

UNITED STATES PATENT OFFICE.

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DOOR FOR HOPPER-BOTTOM CARS.

SPECIFICATION forming part of Letters Patent No. 670,615, dated March 26, 1901.

Application filed January 23, 1901. Serial No. 44,428. (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; and Fig. 3 is an inverted plan view of a portion of the door and its hanger.

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 Patent No. 658,783, dated October 2, 1900.

The object of this present invention is to simplify the construction of doors for such a type of cars, the door being strong and well able to withstand the rough usage to which it is subjected.

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 sidesheet; 4, the hopper-sheet, and 5 the strengthening-plate riveted to the side sill and hopper-sheet and reinforcing the latter, all of the above parts being shown in my former patent above 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 supported by longitudinally-arranged angles 8 and 9, respectively, and transversely-arranged angles 10 at the side edges of the door. These angles may be cast or rolled, in which latter event the vertical members or legs may be sheared to taper the angles at their ends.

12 indicates a plate having an inturned flange 13 at its lower edge, which inturned flange fits under the horizontal leg of the angle 10, said flange being riveted to said angle and to the outer edge of the panel-sheet 7, as shown. There is a plate 12 at each side of the door, said plates serving as hangers. Plates 12 carry a casting 12^a at their upper ends, which casting forms a pivot-eye for co-operating with the pivot-lug 14, secured to the strengthening-plate 5. The pivot-lug 14 is preferably reinforced by suitable webs, whereby it serves as a bracket-brace for the strengthening-plate and the side hopper-sheet. The hanger-plates 12 being pivoted, as shown, permit the door to be opened outwardly on an arc of a circle described from the pivot-point of the bracket 14, so that when the door is in its open position it is slightly tilted or canted to enable any particles lodging thereon to readily be discharged.

The mechanism operating the door preferably consists of a link 15, pivotally connected to lug-castings mounted on the angle 9, said link being pivotally mounted on a rock-arm 16, extending from the inner end of a shaft 17. This shaft carries a ratchet-wheel 18 on its outer end, with which coöperate pawls 19. A stop 20, preferably secured to the center sills of the car, arrests the rock-arm in its inward movement when the pivotal points of the link are past a line of dead-center, which construction serves to lock the door in its closed position, the ratchet-pawls serving to prevent the rock-arm from being dislodged.

When it is desired to open the door, the pawls are disengaged from the ratchet and the rock-arm turned down, which, through the link connections of the door, causes the door to swing downwardly and outwardly.

I am aware that minor changes in the arrangement, construction, and combination of the several parts of my device may 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 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, said door comprising a panel, angles 8, 9 and 10, and plate-hangers pivoted at their upper ends, the lower edges of said plate-hangers being flanged under the horizontal legs of angles 10; substantially as described.

2. In combination with a hopper-bottom car, a door for opening and closing the exit of the load, said door comprising a panel-sheet 7,

longitudinally-disposed angles 8 and 9 arranged at the inner and outer edges thereof, angles 10 arranged at the side edges of the door, plate-hangers 12 flanged under the horizontal legs of the angles 10 and riveted thereto, and castings riveted to the upper ends of the plate-hangers for pivotally mounting said hangers and their supported door upon the car; 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.