

F. E. STALEY & J. McL. FLETCHER.

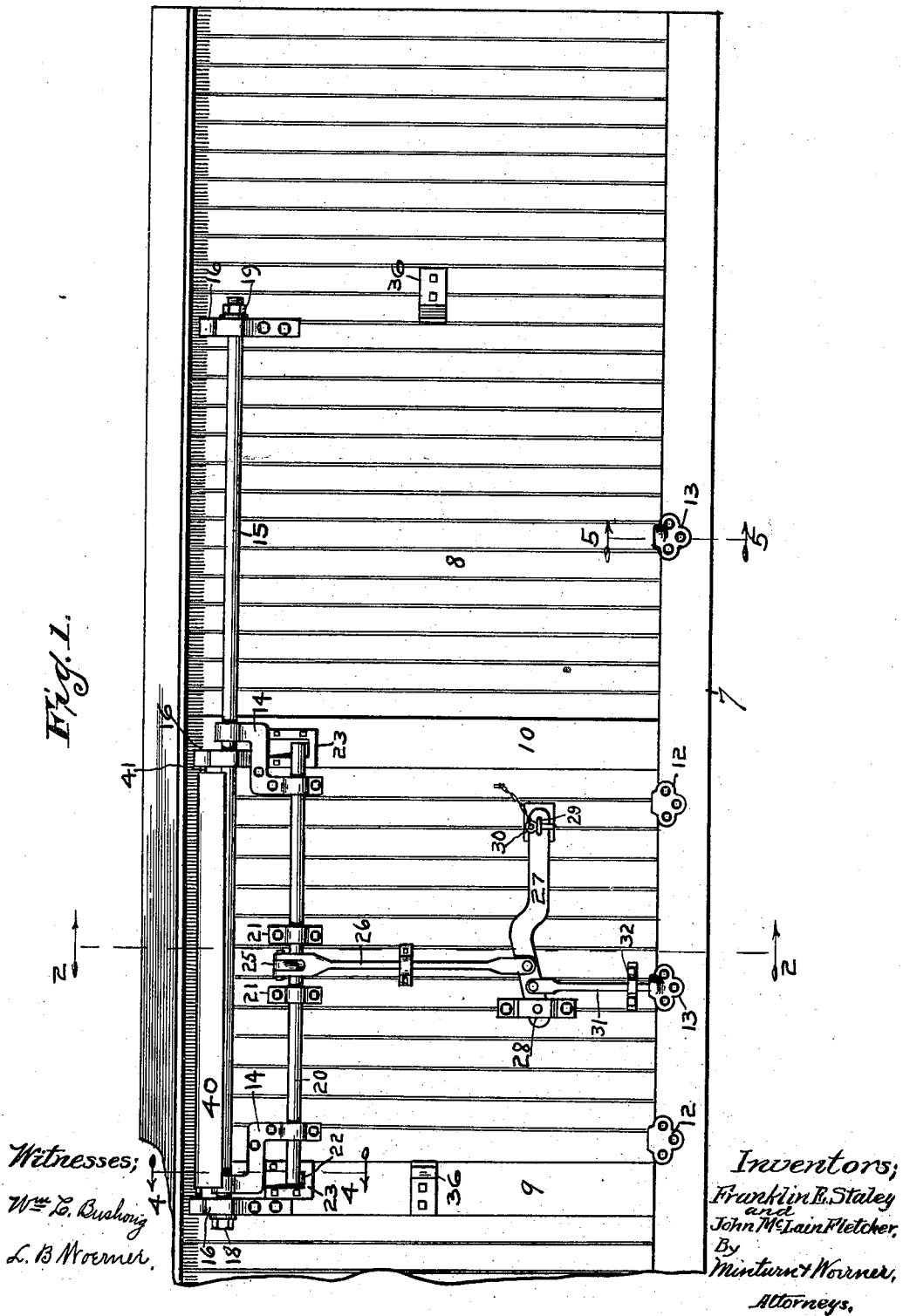
CAR DOOR.

APPLICATION FILED MAY 7, 1910.

981,709.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.



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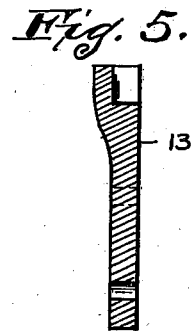
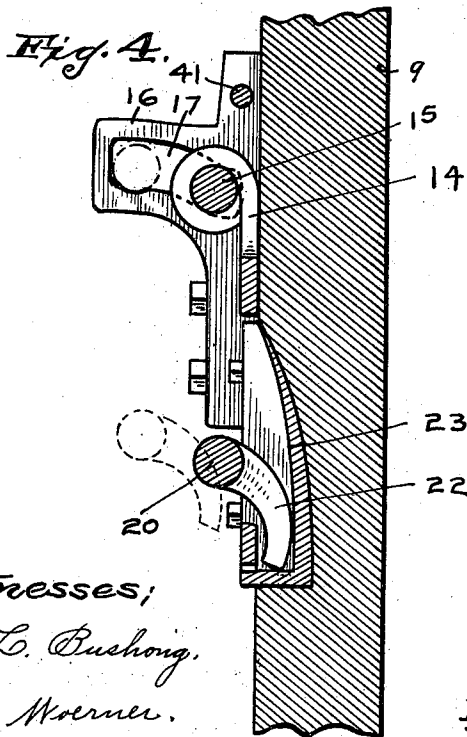
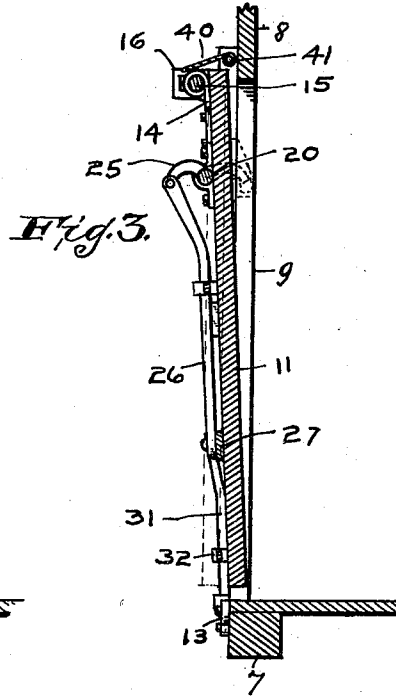
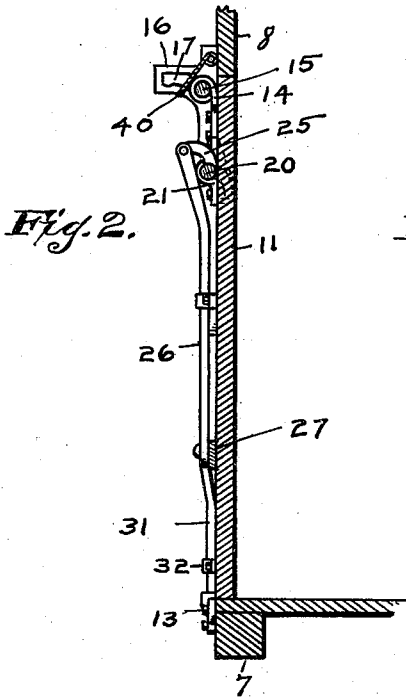
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2 SHEETS—SHEET 2.



Witnesses;
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UNITED STATES PATENT OFFICE.

FRANKLIN E. STALEY AND JOHN McLAIN FLETCHER, OF INDIANAPOLIS, INDIANA.

CAR-DOOR.

981,709.

Specification of Letters Patent. Patented Jan. 17, 1911.

Application filed May 7, 1910. Serial No. 560,020.

To all whom it may concern:

Be it known that we, FRANKLIN E. STALEY and JOHN McLAIN FLETCHER, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification.

This invention relates to improvements in car doors, and has special reference to doors for closed box-cars for carrying freight.

The object of the invention is to provide a door the face of which, when the door is closed, will be flush with the outer face of the adjacent side of the car, or, in other words, lie in the same plane as said outer face.

Another object is to provide means for closing the door with a tight fit to prevent leakage of grain or other finely divided merchandise such as is frequently transported in bulk.

The object of our invention also is to provide a simple and durable construction which will be inexpensive to manufacture and easy to keep in repair.

We accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a view in side elevation of a portion of a box-freight-car equipped with our invention, the view showing the door in its closed position. Fig. 2, is a vertical section on the line 2—2 of Fig. 1 showing the door closed as in said Fig. 1. Fig. 3, is a like view showing the door raised and tilted out at the top in the first position of opening the door. Fig. 4, is a vertical section on a larger scale, taken on the line 4—4 of Fig. 1, and Fig. 5, is a section on the line 5—5 through the latch-plate shown in Fig. 1.

Like characters of reference indicate like parts throughout the several views of the drawings.

Referring to the drawings, 7 represents one of the floor sills at the side of the car, 8 the side of the car, 9 and 10, the vertical door-posts, and 11 the door, the outer faces of all of which parts are substantially in the same plane when the door is closed. In order to remove a door thus mounted with its outer face flush with the corresponding face of the adjacent sides of the car, and slide the door edgewise in removing it, it is first necessary to move the door out bodily, laterally of the car as a whole, until the door is clear

of the car sides, and then it can be slid, suspended from a suitable track, away from the door opening. We accomplish this by suspending the door from a laterally movable track, and by providing means for tilting the upper end of the door out, carrying the track with it, and simultaneously raising the door clear above its sill fastenings thereby freeing the lower end whereby the lower end of the door will swing out by gravity or may be easily drawn out by hand and then slidably moved along its track without conflicting with the door posts or car sides.

When the door 11 is closed its bottom end rests upon the sill 7 and the weight of the door is thus firmly supported by the solid sill of the car. It is held from outward displacement by the metal flanges 12 and latch-plate 13. Bolted to the two upper corners of the door are the oppositely bent hanger-irons 14 terminating at their upper ends with eyes to slidably surround a track-bar 15, whereby the door may be slid longitudinally of the bar but the tilting of the top of the door will move the bar laterally as a whole. The bar 15 is here shown as a round shaft or tube.

16 are brackets bolted to the door posts and car side and provided with outwardly and upwardly bent cam-slots 17 to receive the track-bar 15, which is passed through said slots in assembling, as shown in the drawings. The bar 15 has a head 18 at one end and is screw-threaded at the other end to receive a nut 19 to prevent the removal of the bar. The ends of the cam slots 17 determine the inner and outer adjustments of the track-bar 15, and consequently, of the door 11, and the shape of the slots conforms to the upward and outward movement of the upper end of the door. The outer ends of the brackets 16 are hollowed out slightly at the bottom of the slot 17 in order to provide a seat for the track 15 in its outer position.

Mounted on the outside of the door 11 near its upper end is the transverse shaft 20, which is retained by boxes 21 and suitably shaped lower ends of the hanger-irons 14. This shaft projects beyond the edges of the door and terminates with rearwardly disposed and curved arms 22 which take into corresponding pockets 23 let into the posts 9 and 10, when the door is in its closed position. The bottoms of the pockets form sockets to engage the ends of the arms 22 upon closing the door, and draw the door in at its top by the rocking of the shaft, and

the inner walls of the pockets curve upwardly and outwardly to readily direct the arms 22 into the sockets at the bottoms of the pockets, and also to provide suitable bearing surfaces for the contact therewith of the curved backs of the arms, by the rocking of the shaft 20, to move the shaft 20 and consequently the top of the door 11 to which the shaft is attached, outwardly.

The rocking of the shaft 20 is accomplished by providing a forwardly extended integral arm 25, here shown as located near the middle of the shaft, and by connecting its outer end by means of a rod 26 with a lever 27, pivoted to the front of the door near its bottom, or, where it will be within convenient reach of an operator standing on the ground below. The lever 27 is pivoted at one end at 28, and its other end is slotted to receive a staple 29 fastened to the door. The staple will be secured from withdrawal from the slot in the lever by a pin 30, and this will be sealed in the usual manner.

Pivottally secured to the lever 27, and depending therefrom, is a locking-bar 31 which is directed by a guide 32 and enters the latch-plate 13 in both closed and open positions of the door. The latch-plate 13 has a socket, as shown in Fig. 5, on the bottom of which the lower end of the bar 31 contacts when the lever 27 is swung downwardly, and a continued movement of the lever in downward direction elevates the door, and at the same time the arm 25 of the rock-shaft 20 is lowered by the connection between it and lever 27, through rod 26. The door 11 is thus simultaneously raised and tilted outwardly at its upper end. A latch-plate 13 is provided at both closed and open positions of the door.

Stops 36 are secured to the sides of the car at the ends of the travel of the door to limit the travel of the latter.

Secured over the closed position of the door is a hood 40 of sheet metal which is hingedly supported upon a rod 41. The ends of the rod 41 are supported by the brackets 16. The hood serves to protect the door and its mechanism from rain, snow and other deteriorating agencies. It adjusts itself automatically to the positions of the door.

The operation of our invention is as follows: When the door is closed and it is desired to open it, the lever 27 is released and swung down until the track-bar is arrested by reaching the outer limits of the slots 17 in the brackets 16. The door is then elevated and tilted, occupying the position shown in full lines in Fig. 3, and the track-bar 15 and rock-shaft 20 are in the positions shown in dotted lines in Fig. 4, when the lower end of the door is pulled out even with its top. The hooks at the ends of the rock-shaft are above the openings to the pockets and the door is

free to be slid longitudinally of the track 15. It is then moved until arrested by contact with stop 36, which also presents the door in position to lock in the latch-plate 13 by a lowering of the lever 27, which, while the door was being moved on the track, had been returned to its staple and locked with the pin. By a reverse operation from that just described the door may be again closed.

Having thus fully described our invention, what we claim as new and wish to secure by Letters Patent, is—

1. A closed car, a sliding door therefor which fits in flush with the adjacent side of the car when the door is closed, means when opening the door for simultaneously raising it and tilting its upper end out to an oblique position of the door, and a track moving with the door from which the door is slidably suspended and from which it adjusts itself by gravity to a vertical position.

2. A closed car, a sliding door for the car which fits in flush with the adjacent side of the car when the door is closed, means when opening the door for simultaneously raising and tilting it to an oblique position, a laterally movable track secured to the door and movable with the raising and tilting movements of the door, means for supporting the track, and means for slidably securing the door to the track.

3. A closed car, a sliding door which fits in flush with the adjacent side of the car when closed, a track movable laterally secured to the door and supported by the car, means projecting upwardly of the door to retain the lower end of the closed door, means for tilting out the upper end of the door, means for raising the door above its lower-end retaining means, and means for slidably securing the door to the track.

4. A closed car, a sliding door which fits in flush with the adjacent side of the car when closed, brackets secured to the car said brackets having cam-slots, a track in the slots of the brackets having lateral movement, projections to retain the lower end of the door when closed, a rock-shaft carried by the door having intumed ends to shove the door out of its seat when the shaft is rocked, said shaft having an arm, a lever pivoted to the door, a rod connecting the lever with the arm of the rock-shaft, means to raise the door above the lower end-holding projections, and means for slidably securing the door to the track.

5. A closed car, a sliding door which fits in flush with the adjacent side of the car when closed, brackets secured to the car said brackets having cam-slots, a track in the slots of the brackets having lateral movement, projections to retain the lower end of the door when closed, a rock-shaft carried by the door having intumed end to move the door out of its seat when the shaft is rocked

and having an arm, pockets in the side of the car to receive the inturned ends of the rock-shaft when the door is closed, a lever pivoted to the door, a rod connecting the
5 lever with said arm of the rock-shaft, a latch-plate below the door, a locking bar hinged to the lever and depending into engagement with the said latch-plate, and means for slidingly securing the door to the
10 track.

6. A closed car, a sliding door fitting in flush with the side of the car when closed, brackets secured to the car, said brackets having cam-slots enlarged downwardly at
15 their upper ends to form track seats, a track

in the slots of the brackets having lateral movement, and means when opening the door for simultaneously raising it and tilting its upper end to an oblique position of the door.

In witness whereof, we have hereunto set our hands and seals at Indianapolis, Indiana, this 30th day of April, A. D. one thousand nine hundred and ten. 20

FRANKLIN E. STALEY. [L. s.]

JOHN McLAIN FLETCHER. [L. s.]

Witnesses:

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