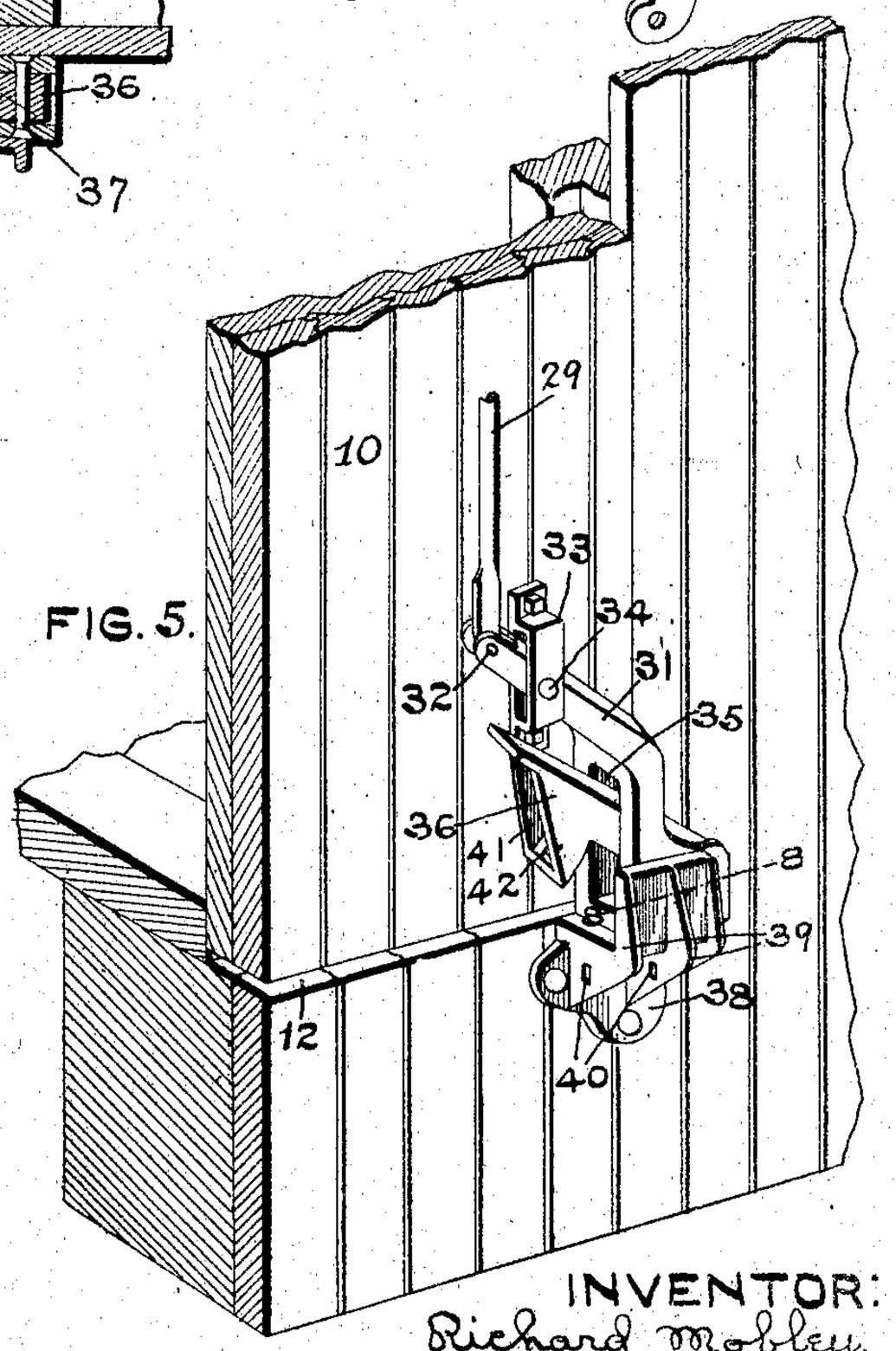

FIG. 5.

ATTEST

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UNITED STATES PATENT OFFICE.

RICHARD MOBLEY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO REPUBLIC RAILWAY APPLIANCE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF ILLINOIS.

CAR-DOOR.

No. 846,594. Specification of Letters Patent. Patented March 12, 1907.

Application filed November 9, 1904. Serial No. 231,989.

To all whom it may concern:

Be it known that I, RICHARD MOBLEY, a citizen of the United States, and a resident of the city of St. Louis, Missouri, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in car-doors, and has particular reference to that class of doors which are known as "flush" doors, and has for its object to provide a flush door of simple construction adapted to fit closely in place within the door-opening and to be held and securely locked in place therein.

In the drawings, Figure 1 is a front elevation of a portion of the side of a box-car, showing the door seated in the door-opening and locked in place therein. Fig. 2 is a top view of the track whereon the door is hung. Fig. 3 is a transverse vertical sectional view of the top and bottom of the door, taken along the line 3 3 in Fig. 1. Fig. 4 is a transverse vertical sectional view of the same, taken along the line 4 4 in Fig. 1. In both Figs. 3 and 4 the middle portion of the door is shown as being broken away. Fig. 5 is an enlarged view in perspective of the locking device applied in the door of my invention. Fig. 6 is an enlarged perspective view of the hanger 9. Fig. 7 is an enlarged perspective view of the portion of the mechanism whereby the hanger 9 is actuated. Fig. 8 is a transverse horizontal sectional view of the portion of the locking mechanism, taken along the line 8 8 in Fig. 5.

The door 10 is suspended from the track 11, which runs parallel with the side wall of the car, and at or near the forward edge of the door-opening 12 the track recedes, as shown in Fig. 2, so as to force the forward edge of the door into its opening when the door is closed. Supporting-rollers 13 and 14 are carried by the hangers 9 and 15, respectively. The hanger 15 is rigidly mounted upon the door 10, as shown in the front view in Fig. 1 and in sections in Fig. 3. The form of the hanger 15 is illustrated in the figures referred to, and it is provided with a sleeve 16, around which the roller 14 is mounted, the roller 14 being secured in place by the rivet 17 and the retaining-washer 17ª. At the lower forward edge of the door-opening 12 I have provided the bracket member 18, which serves to hold the lower forward edge of the door 10 in place when the door is seated in the door-opening 12.

In order to provide means for thrusting the rear edge of the door into position within the door-opening 12, I have mounted the roller 13 upon a tilting hanger 9, which hanger 9 is provided with a stud 18ª, upon which the roller is mounted, said roller 13 being held in place by means of the rivet 19 and retaining-washer 19ª.

The hanger 9 has its lower portion pivotally connected to a base-plate 20, having perforated lugs 21, whereby the base-plate is secured to the rear upper edge of the door 10. At its lower end the base-plate 20 is provided with the perforated projection 22, upon which the hanger 9 is pivotally mounted by means of the pin 23ª. At its upper end the base-plate 20 is connected to the hanger 9 by means of a toggle-lever comprising the link 23, pivotally connected to the plate 20 by means of the pin 24, and a link 25, pivotally connected to the hanger 9 by means of a pin 27, said two links being pivotally connected together and to a bar 25ª by means of a pin 26. The inner end of the link 25 is preferably slotted, as indicated by the numeral 28, to receive the upper end of the vertical rod, which is held in place within the slot 28 by means of the pin 26. The vertical rod 29, intermediate of its ends, passes loosely through the guide 30, mounted upon the outer face of the door 10.

At its lower end the vertical rod 29 is connected with and actuated by the lever 31, to which it is pivotally connected by means of the pin 33. The lever 31 is pivotally mounted within the guide member 33 by means of the pin 34 and has its lower end wedge-shaped and provided with an opening 35 to receive the locking member 36. As shown in Fig. 8, the locking member 36 is pivotally mounted within the opening 35 by means of the pin 37. A bracket-lug 38, having a wedge-shaped opening, is mounted upon the outer face of the car at the rear bottom edge of the door-opening 12 and is provided with ribs 39, said ribs having perforations 40.

The locking member 36 is provided with a downward extension 41, having the opening 42, the opening 42 being so locked as to be substantially in alinement with the openings 40 when the locking member 36 is in its locked position. The locking of the door is then effected by means of running the band or wire 43 through the openings 40 and 42 and securing the ends of said band or wire 43 by means of the seal 44.

In its closed position the door 10 is seated in place within the door-opening 12, as shown in section in Fig. 4, the rear edge of the door being thrown inwardly by reason of the toggle-links 23 and 25 being thrust into substantial alinement by the upward thrust of the vertical rod 29. The hanger 9 is provided with an inwardly-projecting lug 45, whereby the upward movement of the link 25 is limited.

When it is desired to open the door, the seal is broken and the lower end of the lever 31 is swung out of engagement with its bracket-lug, causing a downward pull upon the vertical rod 29. By means of this pull the rear edge of the door is moved out of its seat, when the door may be slid out of its position in front of the door-opening 12.

It will be observed that in operating the door the receding portion of the track will force the front edge of the door into its opening, and when the lever 31 is swung to engage its bracket-lug it will move downwardly, such motion forcing the rod 29 upwardly and moving the toggle-links to positions wherein pivotal centers are alined. In this position the toggle-levers are subjected only to end thrust, and thus there is no strain placed on the rod 29. The member 36 is in the form of a hook, which drops over the bracket-lug and tends to prevent accidental displacement thereof. Gravity also assists in holding the lever 31 in engagement with the bracket-lug. When the pivoted member 36 is sealed, it is obvious that the sealing-wire will be drawn sufficiently tightly to prevent this hook-shaped member from having its nose lifted above the bracket-lug, and consequently the lever 31 cannot be swung on its pivot. When the door is opened, the hooked member 36 must be disengaged from the bracket-lug and the lever 31 swung so that its free end, which carries the hooked member 36, will be lifted. This depresses the rod 29, collapses the toggle-links, and moves the rear edge of the door outwardly past the side wall of the car, permitting the door to be slid on its supporting-track away from the door-opening. When the door is open, the operator of course releases the lever 31 and the weighted free end of the lever will drop by gravity, forcing the rod 29 upwardly, and consequently permitting the rear edge of the door to move inwardly against the side wall of the car. This I consider an important feature of my invention, because when the door is opened the tendency of the locking-fixtures is to hold the door firmly against the side wall of the car, and so prevent movement of the door when the car is being switched and subjected to shocks and jars incident to running service.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with a car-door, of a track, a hanger engaging the same and having its lower extremity pivotally secured to said door, and a pair of links connecting the hanger with the upper end of the before-mentioned door, the pivotal connection between said links and the point of engagement of the hanger with the track as well as the pivotal engagement between the door and the lower extremity of the hanger being each in substantially the same plane, in both the open and closed positions.

2. The combination with a car-door, of a track, a hanger engaging the same by means of a roller carried by said hanger and having an integral lower extremity pivotally secured directly to said door, a link pivoted to the upper end of said door, a second link pivoted intermediate the ends of said hanger, means for connecting said links midway between said hanger and door, and an operating-rod secured at such connecting-point.

3. The combination with a car-door, of a track, a hanger suspended therefrom and having its lower extremity pivotally secured to said door, a pair of links connecting the upper end of said door and the hanger, the joining-point between said links being in substantially the same plane with the point of engagement between the hanger and the before-mentioned track and the point of connection between the door and the lower extremity of said hanger, in both the open and closed position of the door, and an operating-rod attached to the connection between said links.

4. The combination with a car-door, of a track, a hanger suspended therefrom, a plate at the upper end of said door, means for pivotally connecting the lower extremity of said hanger to said plate, a link pivoted to the central portion of said hanger, a second link pivotally engaging said first-mentioned link and the upper end of said plate whereby a toggle-joint is formed between the plate and the hanger, an operating-rod connected at the junction of said links, and a lug on said hanger and projecting above said links thereby limiting the upward movement of the op-

erating-rod and the junction-point of the toggle.

5. The combination with a car-door, of a track, a hanger suspended therefrom by means of a roller secured to said hanger and having its lower extremity secured to said door, a toggle-joint connecting the central portion of said hanger and the upper end of said door, an operating-rod pivotally secured to the links of said toggle-joint by the connection thereof, and a lug on the hanger extending over the links for limiting the upward movement of said operating-rod and the junction-point of said links.

6. In a suspended flush car-door, the combination with means, including a vertically-movable rod, for forcing the upper rear edge of the door inwardly into its door-opening, of a lever to which said rod is connected, a bracket-lug on the side wall of the car, and a cam-face on said bracket-lug which is engaged by said lever.

7. The combination with a bracket-lug having a cam-face and secured to the side wall of a car and near the door-opening, of a lever having a wedge-shaped part designed to engage the cam-face of said bracket-lug, a suspended flush door upon which said lever is mounted, and means at the upper edge of said door operatively connected to said lever for forcing the upper edge of the door inwardly; substantially as described.

8. The combination of a bracket-lug secured to the side wall of a car, a cam-face on said bracket-lug, a lever designed to coöperate with the cam-face on said bracket-lug, said lever being secured to a suspended flush car-door, an overhead track for supporting said door, and mechanism operatively connected with said lever for exerting a thrust against the upper edge of the door and said track for forcing the upper edge of the door inwardly; substantially as described.

9. The combination of a bracket-lug secured to the side wall of a car, a cam-face on said bracket-lug, a lever pivotally mounted upon a suspended flush door and coöperating with the cam-face of said bracket-lug, a pivoted part on said lever provided with an opening whereby the lever may be sealed to said bracket-lug, a rod connected to said lever, an overhead track, a roller-hanger coöperating with said track and pivotally connected to the upper rear edge of the door, and a toggle mechanism connected to said rod, to the upper edge of the door, and to said pivoted hanger for forcing the door inwardly into its opening when the lever is in engagement with its bracket-lug; substantially as described.

10. The combination with a car-door, of a track, a hanger suspended therefrom by means of a roller secured to the upper end of the hanger, the hanger having an integral portion extending over the outer face of the door and pivoted at its lower end thereto, a pair of pivotally-connected links connecting the upper end of said door and hanger at a point intermediate the connection of the hanger with the track and said pivot-point of the extension, an operating-rod attached to the links at the point of connection therebetween, and the pivotal connection between the links being at all times substantially in the same line with the point of engagement between the hanger and the above-mentioned track and the point of connection between the door and the extension of the hanger.

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

RICHARD MOBLEY.

Witnesses:
CHARLES S. SHALLENBERGER,
ALFRED A. EICKS.