

No. 689,737.

Patented Dec. 24, 1901.

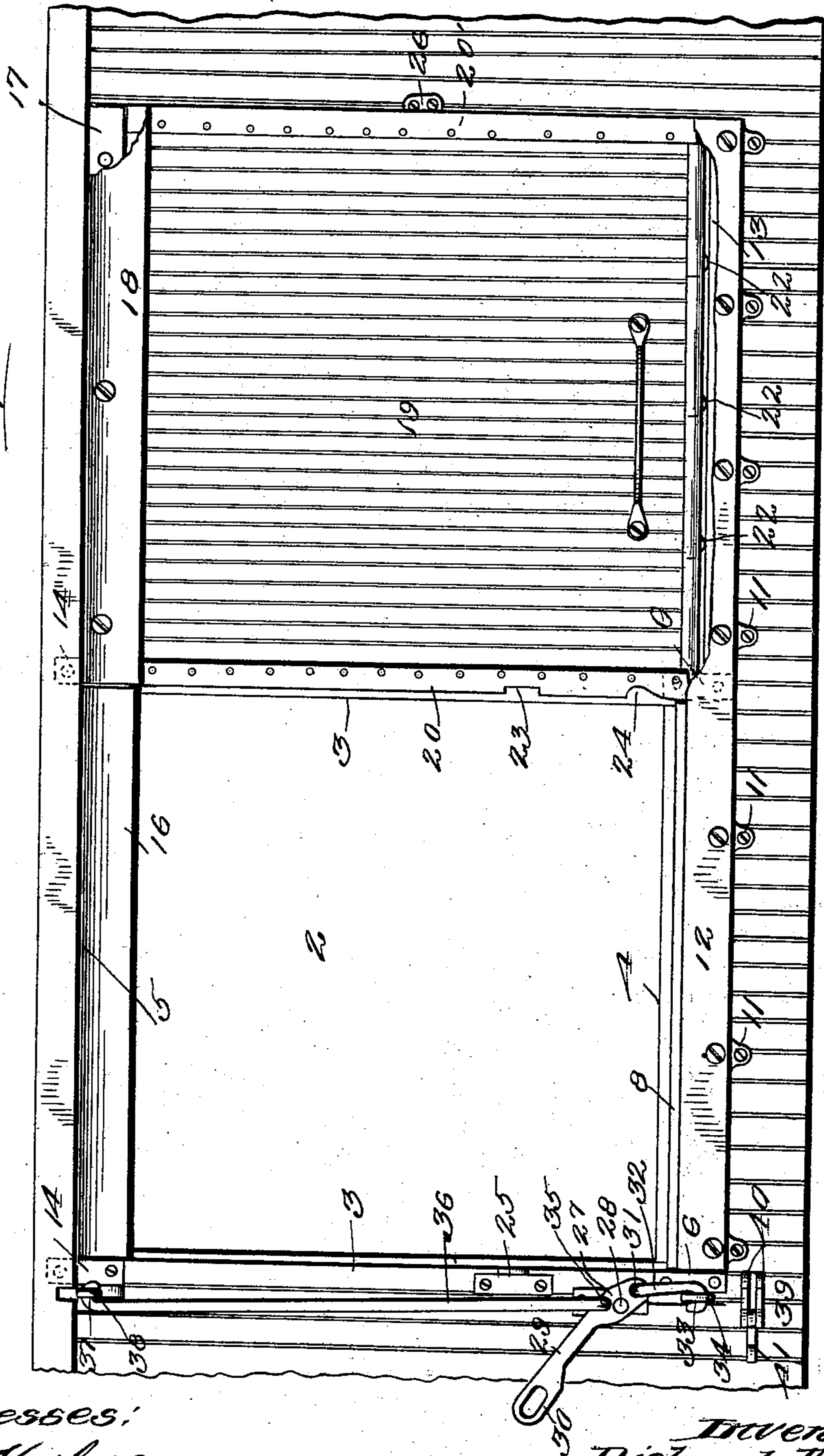
R. MOBLEY.
CAR DOOR.

(Application filed Apr. 4, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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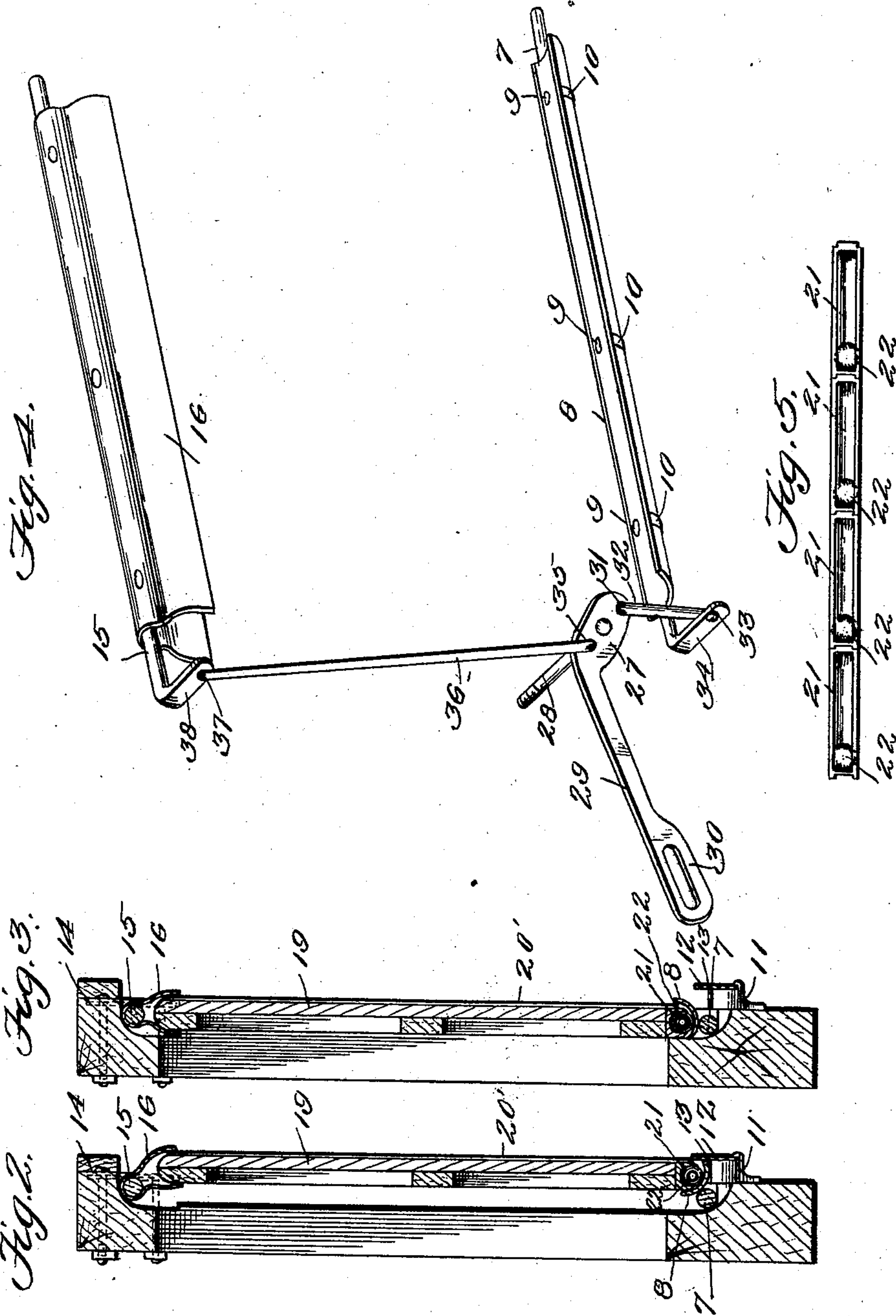
R. MOBLEY.

CAR DOOR.

(Application filed Apr. 4, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

RICHARD MOBLEY, OF PRINCETON, INDIANA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 689,737, dated December 24, 1901.

Application filed April 4, 1901. Serial No. 54,311. (No model.)

To all whom it may concern:

Be it known that I, RICHARD MOBLEY, a citizen of the United States, residing at Princeton, in the county of Gibson and State of Indiana, have invented new and useful Improvements in Car-Doors, of which the following is a specification.

This invention relates to certain new and useful improvements in car-doors, and more particularly to what may be termed a "flush" car-door adapted to fit snugly into the door opening or casing.

The invention aims to connect the door with the car or support it therefrom in such a manner as to permit of its being closed into the door opening or casing until its outer surface is flush with the outer side of the car; furthermore, to provide the car with means whereby the door may be moved into and out of the door opening or casing by leverage power.

The invention further aims to provide suitable guideways to permit of sliding the door away from the door opening or casing and to also protect the top of the door from rain, sleet, or snow, so that the same will not interfere with the operation of the door, as well as preventing sparks or other matters from entering the car; furthermore, to construct the bottom of the door with a series of ball-races carrying ball-bearings to materially assist the operator when sliding the door to and from the door opening or casing.

The invention further aims to construct a flush car-door and the operating means therefor which shall be extremely simple in its construction, strong, durable, and efficient in its operation, and comparatively inexpensive to set up; and it consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, and in which—

Figure 1 is an elevation of a portion of a side of a car, showing my improved door attached thereto and the operating mechanism for the door. Fig. 2 is a sectional elevation showing

the door in its open position. Fig. 3 is a like view showing the door closed. Fig. 4 is a perspective view of the operating mechanism for the door, and Fig. 5 is a detail showing the ball-races for the door.

Referring to the drawings by reference-numerals, 1 indicates one side of a car having the car-door opening 2, formed with the jambs 3, sill 4, and top 5.

Rotatably mounted within the bearing-brackets 6, secured to the car at each side of the sill 4, is an operating-rod 7, which extends entirely across the sill 4 and has mounted thereon the lower elevating or shifting track 8. The track 8 is substantially concave in contour, is secured to the rod 7 by the screws 9, and is provided with the reinforcing-strips 10 upon the outer face thereof.

Extending across the side of the car, as shown, is a series of supports 11, to which is secured the elongated guide-rail 12 a suitable distance from the car. The guide-rail extends past the car-door opening the desired distance. The portion of the guide-rail which is not opposite the car-door opening has its inner face formed with an integral flange or offset, forming a stationary track 13. The portion of the inner face of the guide-rail arranged below the car-door opening is not provided with the flange or offset, so that the operation of the elevating or shifting track 8 will not be interfered with. The track 8 when in its lowered position is adapted to align with the stationary track 13, forming thereby a continuous track from end to end of the guide-rail 12.

Secured to each side of the top of the car-door opening is a bearing-bracket 14, in which are rotatably mounted the ends of the operating-bar 15, carrying the upper shifting guide 16, the latter being substantially convexed in contour.

The reference-numeral 17 denotes a supporting-bar which is secured to the car at one side of the car-door opening and carries the segmental-shaped guide-strip 18, alining with the shifting guide 16 when the latter is in its outer position, forming thereby a guide substantially the length of the guide-rail 12.

The shifting track 8 is concaved in the manner shown, so that the outer portion thereof will engage around the bottom of the

door 19 and force the same within the car-door opening snugly, as well as preventing the entrance of sparks, sleet, snow, rain, or other matters to the car. The shifting guide 16 is formed convexed, so that the outer portion thereof will engage around the top of the door 19 and force the same within the car-door opening snugly, as well as preventing the entrance of sparks, sleet, snow, rain, or other matters to the car. The operation of the shifting track 8 and the shifting guide 16 is simultaneous, as will be hereinafter described. The guide-strip 18 is formed in a segmental manner to protect the top of the door from rain, sleet, or snow, the shifting guide 16 also protecting the top of the door 19 to that effect.

The door 19, which is adapted to operate upon the tracks 8 and 13, is provided at each side with an outwardly-extending reinforcing-strip 20 20', respectively, which extends from top to bottom of the door. The strips 20 20' extend over and upon the side of the car at the edges of the car-door opening, so that when the door is flush they will prevent the entrance of sparks or other matters to the car. Secured in any desirable manner to the bottom edge of the door 19 is a series of ball-races 21, preferably four, each provided with a ball-bearing 22. The ball-races are so constructed that the bearing comes on the sides of the balls and that while each ball travels the length of its race the door will have traveled its width. The races must also be constructed so that the balls must not have any bearing inside of the races, with the exception as before mentioned, and that the balls must not engage the top or ends of the race. To obtain the arrangement of the balls in the manner shown, the inner face of the sides of the races is formed in a curvilinear manner and each end of the races with an abutment. The strip 20 is cut away, as at 23 24, the former to permit the stop 25 to engage the door and the latter to permit of the operation of the operating-lever, to be hereinafter described. The reference-numeral 26 denotes a stop for the door when moved away from the car-door opening. The reference-numeral 26' denotes a suitable grip for removing the door from between the guides and tracks, so that it can be repaired when desired.

Secured at one side of the car-door opening, near the lower end thereof, is a plate 27, carrying a stud 28, to which is pivoted the operating-lever 29, provided with an apertured handle 30. The plate 27 has an opening arranged at each side of the stud 28. Attached, as at 31, to the lever 29 is the upper end of the link 32, the lower end thereof being connected, as at 33, to the outwardly-extending apertured lug 34, carried by one end of the operating-rod 7. Attached, as at 35, to the lever 29 is the lower end of the elongated link 36, the upper end thereof being connected, as at 37, to the outwardly-extending ap-

ertured lug 38, carried by one end of the operating-bar 15.

The reference-numeral 39 denotes a sealing device for the car as well as a locking means for the lever 29, and it consists of a pair of brackets 40, having one end thereof apertured and a catch 41 pivotally connected to the opposite end. The catch 41 is provided with an opening 42 in its free end, which is adapted to register with the apertures in the brackets 40. The catch 41 secures the apertured end of the lever 29 to the brackets 40, and when in such position a suitable sealing means is secured through the opening 42 and the apertures in the end of the brackets 40.

The operation of fitting the door snugly within the car-door opening 2 is as follows: Assuming that the door 19 has moved between the shifting track 8 and shifting guide 16, the lever 29 being in its normal position somewhat elevated, the lever 29 is then lowered, partially rotating the rod 7 and bar 15, elevating and moving inwardly the track 8, lowering and moving inwardly the guide 16, and forcing the door 19 within the car-door opening, the door fitting snugly within the opening. The operation of the rod 7 and bar 15 is caused by the lowering of the elongated link 36 and the elevation of the link 32, the former attached to the bar 15 and lever 29 and the latter attached to the rod 7 and lever 29. On a reverse movement of the lever 29—that is, elevating the same—a reverse movement will be given the links 32 36, as well as the shifting guide 16 and track 8, causing them to aline, respectively, with the segmental guide-strip 18 and stationary track 13, so the door 19 can be moved away from the car-door opening, if desired.

It is thought the many advantages of my improved car-door and the operating means therefor can be readily understood from the foregoing description, taken in connection with the accompanying drawings, and it will be noted that various minor changes may be made in the details of construction without departing from the general spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a car provided with a car-door opening, of a shifting guide, a shifting track, separate means for supporting said guide and track, a door inclosed and engaged at its top within the said guide and at its bottom within the said track, ball-bearings suitably carried by the bottom of said door and engaging the track, and means connected to the said supporting means for the track and guide for operating these latter simultaneously.

2. The combination with a car provided with a car-door opening, of an oscillating shifting guide, of an oscillating shifting track, a door inclosed and engaged at the top thereof by said guide and at the bottom thereof by

said track, and means for simultaneously oscillating the said track and guide for moving said door into and out of said opening.

3. In combination, a shifting guide, an operating-bar therefor, a shifting track, an operating-rod therefor, a door arranged between said track and guide, and means for operating said track and guide for moving said door into and out of position.

4. The combination with a car provided with a car-door opening, of a longitudinally-extending shifting guide substantially the width of the said opening, a longitudinally-extending shifting track substantially in the said opening, a car-door having its top engaged and inclosed by said guide and its bottom engaged and inclosed by said track, and means for operating said track and guide for moving said door into and out of said opening.

5. In combination, a substantially convexed shifting guide, an operating-bar connected thereto, a link attached to said bar, a substantially concaved shifting track, an operating-rod connected thereto, a link attached to said rod, a door arranged between said track and guide, and a lever attached to said links for operating the same causing thereby the shifting of said track and guide.

6. In combination, a stationary track, a shifting track adapted to aline therewith, a stationary guide, a shifting guide adapted to aline therewith, a guide-rail for said stationary and shifting tracks, a door arranged between the said tracks and guides, and means for operating simultaneously said shifting track and guide.

7. In combination, a stationary track, a shifting track adapted to aline therewith, a stationary guide, a shifting guide adapted to aline therewith, a guide-rail for said shifting and stationary tracks, a door arranged between said tracks and guides, ball-races attached to the bottom of said door and each provided with a ball-bearing adapted to engage said tracks, and means for operating said shifting track and guide simultaneously.

8. In combination, a stationary track, a shifting track adapted to aline therewith, a stationary guide, a shifting guide adapted to aline therewith, a guide-rail for said shifting and stationary tracks, a door arranged between said tracks and guides, ball-races attached to the bottom of said door and each provided with a ball-bearing adapted to engage said tracks, an operating-lever connected with said shifting guide and track for operating them simultaneously, and a fastening device for said lever.

9. In combination, a stationary track, a shifting track adapted to aline therewith, a stationary guide, a shifting guide adapted to aline therewith, a guide-rail for said shifting and stationary tracks, a door arranged between said tracks and guides, ball-races attached to the bottom of said door and each provided with a ball-bearing adapted to engage said tracks, a link connected with said shifting guide, a link connected with said shifting track, an operating-lever attached to said links for operating the same, and a fastening device for said lever.

10. In combination; a stationary track, a shifting track adapted to aline therewith, a stationary guide, a shifting guide adapted to aline therewith, a guide-rail for said shifting and stationary tracks, a door arranged between said tracks and guides, ball-races attached to the bottom of said door and each provided with a ball-bearing adapted to engage said tracks, an operating-bar secured to said shifting guide, an operating-rod secured to said shifting track, an operating-lever, a link connecting said lever to said bar, and a link connecting said lever to said rod.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RICHARD MOBLEY.

Witnesses:

HENRY E. AGAR,
HARRY A. CONNOR.