

No. 671,705.

Patented Apr. 9, 1901.

G. I. KING.

DOOR FOR HOPPER BOTTOM CARS.

(Application filed Jan. 23, 1901.)

(No Model.)

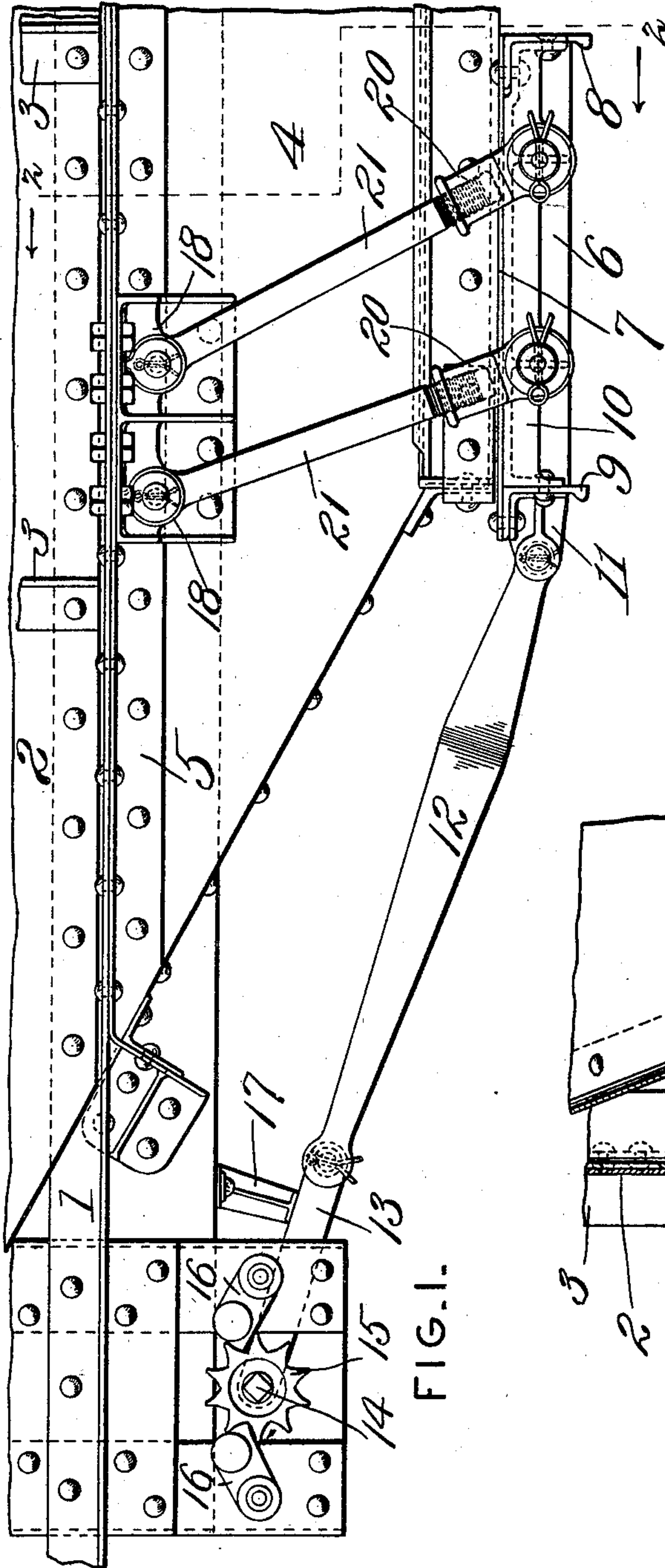


FIG. 1.

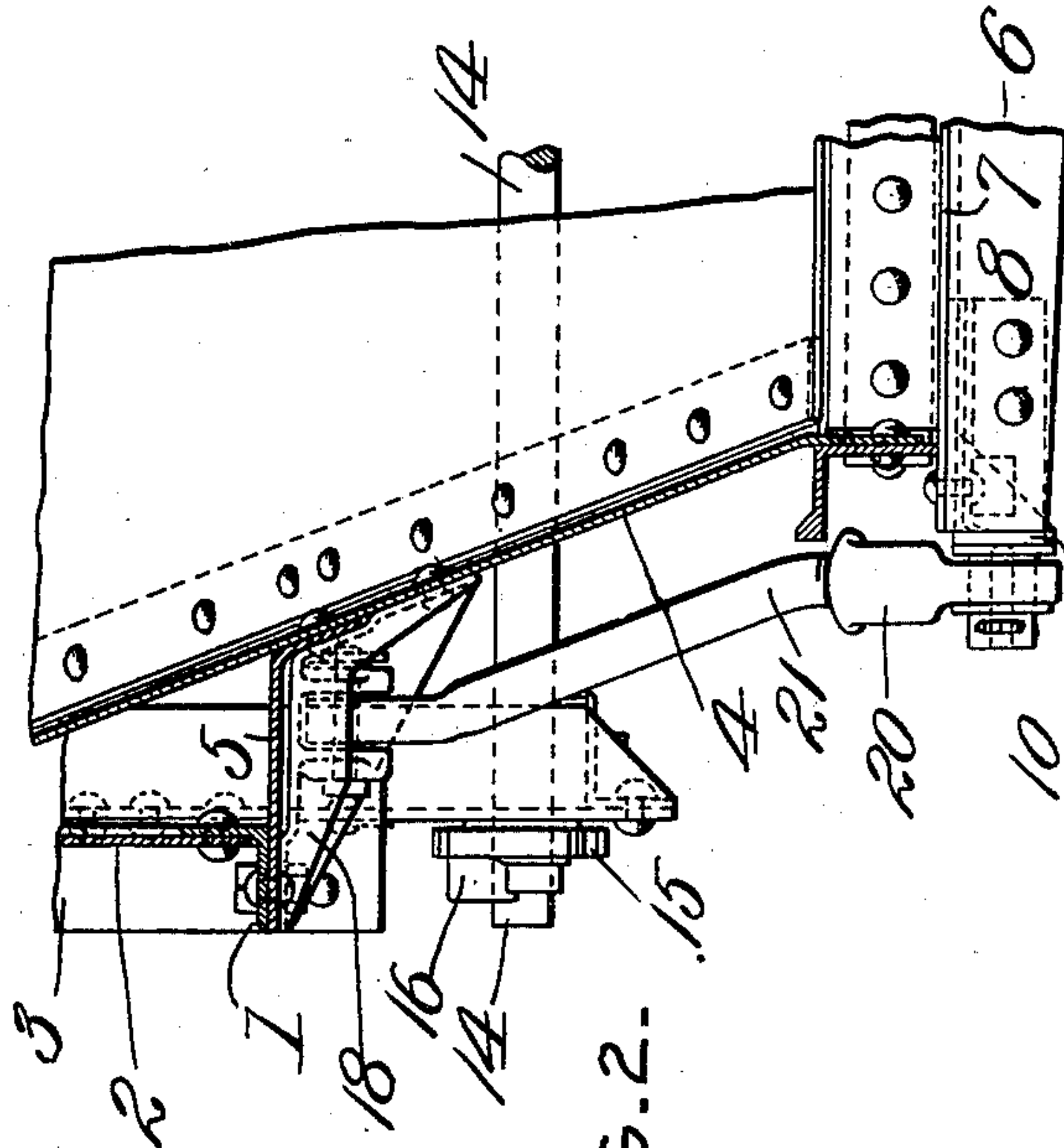


FIG. 2.

ATTEST.

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# UNITED STATES PATENT OFFICE.

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## DOOR FOR HOPPER-BOTTOM CARS.

SPECIFICATION forming part of Letters Patent No. 671,705, dated April 9, 1901.

Application filed January 23, 1901. Serial No. 44,427. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE I. KING, a citizen of the United States, residing at the city of Detroit, in the county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Doors for Hopper-Bottom-Cars, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view of a portion of a hopper-bottom car upon which is mounted my improved door. Fig. 2 is a vertical sectional view on line 2 2, Fig. 1.

This invention relates to a new and useful improvement in doors designed especially for use in connection with hopper-bottom cars—such, for instance, as is shown and described in United States Letters Patent No. 658,783, dated October 2, 1900.

The object of the present invention is to provide adjustable door-hangers in order that doors may be adjusted to different cars, such adjustment taking up inequalities in the manufacture of the car and also taking up the stretching which may be found in the hangers after use.

With this object in view the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, 1 indicates the side sill of the car; 2, the side sheet; 3, the angles reinforcing the side sheet; 4, the hopper-sheet, and 5 the strengthening-plate, riveted to the side sill and hopper-sheet, reinforcing the latter, such parts being shown in my former patent referred to.

6 indicates the door as an entirety, which door is disposed horizontally, said door closing the exit for the load, of which the side hopper-sheet forms one wall. This door in practice extends transversely the car and co-operates with a companion, (not shown,) which companion is similar in all respects and is operated in like manner, though in an opposite direction. Door 6 is composed of a sheet of metal 7, forming the panel of the door,

said sheet being carried by inner and outer angles 8 and 9, respectively, while castings 10 are riveted to said angles for supporting the panels of the door, as will be readily understood.

11 indicates brackets secured to the outer angle 9, to which brackets is pivoted the Y-shaped link 12, the outer end of said link being connected to the rock-arm 13, extending from the inner end of a rock-shaft 14. This rock-shaft is mounted in appropriate bearings and is provided with a ratchet 15, with which coöperate pawls 16, said shaft being provided with a non-circular portion for receiving a suitable wrench, by which power is imparted thereto.

17 indicates a stop-block mounted upon the center sill of the car for arresting the upper movement of the rock-arm at such place where the pivoted points of the Y-shaped link are past a position of dead-center. Thus the door-operating mechanism serves to lock the door in its closed position, the pawls engaging the ratchet preventing the rotation of the rock-shaft. The door-hangers are pivotally connected to the outer castings 10 of the door at their lower ends, while their upper ends are pivotally mounted in lugs 18. These lugs are preferably in the form of castings secured under the strengthening-plate 5, said castings having suitable strengthening-webs, whereby they act not only as braces for the strengthening-plate 5, but also as supports for the side hopper-sheet.

In order to adjust the hangers, I make the same of two parts, one in the form of a nut 20, whose lower portion is pivoted to the casting 10, and the other a threaded rod 21, whose upper end is pivoted to the casting 18, the lower or threaded end of said rod being received by the nut, as is clearly shown in the drawings. The lower section of the hanger is held on its pivot by a cotter or other suitable device, while the pivot in the casting 18 is held in position by cotter, whereby either or both of the sections of the hanger may be disconnected at will. When disconnected, the parts may be relatively rotated with respect to each other, which results in shortening or lengthening said hanger, and when the hanger is introduced in its position on its respective



pivot-pins it is locked against rotation, and therefore held in its adjusted position.

The adjustment of the hangers is important in cars of this description simply because the doors in their closed position, when the car is loaded, support a great weight, and where the contents of the car consists of fine granular particles the sagging or deflection of the doors, due to the stretching of the hangers or from other causes, permits particles to drop out when the car is in transit. By making the hangers adjustable longitudinally, there being two hangers at each side of the door, the door may be adjusted bodily in a vertical direction by adjusting all of the hangers, or one side may be adjusted, or the front or back edge, at will. In operation these hangers, as shown in Fig. 1, hold the door in a horizontal position when the door is closed. When the operating mechanism is actuated, the doors swing on the hangers, and due to the great length of the front or inner hanger the inner edge of the door moves in an arc or a circle greater than the movement of the outer or inner edge of the door, whereby when the door is in its open position it is tilted or canted, so that any particles or material which may endeavor to lodge thereon will have an opportunity of falling off with the discharge of the load.

I am aware that minor changes may be made in the details of construction of my improved door, and I wish to be understood as claiming such in the following claims, except where such claims are expressly limited to the details of construction.

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

1. In combination with a hopper-bottom car, a door for opening and closing the exit for the load, and two hangers for suspending each side of said door, one end of each hanger being pivotally connected to the door, and the other end of each hanger being pivotally connected at different points above said door, said hangers being adjustable longitudinally, substantially as described.

2. In combination with a hopper-bottom

car, a door for opening and closing the exit of the load, said door being suspended by two hangers arranged at each side thereof, one hanger being pivotally connected at front and back edges of the door respectively, the other end of said hangers being pivotally connected at different parts above the door, one of said hangers being longer than the other, whereby, one edge of the door may be dropped lower than the other during the opening movement, said hangers being composed of sections, which enables the hangers to be adjusted longitudinally, substantially as described.

3. In combination with a hopper-bottom car, a door for opening and closing the exit for the load, two hangers pivotally connected to the front and rear edges of said door, and other ends of said hangers being pivotally connected at different points above the door, the hangers pivoted to the front edge of the door being longer than the other hangers; all of said hangers being made up of two sections respectively, whereby said hangers are longitudinally adjustable, substantially as described.

4. In combination with a bracket for bracing the side hopper-sheet, of two hangers pivotally mounted in said bracket, said hangers being longitudinally adjustable, and a door supported by the lower ends of said hangers, substantially as described.

5. In combination with a hopper-bottom car, a door for closing the exit for the load, pivot-lugs extending from the front and back edges of said door, female hanger-sections mounted upon said pivot-lugs, male hanger-sections bent to conform to the shape of the car, and threaded into said female sections, and a brace-bracket in which the upper ends of said male sections are pivoted, substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 21st day of January, 1901.

GEORGE I. KING.

Witnesses:

F. R. CORNWALL,  
D. G. STUART.