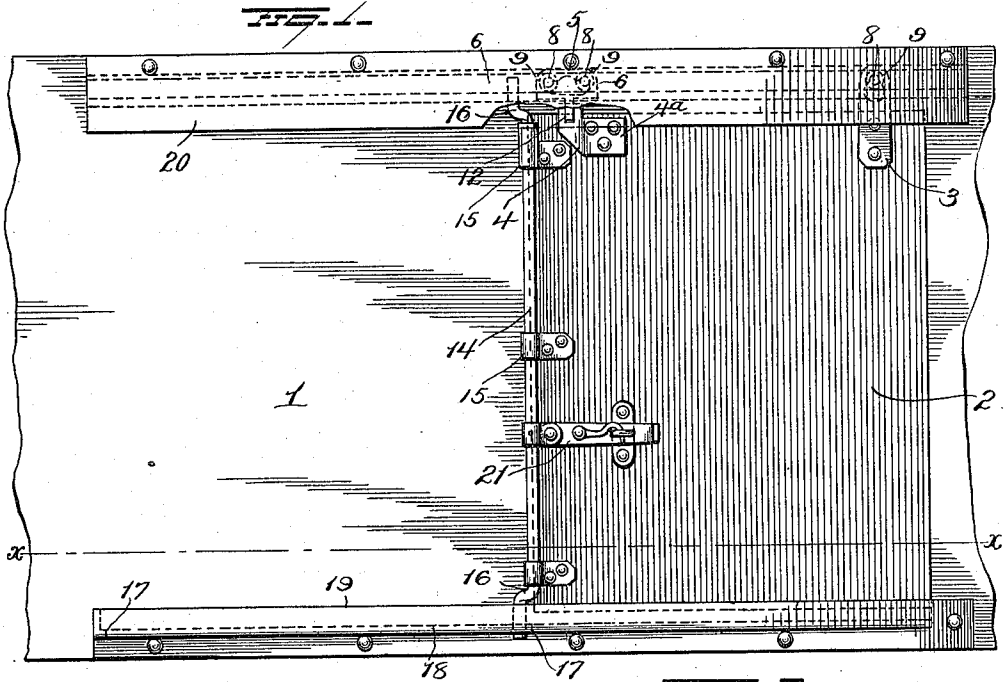
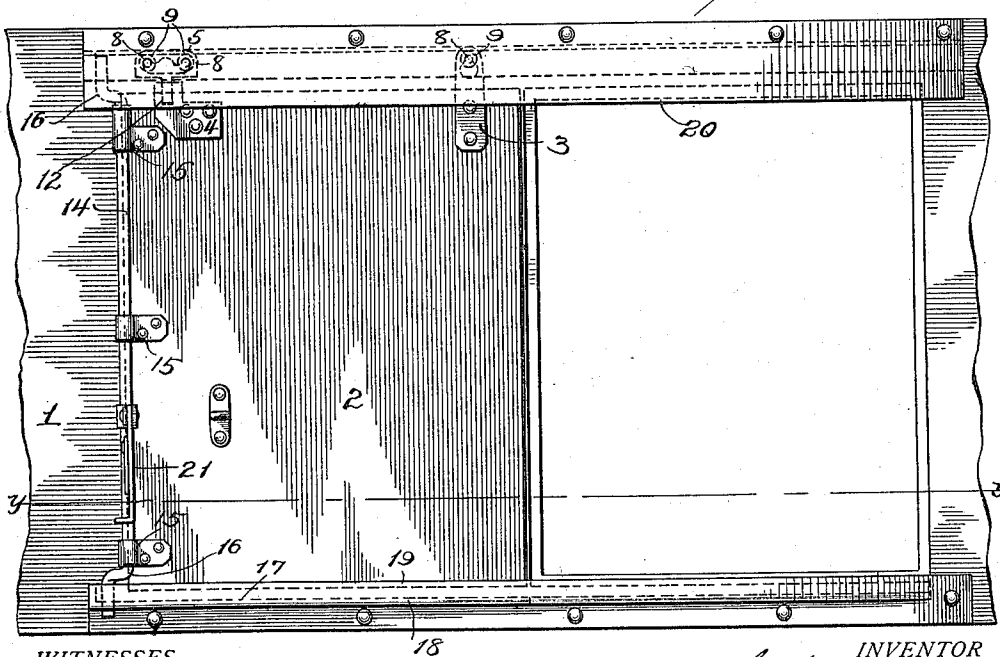


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DOOR FOR FREIGHT CARS.
APPLICATION FILED JUNE 10, 1914.

1,152,261.

Patented Aug. 31, 1915.
2 SHEETS—SHEET 1.



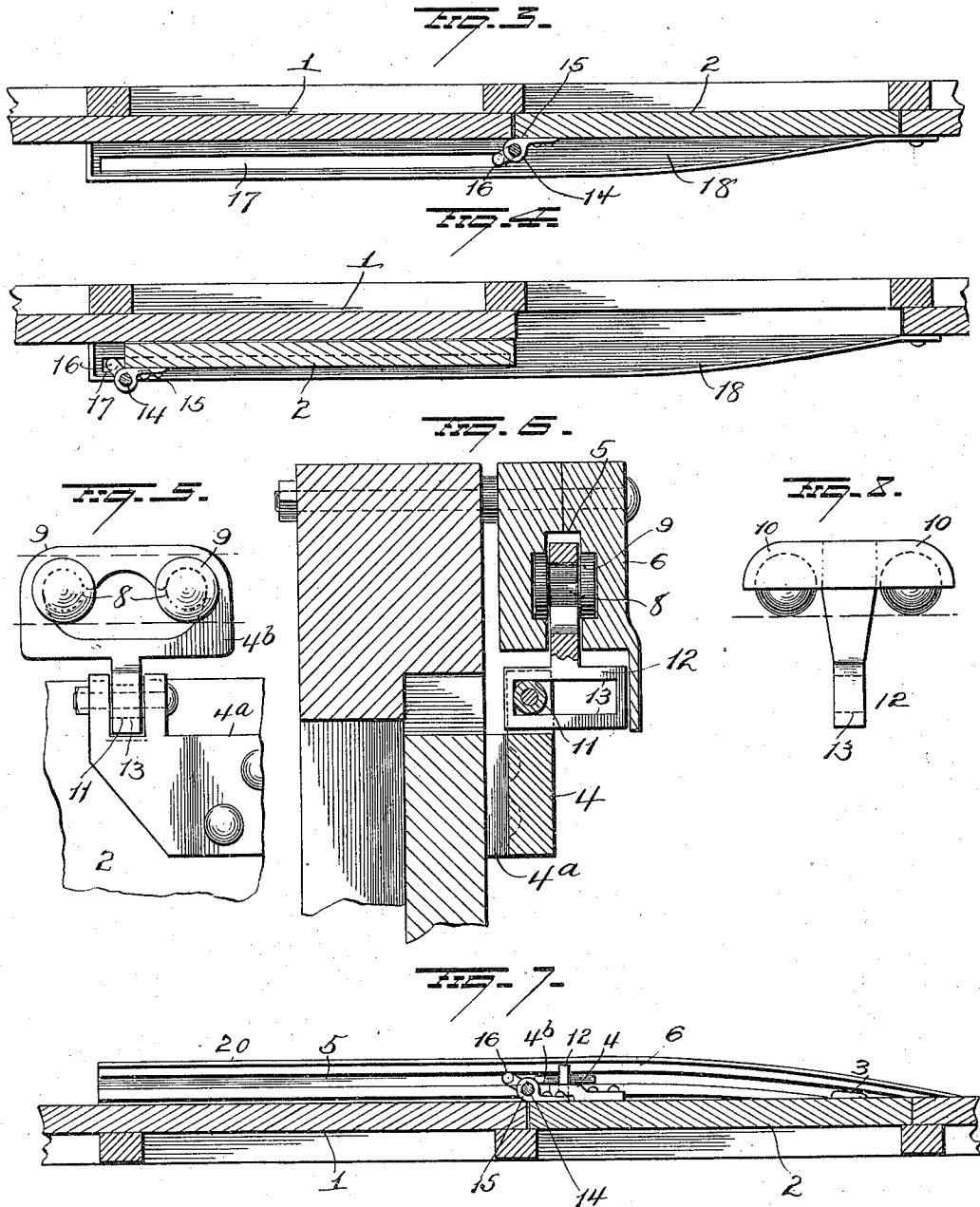
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UNITED STATES PATENT OFFICE.

CHARLES H. ANDRUS, OF HARRISBURG, PENNSYLVANIA.

DOOR FOR FREIGHT-CARS.

1,152,261.

Specification of Letters Patent.

Patented Aug. 31, 1915.

Application filed June 10, 1914. Serial No. 844,228.

To all whom it may concern:

Be it known that I, CHARLES H. ANDRUS, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Doors for Freight-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in doors for freight cars, the object being to so guard the door at its upper and lower edges that it cannot fall from position, or project, or swing away from the side of the car in the event any or all of its hangers should be broken or disconnected from the door or car.

A further object is to provide improved means for supporting the door at the top whereby it may be readily and quickly moved from its flush position to a position in a plane to the outer side of the car body and back again to its flush position.

With these and other objects in view my invention consists in the parts and combinations of parts as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation showing the door closed and locked; Fig. 2 is a similar view showing the door open; Fig. 3 is a view in section on the line $x-x$ of Fig. 1; Fig. 4 is a similar view on the line $y-y$ of Fig. 2; Fig. 5 is a detached view of the sectional hanger; Fig. 6 is a view in section through the sectional hanger and track; Fig. 7 is a view in section looking up toward the slotted rail and Fig. 8 is a view of a modification.

1 represents a freight car body, provided with the usual openings in its sides for the doors, only one of which however is shown, and 2 is the door constructed to closely fit said opening and provided at its upper end with the hangers 3 and 4, which latter move in a slot 5 in the door guiding and carrying rail 6. The slot 5 is T-shaped in cross section, and the hanger or bracket 3, is provided at its upper end, which rests within said slot, with an opening for the roller bearing, which may be an axle 8, with disk rollers 9 at its ends, the rollers being fast to the axle, or the hanger 3 may be provided with side extensions 10 concaved on their lower faces to rest on rollers which are car-

ried within the runway of the guiding and carrying rail, as shown in Fig. 8. If the axle with the rollers 9 at the ends thereof be used, the hanger 3 should be provided with an opening the lower portion of which is sufficiently large to permit of the passage of a roller, and the upper portion of said opening restricted so as to prevent any rolling movement of the axle within the hanger.

The hanger 4 is made in two sections one of which 4^a, is secured to the door, and the other 4^b suspended within the runway in the rail 6. The section 4^a is screwed to the door at the top thereof near the front end, and is provided at its upper free end with a roller 11, the axis of which is parallel with the outer face of the door. The section 4^b is provided with a plurality of roller bearings similar to those described in connection with hanger 3, and with a centrally located depending projection 12, the long axis of which is at right angles to the door. The roller bearings for the hangers are located in vertical planes to the front and to the rear of the depending projection 12, so that the latter will be supported against a swinging or oscillating movement, and the depending projection is provided with an elongated slot 13, for the reception of the roller 11 carried by the lower section 4^b of the hanger 4. This roller 11, is mounted on a removable axle, so that in assembling the parts, the roller 11 would be placed in position within slot 13 and then secured to its section 4^a by its axle which may be in the form of a bolt, headed at one end, and threaded at the other for a nut. The slot 13 is sufficiently long to permit of a movement of the roller in one direction sufficient for the front end of the door to clear the side of the car, and in the other direction, for the door to close flush with the side of the car. The door is thus suspended from the rail 6 by the two hangers and is free to move lengthwise the rail 6 so as to carry the door from its closed to its open position, and its front end is free to move on the front hanger, in a direction at right angles to its opening and closing movement, a distance sufficient to clear the side of the car during the opening movement, and inwardly to a position flush with the side of the car in its closing movement. The door is provided at its free end with the shaft 14, mounted in bearings 15, and provided at its

ends with the cranks 16 which latter project respectively above and below the door. The upper crank 16 rests and moves in the slot 5 in the rail 6, and the lower crank 16 rests and moves in the slot 17 in the sill plate 18, which latter forms a bottom support for the door when the latter is wholly or partly open. The sill plate 18 is provided with a flange 19 which projects above the lower edge of the door, in all positions of the latter and operates to guide the door, and prevent any outward swing or movement of the lower end of the latter, and it, and also the slot 5 in rail 6 are curved so as to direct the rear end of the door inwardly toward its flush position in closing, and outwardly so as to clear the side of the car in opening the door.

The rail 6 is provided at its outer edge with a depending flange 20 which projects below the top edge of the door and prevents any outward movement of the door at the top, so that in the event either or both of the hangers should be broken or become disconnected from the door, the latter will be held solidly against the possibility of outward displacement by the upwardly projecting flange on the sill plate and the depending flange on the rail.

The shaft 14 is provided with a handle 21 hinged thereto by which the shaft is turned. When the door is closed it rests flush with the side of the car. By turning the shaft the cranks 16 resting in slots in the rail and sill plate, move the shaft outwardly thus carrying the front end of the door outwardly beyond the plane of the side of the car. By now pushing the door to its open position, the curvature of the slot in the rail carries the rear end of the door outwardly so that when the door is wholly open, it rests in a plane outside of the car body. By pushing the door rearwardly the rear end is guided into position in the door frame, and by turning the shaft, the front

end will be moved back in to its flush position within the door opening.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described but,

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

1. The combination of a freight car having an opening for a flush door, a curved and slotted rail located in a plane above the door, a slotted sill plate having a flange similarly curved, the flange on said plate projecting above the lower edge of the door, hangers suspending the door from the said slotted rail, and a shaft journaled in bearings on the door and having a crank at each end, one of said cranks resting in the slot in the sill plate and the other in the slot in the rail.

2. The combination of a freight car, having a door opening, a flush door, a curved and slotted rail in a plane above the door, a fixed flange projecting below the top of the door and forming an upper guard for the latter, hangers mounted on roller bearings within the slot in the rail and secured to the door, a slotted sill plate having a flange curved to conform to the curvature of the slot in the rail and a shaft journaled to the door and having cranks at its ends, one crank resting in the slot in the rail and the other in the slot in the sill plate.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

CHARLES H. ANDRUS.

Witnesses:

G. T. BAKER,

W. J. McMONIGLE.