C. F. REIGH.

CAR DOOR HANGER.

APPLICATION FILED APR. 5, 1910.

990,776.

Patented Apr. 25, 1911.

2 SHEETS—SHEET 1.

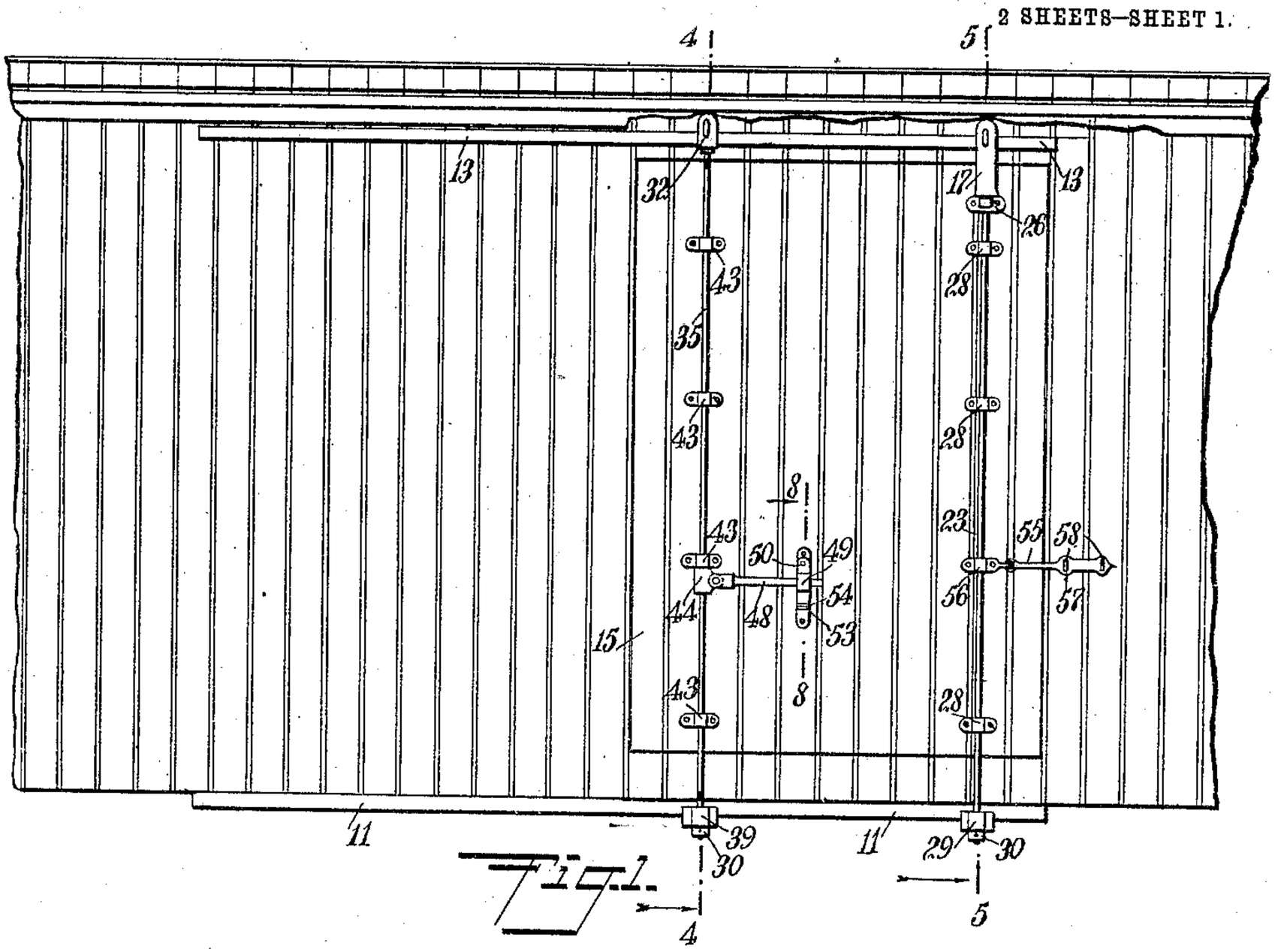

Fig. 1.

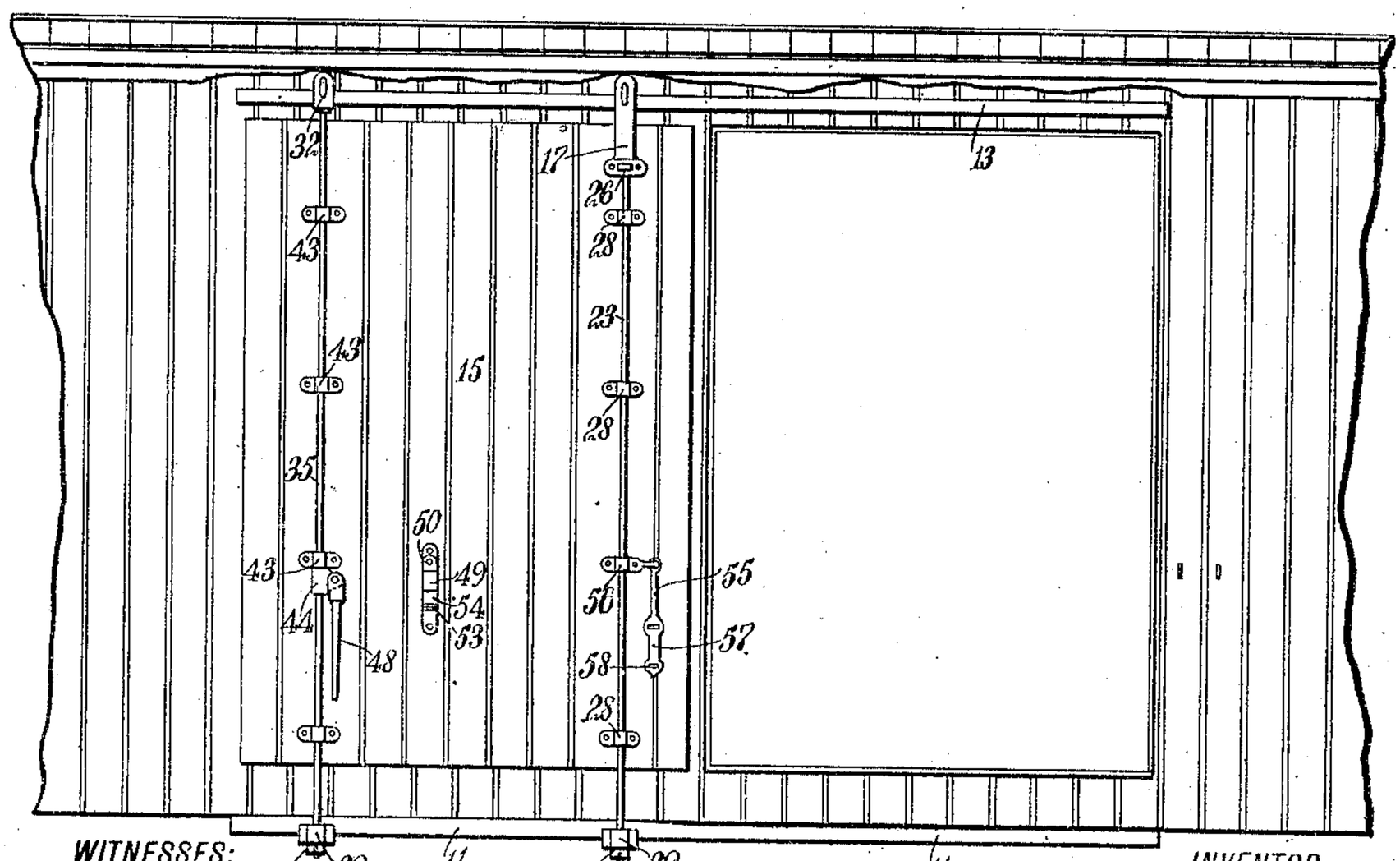

Fig. 2.

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2 SHEETS—SHEET 2.

FIG. 3.

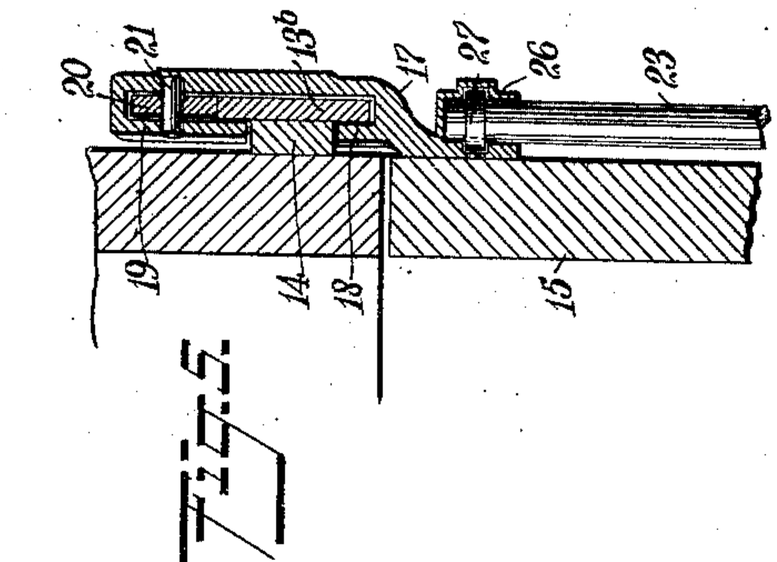

FIG. 5.

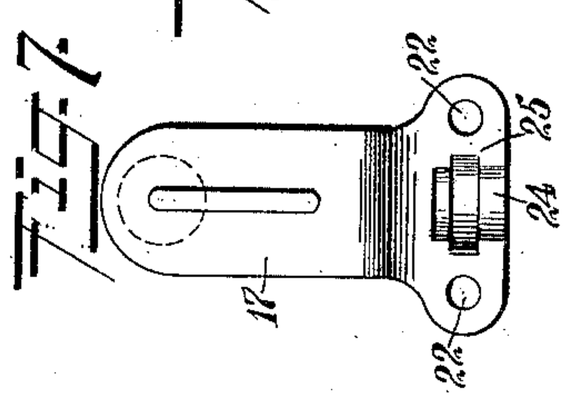

FIG. 7.

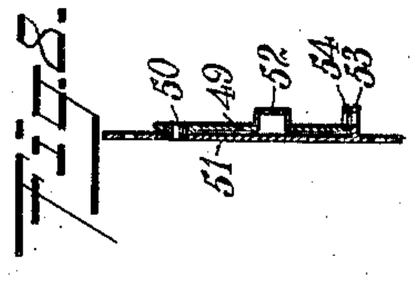

FIG. 8.

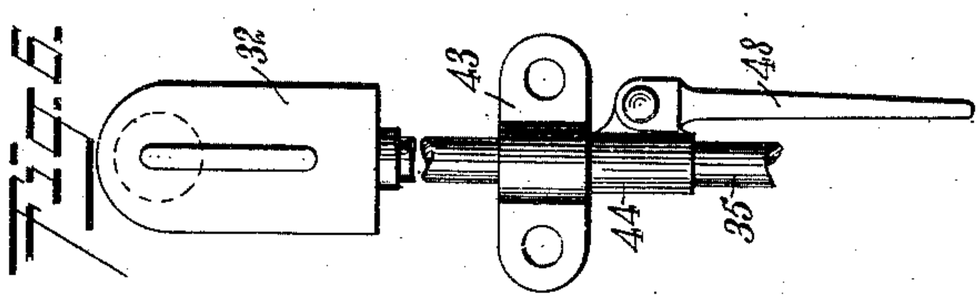

FIG. 6.

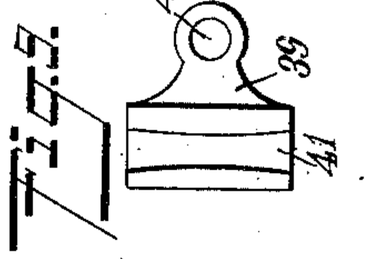

FIG. 9.

FIG. 4.

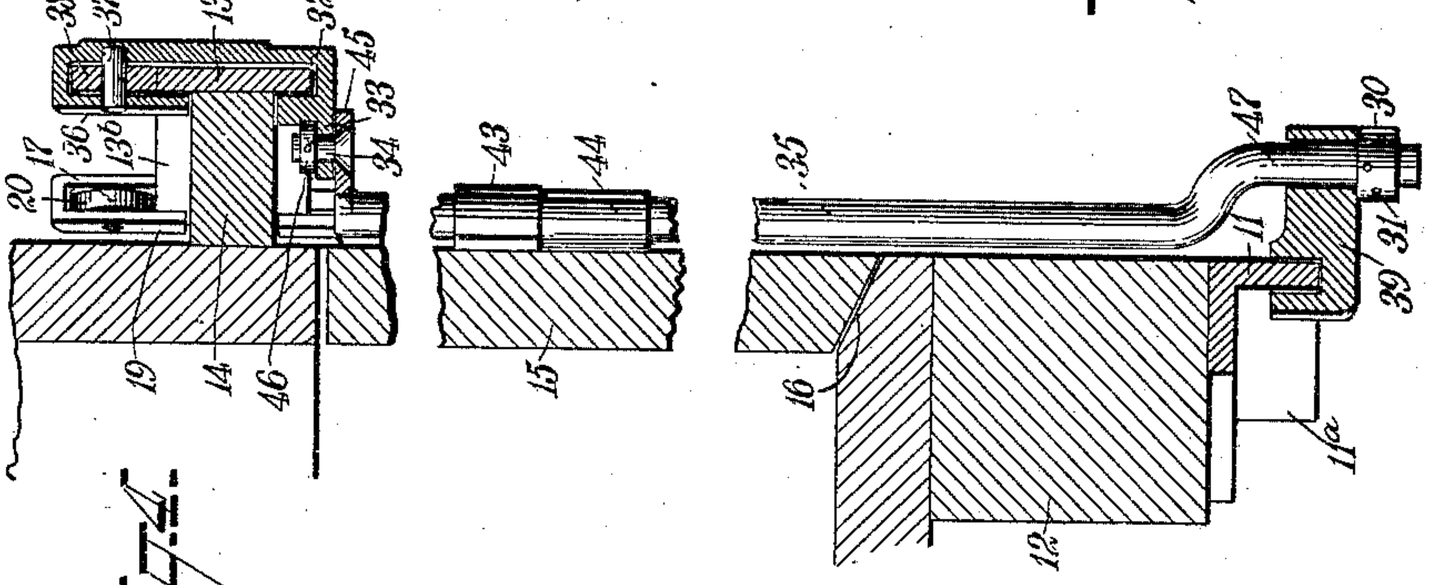

FIG. 10.

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UNITED STATES PATENT OFFICE.

CALEB FRANK REIGH, OF JUNIATA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO N. F. ARBLE, OF PITTSBURG, PENNSYLVANIA.

CAR-DOOR HANGER.

990,776. Specification of Letters Patent. **Patented Apr. 25, 1911.**

Application filed April 5, 1910. Serial No. 553,488.

To all whom it may concern:

Be it known that I, CALEB F. REIGH, a citizen of the United States, and a resident of Juniata, in the county of Blair and State of Pennsylvania, have invented a new and Improved Car-Door Hanger, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide an outside sliding door adapted to be disposed in a position flush with the outside of the car body; to provide a construction for the operating mechanism of the door whereby the sag of the door may be taken up; to provide a novel means for locking the door; to provide means for disposing the door in locked position to ventilate the car; to provide a construction and arrangement for the mounting of said door whereby the interference of the same to the operation of loading and unloading the car is removed; and to provide a construction for the mounting of a door which is simple, durable and efficient.

One embodiment of the present invention is illustrated in the structure shown in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a side elevation of a car body provided with a door constructed and arranged in accordance with the present invention, the door being shown in closed position; Fig. 2 is a similar view, showing the door in opened position; Fig. 3 is a plan view in detail, on an enlarged scale, of the lower track of the door mounting; Fig. 4 is a fragmentary detail view in vertical section taken on the line 4—4 in Fig. 1, of the car body structure, door and mounting therefor; Fig. 5 is a similar view taken on the line 5—5 in Fig. 1; Fig. 6 is a detail view fragmentary in form and shown on an enlarged scale, of the rearmost pivot rod, upper hanger and operating lever therefor; Fig. 7 is a detail view in front elevation and on an enlarged scale, showing the upper hanger for the forward guide rod, the view showing the body casting of the hanger with the socket cap thereof removed; Fig. 8 is a detail view in vertical section taken on the line 8—8 in Fig. 1, of the locking shackle for the operating lever of the rear hinge rod; and Fig. 9 is a detail view in plan, of the lower guide bracket of the rearmost hinge rod.

Among the most serious objections under which the various attempts to provide an outside sliding mounting for car doors has labored, has been that the lower guide rail for the door has protruded from the side of the car body, and forms an obstruction or interference to the easy loading and unloading of the car. The rail has also been subjected to receiving heavy blows, which have bent the rail so as to prevent the closure of the door until remedied. The remedy, as a rule, has required the services of a mechanic, which at times it has been difficult to obtain. It is to avoid this particular difficulty that in the present invention a lower rail 11 has been secured to the under side of the car body adjacent to the door opening in such manner as never to protrude beyond the car body. The rail 11 is preferably formed, as shown in Figs. 3, 4 and 5, from angle iron, one flange of which is laid against the lower sill 12 of the car body, and the other flange of which is then depended and disposed toward the outer vertical side of the car body. The rail 11 is formed in two sections 11^a and 11^b. The sections are bent to form divergent extensions, which, when the rail is mounted on the car body, produce a track parallel or flush with the side of the car body. The section 11^b is inclined under the car body, away from the side thereof. The result of the inclined section 11^b is to draw inward the forward edge of the door when the same is moved to cover the door opening. Thus, when the door is opened, the lower edge of the door opening is unobstructed, permitting the use of trucks or drays, the tail pieces of which may be backed against the sill 12 or extended into the door opening without interference from the door mounting. The same objection does not apply to the upper rail, and in this invention the said upper rail 13 is formed from a flat bar bent to conform to the track shape of the lower rail 11. The rail 13 is supported in position above the door opening and adjacent thereto upon bracket blocks 14, 14. The straight section 13^a of the rail 13 corresponds in disposition

and length with the section 11^a of the rail 11, though extended outward from the side of the car body. The section 13^b in the same manner corresponds with the section 11^b of the rail 11.

The door 15 is constructed in any approved manner, and is provided with a chamfered bottom to fit the door sill 16 of the door opening. At the forward and upper edge of the door there is fixedly mounted thereon a bracket hanger 17. The bracket hanger 17 is hook shaped, having flanges 18 and 19 adapted to extend around and to the inner side of the rail 13. The upward extension of the hanger 17 is provided to receive a roller 20, which is provided with a pivot shaft 21, for which bearings are formed in the hanger 17 and flange 19 thereof. The roller 20 is disposed to track on the outer edge of the rail 13. The weight of the door in its forward action is carried upon the roller 20 and in the manner portrayed. The hanger 17 is securely bolted to the door 15, the bolts being passed through perforations 22, 22 formed in the lower extension of the casting forming the hanger 17. In the said extension is formed the half socket for a guide rod 23. The half socket, as illustrated in Fig. 7 of the drawings, is provided with a cylindrical extension 24 and an annular recess 25. A cap 26 is provided to fit over the extension at the lower end of the hanger 17, having end tabs provided to correspond with the perforations 22, and socket recesses to correspond with the cylindrical extension 24 and the annular recess 25. When the cap 26 is in position a cylindrical chamber is formed to receive the upper end of the guide rod 23 and a collar 27 mounted thereon. The rod 23, which is thus secured to the hanger 17 as above described, is pivotally mounted in the forward edge of the door in clips 28, 28, and extended through a perforation formed in the end of a guide bracket 29. The bracket 29 is provided at the inner end with a transverse slot adapted to receive the vertical flange of the rail 11. The transverse slot formed in the bracket 29 corresponds with the slot shown in Fig. 9, which is formed in the guide bracket attached to the hinge rod at the rear of the door. It will be noticed that the slots thus formed are contracted at the center and flared at the outer ends to prevent binding or jamming of the rail sides within the said slots. The lower end of the rod 23 has secured thereon a collar 30. The collar 30 is provided with a series of perforations adapted to receive a pin 31. The pin 31 is driven through a perforation provided in the lower end of the rod 23, and the arrangement whereby a number of perforations are made in the collar 30 affords a simple means for adjusting the collar longitudinally on the said rod 23. This arrangement of variously disposed perforations in the collar 30 to receive the pin 31 when driven through the single perforation in the bottom of the rod 23, is provided to raise the bracket 29 into guiding arrangement with the rail 11 whenever, through wear or other cause, the rail 13 sags, and in which position there might be danger of the bracket 29 dropping out of engagement with the said rail 11. It will be understood that at the forward end of the door the rod 23 operates in conjunction with the lower rail 11 as a guide for the door 15. When the door 15 is advanced to the closed position, it will be seen, as in Fig. 5 of the drawings, that the section 13^b of the rail 13, and the section 11^b of the rail 11, have guided the hanger 17 and the bracket 29 inwardly toward the car door, as contrasted with the position assumed by the said hanger 17 and bracket 29 when the door is thrown back to the position shown in Fig. 2 of the drawings, which position is illustrated in section in Fig. 4 of the drawings.

The rear end of the door is supported by a hanger, 32, differing in construction from the hanger bracket 17 only in that an extension 33 is provided to receive a pivot bolt 34, by which a hinge rod 35 is pivotally suspended from the said hanger 32. The hanger 32 is provided with a depended extension 36 provided to form one side of the bearings for a pivot bolt 37 with which the roller 38 is provided. The roller 38 is disposed to track upon the rail 13.

The hinge rod 35 is provided at the lower end thereof with a guide bracket 39. The bracket 39 is formed as shown in Figs. 4 and 9 of the drawings. It will be noticed that the length of the bracket 39 is not as great as that of the bracket 29. This is for the reason that the bracket 39 does not pass on to the section 11^b of the rail 11, for which reason the bracket 29 is elongated, as shown. The bracket 39 is provided with a perforation 40 and a double flared slot 41, wherein rests the vertical extension of the angle bar of the rail 11. The bracket 39 is supported on the rod 35 by means of one of the collars 30, and secured thereto by the pin 31 for the purpose and in the manner as above described with reference to the rod 23.

The rod 35 forms a hinged support for the door 15, the weight whereof is carried on a keeper 43, which rests upon a shoulder 44 welded in position upon the rod 35. The rod 35 is supported by the pivot bolt 34, which is extended through a perforation in an extension 45 set out from the upper end of the said rod 35. The bolt 34 is held in supported position upon the extension 33 by a removable collar 46. The lower end of the rod 35 is bent to form a lower extension 47 in position alined with the bolt

34, and extended parallel with the body of the rod 35. By means of this arrangement the extension 47 and the bolt 34 constitute the hinged pivots on which the rod 35 is swung in moving the rear end of the door 15 laterally into the door opening provided therefor. In thus swinging the rear end of the door into the door opening to become flush with the sides of the car, a lever handle 48 is employed in the position of the door 15 and the rod 35 illustrated in Figs. 1 and 4 of the drawings. The lever 48 may be laterally extended, as illustrated in Fig. 1. In this position it may be engaged by a hasp 49, which is pivoted at 50 upon the door 15 and upon a plate 51, as seen in Fig. 8 of the drawings. The hasp 49 is provided with an outwardly extended recess 52, adapted to fit the said lever 48 when passed over the end thereof, as shown in Fig. 1 of the drawings. The plate 51 is provided with an outwardly extended ear 53. A corresponding ear 54 is provided on the end of the hasp 49. The two ears are perforated in alinement to receive the shackle of any suitable form of padlock. It is obvious that when the lever 48 is disposed, as shown in Fig. 1 of the drawings, to be engaged by the hasp 49, the rod 35 is swung on the extensions 45 and 47 to move the body portion of the said rod, and the door connected therewith, inwardly, and to close the said door within the opening provided therefor. It is obvious that if the hasp 49, after engaging the lever 48, be locked to the plate 51 by a padlock engaging the ears 53 and 54, the door 15 is immovably locked in closed position, for the reason that the rear edge of the door must be moved outward to clear the jamb of the door to be retracted.

As an additional lock there is provided a hasp 55, pivotally connected to a keeper 56 forming one of the guides for the guide rod 23. The hasp 55 is of sufficient length to overthrow on to the side of the car body to engage a staple 57 in the side thereof. Through the staple 57 is threaded the shackle of a suitable padlock. The hasp 55 is provided with two slots 58, the same being removed at different distances from the pivotal connection of the said hasp, as seen in Fig. 1 of the drawings. The slot 58 nearest the outer end of the said hasp is provided to engage the staple 57 when it is desired to lock the said door in partially opened position. To utilize the hasp 55 for locking the door in said partially opened position it is necessary that the lever 48 should be released from engagement with the hasp 49, and that the rear end of the door 15 be outwardly projected to clear the rear jamb of the door opening. In this position the door is retracted until the end slot 58 is alined with the staple 57 to be slipped over the said staple and secured in position by the padlock, as above mentioned. The hasp 55 will maintain the door in the position mentioned.

In some instances, I prefer to construct the hangers for the car door to operate on straight tracks both at the upper and at the lower edges of the said door. In such a case I substitute for the bent rails 11 and 13, straight rails having the same cross sectional shape as the said rails 11 and 13. In this modification of the construction, I employ two of the guide rods 23, each provided with hangers 17 and supporting collars 30. Said hangers and collars in the modified form are constructed and arranged in the manner above described.

In adapting the construction to the modified form the hanger brackets 29 and 39 are shortened. The rail 11 is maintained at the edge of the car body and parallel with the side of the car. The rail 13 is held as close to the car body as possible and in parallel disposition thereon.

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

1. A car door hanger, comprising a plurality of supporting rails disposed above and below the door opening, one of said rails being disposed under the car body and removed from the vertical side thereof, the other of said rails being disposed above the door opening and extended from the vertical side of the car body, both of said rails being inclined inwardly toward the opening edge of the door frame; a plurality of supporting rods pivotally connected to said door at the forward and rear end thereof, the rearmost rod being shaped to form a bowed extension adapted to swing about the pivotal center to move the section of said door connected therewith within the door opening; a plurality of guide brackets connected with said rods and said rails; and locking means embodying an elongated hasp having two engaging sections disposed at varied intervals from the pivotal mounting therefor to provide means for locking the said door in a partly opened position.

2. A car door hanger, comprising a plurality of straight tracks disposed at the upper and the lower edges of the door opening and in parallel relation with the car body; a plurality of vertically disposed supporting rods attached to the door for closing said opening, and at the forward and rearward edges thereof; carrier hangers having supporting wheels mounted on said tracks, said hangers having engaging clamps for the upper end of said rods; guide brackets provided with a perforation to receive the said supporting rods, and said brackets further provided with upwardly opening slots to infold the lower of said tracks; and adjustable collars adapted to be

fixedly mounted in varied positions on the lower ends of said rods.

3. A car door hanger, comprising a plurality of supporting rails angularly disposed above and below the door opening, the lower rail being angularly disposed under the car body and entirely removed from the vertical side thereof; guide members and brackets for said door having a sliding engagement with said rails, the top brackets movably engaged over the upper angularly disposed rail, and the lower guide members slidably disposed and engaged under the lower rail; a plurality of vertically disposed supporting rods for said door pivotally connected to said upper brackets, whereon the said door may be rotated to swing out of and into the door opening, the lower end of the brace rods passing through the lower guide members; and means on the rods for taking up slack due to sagging of the car body.

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

CALEB FRANK REIGH.

Witnesses:
WALTER J. HENRY,
T. J. T. CASPER.