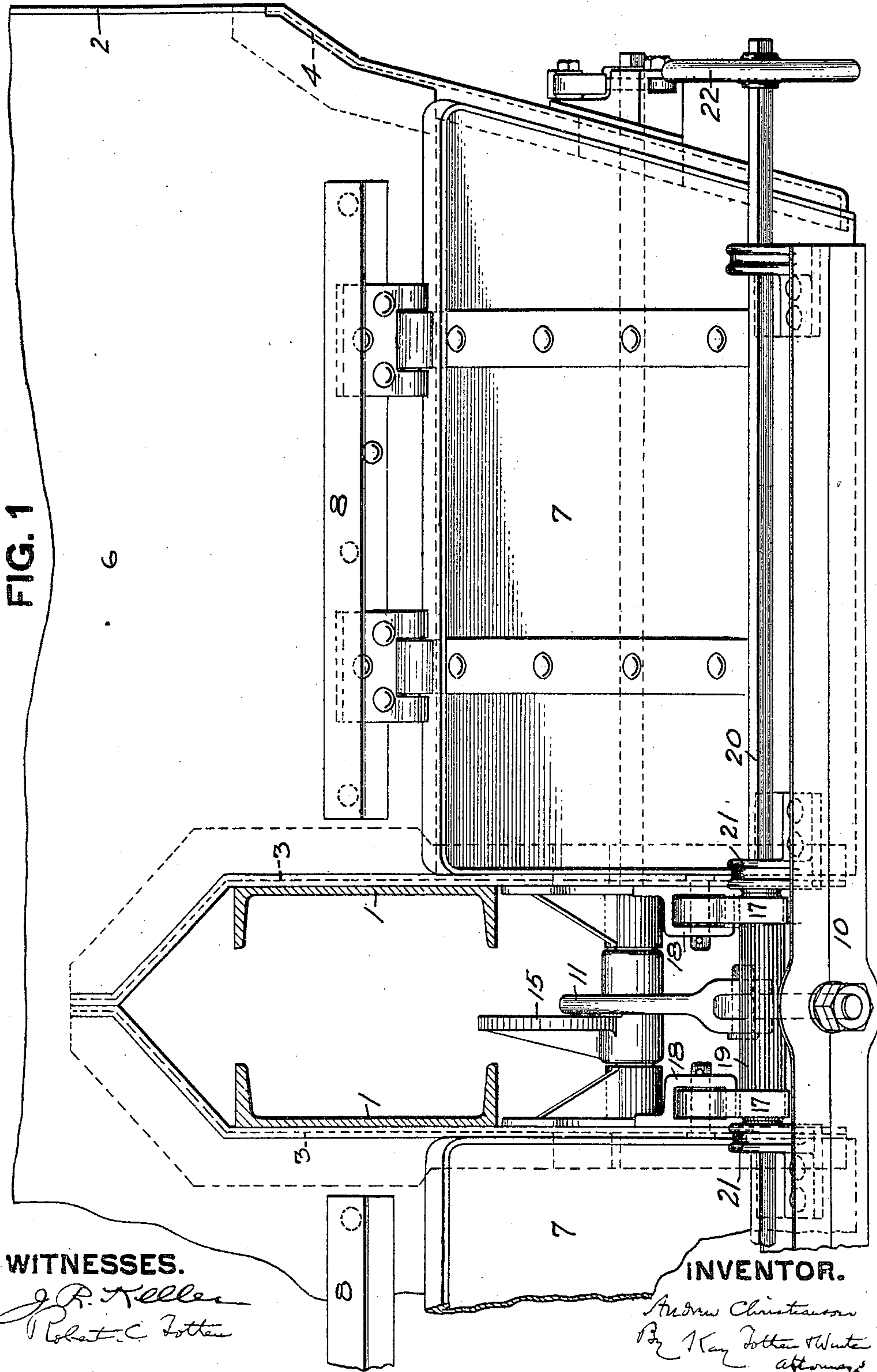


No. 843,559.

PATENTED FEB. 5, 1907.

A. CHRISTIANSON.  
SAFETY DEVICE FOR HOPPER CAR DOORS.  
APPLICATION FILED NOV. 10, 1906.

2 SHEETS—SHEET 1.



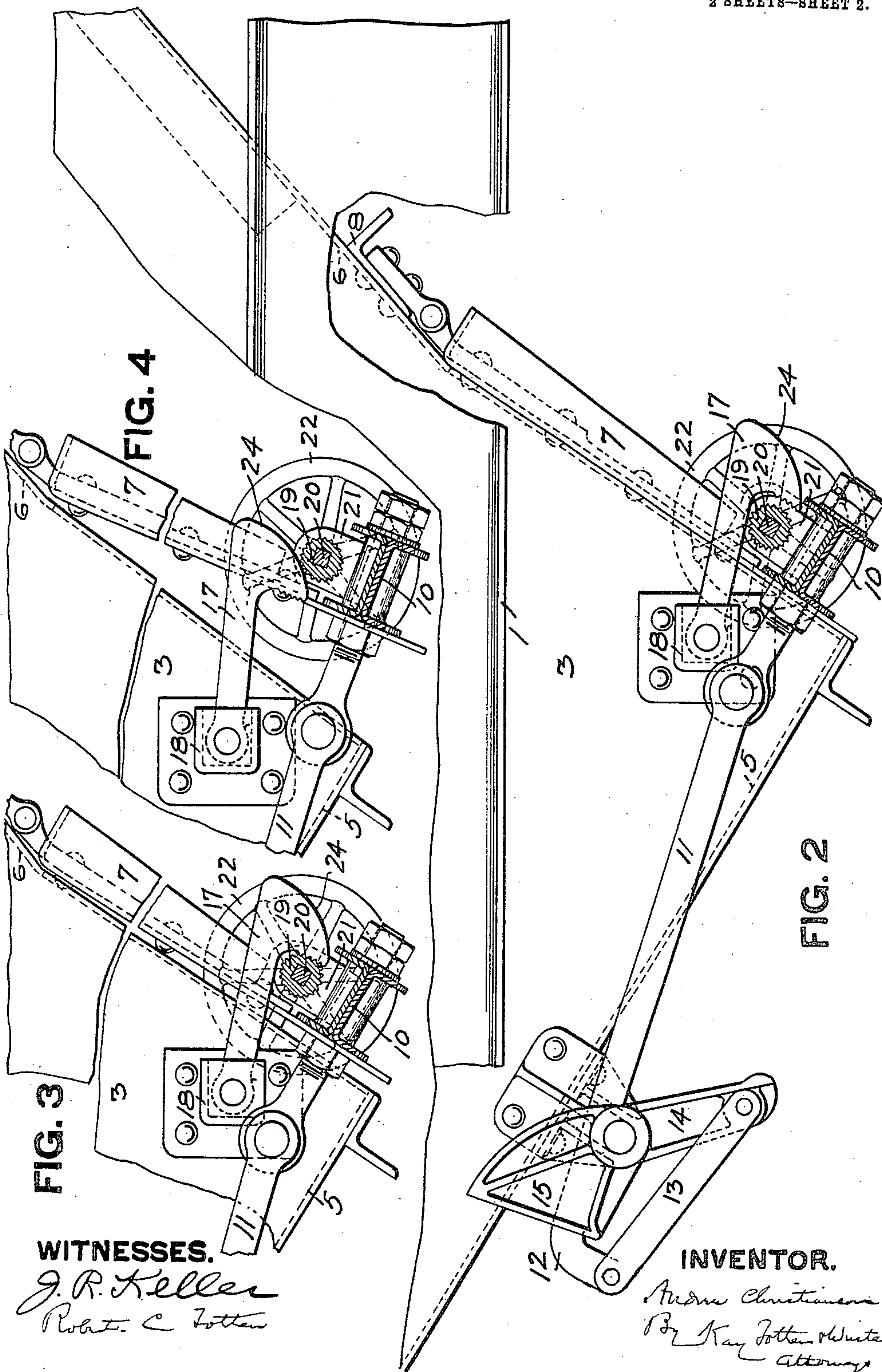
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WITNESSES.

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# UNITED STATES PATENT OFFICE.

ANDREW CHRISTIANSON, OF BUTLER, PENNSYLVANIA, ASSIGNOR TO STANDARD STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## SAFETY DEVICE FOR HOPPER-CAR DOORS.

No. 843,559.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed November 10, 1906. Serial No. 342,842.

*To all whom it may concern:*

Be it known that I, ANDREW CHRISTIANSON, a resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Safety Devices for Hopper-Car Doors; and I do hereby declare the following to be a full, clear, and exact description thereof.

This invention relates to safety devices for the doors of hopper-cars or hopper-bottom gondola cars.

The object of the invention is to provide a device which is simple of construction, easy of operation, which does not interfere with the ordinary door-operating mechanism, and which effectively holds the door closed in case the usual door-closing mechanism fails.

In all railway-cars provided with swinging drop-doors, whether arranged horizontally or on an incline, there is always danger of the door-closing means failing. Usually these doors are closed by means of a rotating shaft connected to the doors either by means of chains, links, or other flexible connectors, and the doors are usually held in closed position by locking the shaft against rotation. This locking means is liable to become displaced or the flexible connectors sometimes break, in either event permitting the doors to swing open and discharge the lading.

This invention is intended to provide additional safety devices which prevent the doors from swinging open in case any of the foregoing contingencies arise.

The invention comprises the arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a transverse section through the bottom portion of a hopper-car and showing my invention applied thereto. Fig. 2 is a longitudinal vertical section of the bottom portion of the car, taken between the center sills; and Figs. 3 and 4 are similar views of a portion of the mechanism, showing different positions of the door.

In the drawings the invention is shown applied to a hopper-car provided with hoppers closed by transverse inclined doors, although it is evident that it can be applied to any form of hopper-bottom car having either inclined or horizontal doors extending either transversely or longitudinally of the car.

The car shown is provided with center sills

1, which are standard rolled channel-beams placed with their flanges projecting inwardly. The car side is shown at 2, the inside hopper-sheet at 3, the outside hopper-sheet at 4, the inclined floor-plate at 5, and the transverse hood at 6. The doors 7 are hinged to a transverse angle 8, riveted to the lower edge of the hood-sheets, and the lower edges of said doors when closed abut against the bottom edge of the inclined floor-plate 5 in the usual way of one type of hopper-bottom cars.

The doors preferably are arranged in pairs, one on either side of the center sills, as shown in Fig. 1, the individuals of the pair being connected by a beam 10 of any preferred construction, that shown comprising two channel-shaped pressed members placed back to back with one of the flanges of each secured to the doors, as shown in Figs. 2 to 4.

The door-closing mechanism may be of any desired type, such as winding chains connected to the usual winding-shaft or any of the other usual forms of such mechanism. That shown comprises a link 11, connected to the beam 10 between the center sills and having a hooked end 12, which is connected by another link 13 to an arm 14 on a rotating member 15, mounted between the hoppers and actuated from a transverse shaft extending out to the sides of the car. This is the well-known Simonton door-operating mechanism and will be understood without further description.

My invention is an additional or safety device to prevent the doors from falling open in case the door-operating mechanism fails from any cause. This safety device comprises a hook or hooks 17, two such hooks being shown pivotally mounted in brackets 18, secured to the inside hopper-sheets between the hoppers, said hooks being arranged to engage a drum 19 on a transverse shaft 20, mounted in suitable bearings 21 on the beam 10, said shaft extending out to the side of the car and being there provided with suitable rotating means, such as the hand-wheel 22. Preferably the drum 19 and hooks 17 are provided with interengaging serrated or toothed faces, as shown. The nose of the hook is inclined or rounded, as shown at 24, so that it is automatically lifted to pass the drum 21 when the door is being closed, as shown in Fig. 4.



The doors will be closed in the usual way by operating the door-closing mechanism. The hook 17 is so mounted and constructed that it automatically passes the drum, as shown in Fig. 4, and when the doors are held fully closed the serrated faces of the drum and hooks are not in engagement, as seen in Fig. 2, so that the hook can drop down so as to be in the path of the drum when the latter swings open. Should the door-closing mechanism fail for any reason, either wholly or partly, the door will fall back until the drum 19 engages the hook, as seen in Fig. 3, and in this position is securely held so as to prevent discharge of the lading. In opening the door the same thing occurs, and to permit the door to swing fully open it is necessary to operate the hand-wheel 20, thus rotating the drum 19 and through the toothed engagement of the same with the hook lifting the latter until it clears the drum, thus permitting the door to swing fully open.

The mechanism described is simple of construction and can be applied to various types of hopper-bottom cars and without interfering with the usual door-operating mechanism. It acts automatically on the closing of the door and effectually prevents the doors from opening in case of failure of the door-closing mechanism.

What I claim is—

1. A railway-car provided with a swinging bottom door, closing mechanism for said door, a safety device comprising a movable latch, and a movable member in position to be engaged by the latch and therethrough hold the door closed and arranged, when moved, to release said latch.

2. A railway-car provided with a swinging bottom door, closing mechanism for said door, a safety device comprising a latch movably mounted on the body, and a movable member on the door in position to be engaged by the latch when the door is closed and arranged when moved to release said latch.

3. A railway-car provided with a swinging bottom door, closing mechanism for said door, a safety device comprising a latch movably mounted on the body, and a movable member on the door in position to be engaged by the latch and arranged when moved to re-

lease the latch, said movable member and latch being provided with interengaging connections.

4. A railway-car provided with a swinging bottom door, closing mechanism for said door, a safety device comprising a latch movably mounted on the body, a movable member on the door in position to be engaged by the latch when the door is closed and arranged when moved to release the latch, said movable member and latch being provided with toothed or serrated engaging faces.

5. A railway-car provided with a swinging bottom door, closing mechanism for said door, a safety device comprising a hook pivoted to the body, and a movable member on the door in position to be engaged by the hook and arranged when moved to disengage the hook.

6. A railway-car provided with a swinging bottom door, closing mechanism for said door, a safety device comprising a hook pivotally mounted on the body and a rotatable member on the door in position to be engaged by the hook when the door is closed, said rotatable member and hook being provided with toothed or serrated engaging faces.

7. A railway-car provided with a swinging bottom door, a shaft rotatably mounted on the door, closing mechanism for said door, and a safety-hook pivoted on the car-body in position to engage the shaft when the door is closed, said hook and shaft being provided with interengaging connections.

8. A railway-car provided with center sills, a hopper on either side of the sills, transverse doors for said hoppers, door-closing mechanism, a safety device comprising a hook pivotally connected to the body between the hoppers, and a shaft mounted on the door transversely on the car and having a serrated member in position to be engaged by the hook when the door is closed and provided at its outer end with rotating means.

In testimony whereof I, the said ANDREW CHRISTIANSON, have hereunto set my hand.

ANDREW CHRISTIANSON.

Witnesses:

ROBERT C. TOTTEN,  
J. R. KELLER.