

No. 720,245.

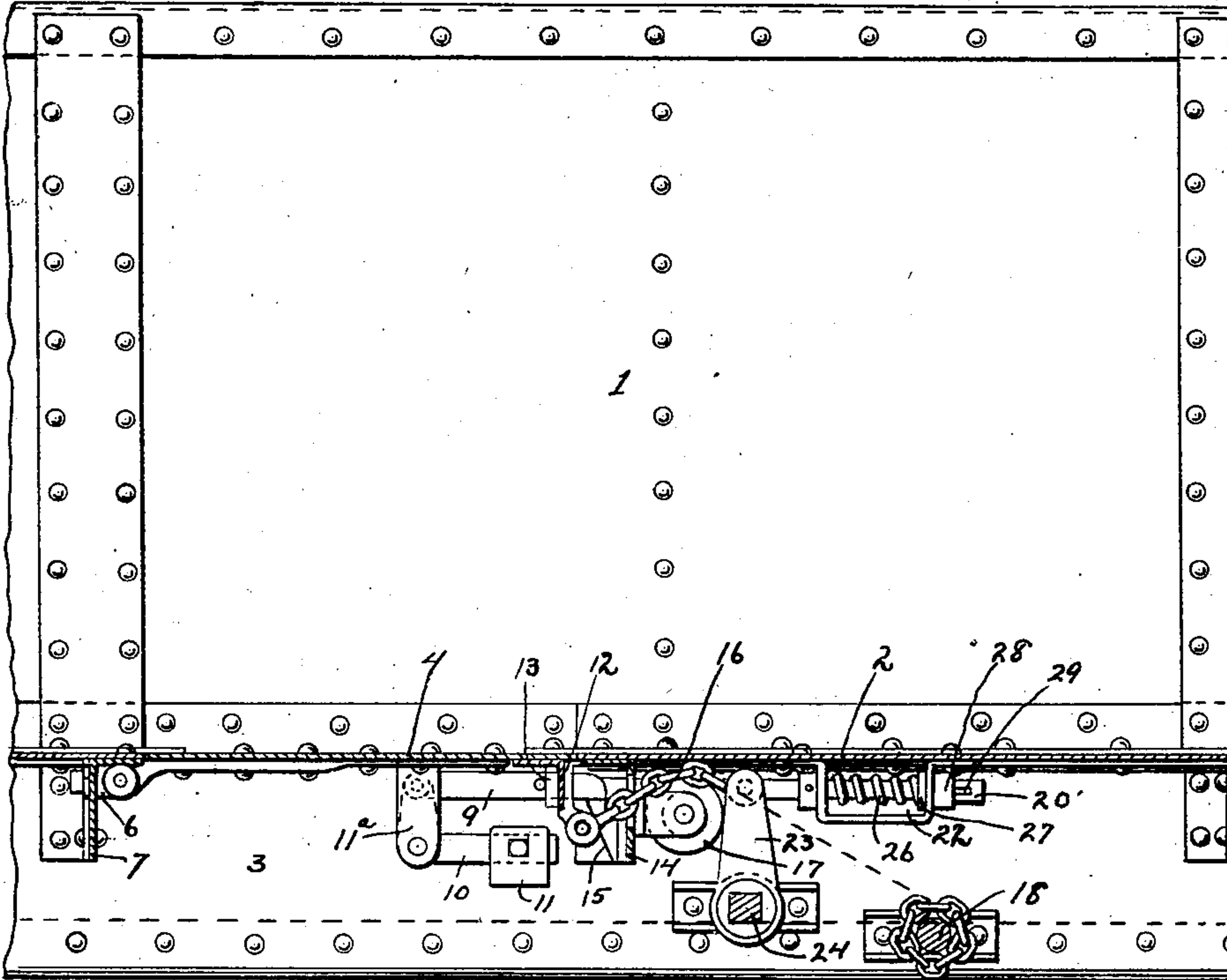
PATENTED FEB. 10, 1903.

J. M. HANSEN.  
FLAT BOTTOM CAR WITH FLUSH DOOR.  
APPLICATION FILED MAY 28, 1902.

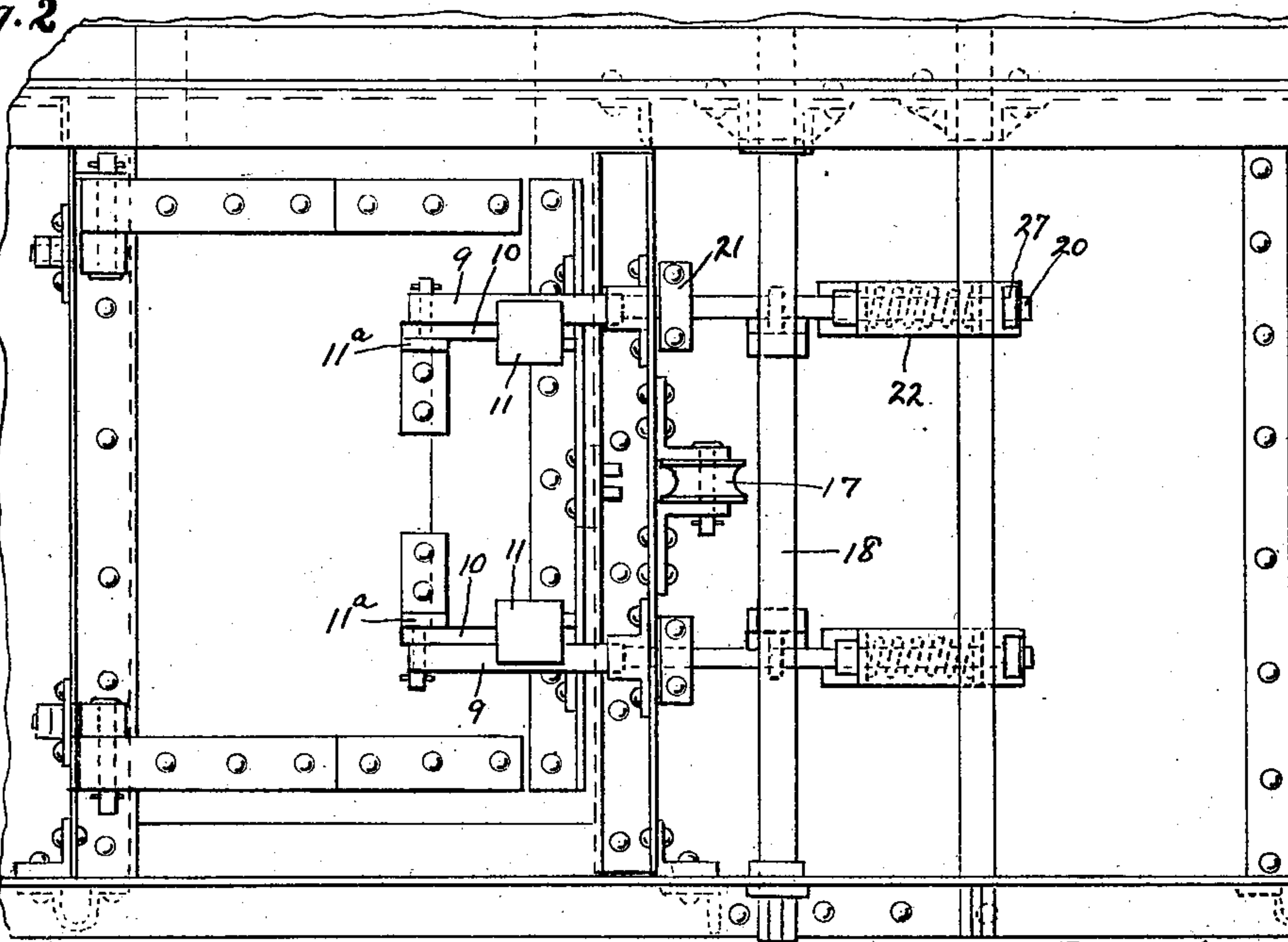
NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 1*



*Fig. 2*



Witnesses:

*J. H. Hunter*  
*Fred H. Sweet*

Inventor:

*John M. Hansen*  
*By Kay & J. Allen*  
*Attys.*

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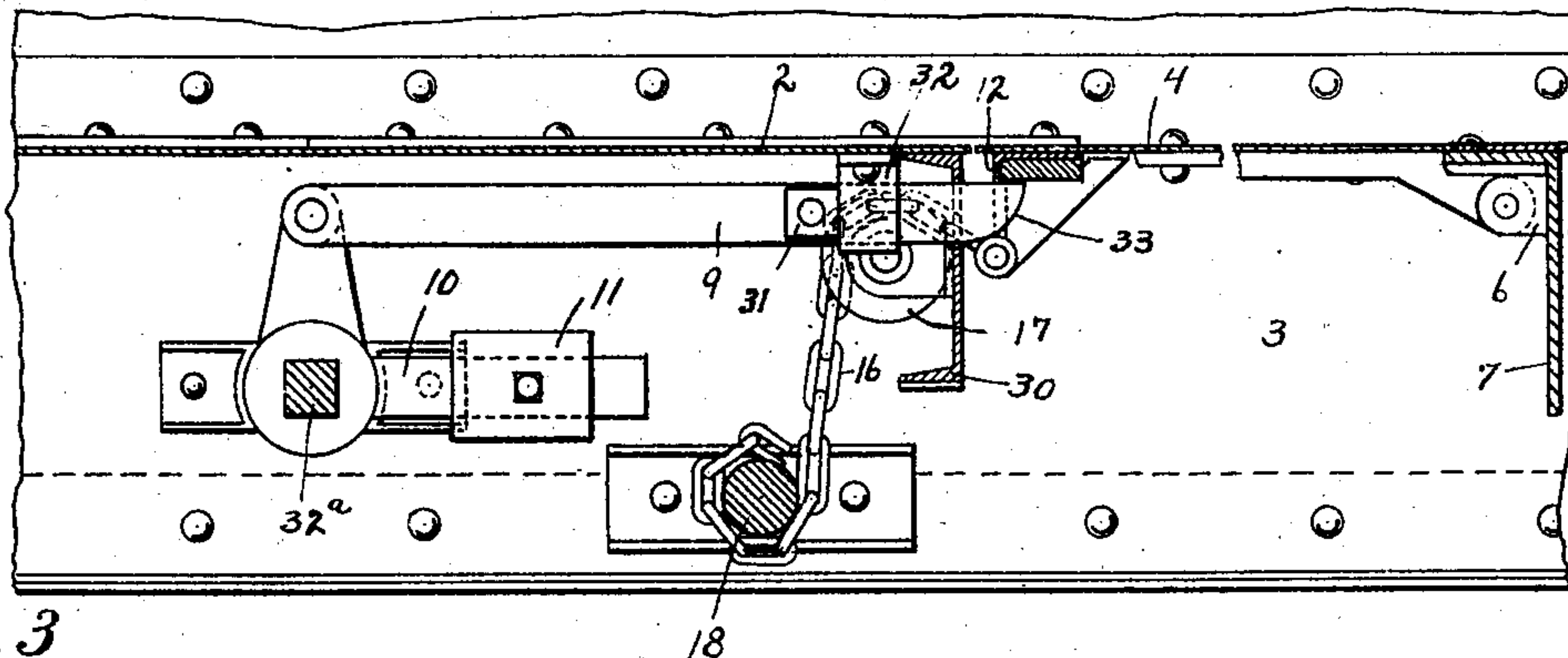


Fig. 3

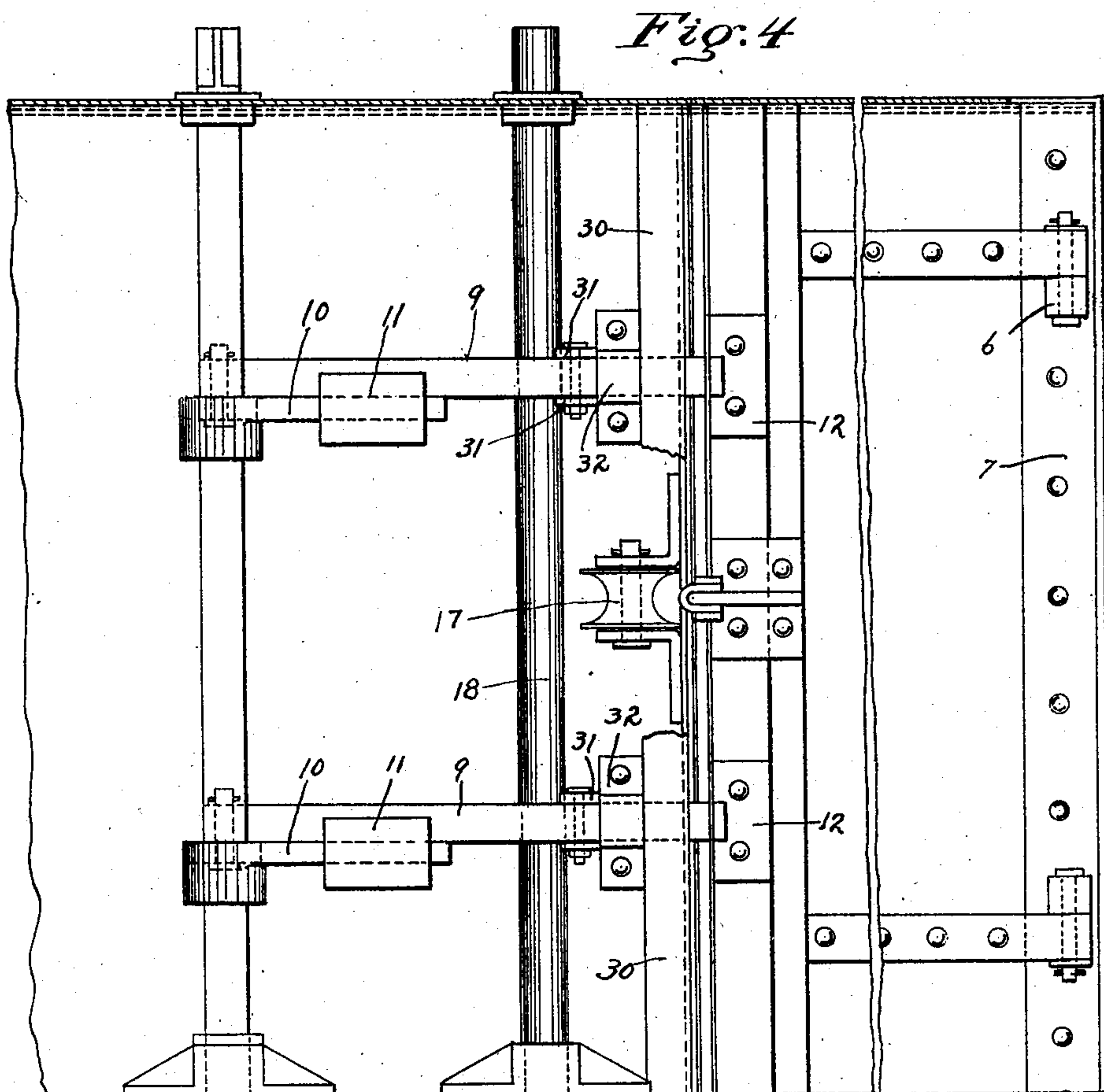


Fig. 4

Witnesses.

Fred H. Swet

Walter Samaras

Inventor:

John M. Hansen  
By Kay & Totten  
Attorneys.



# UNITED STATES PATENT OFFICE.

JOHN M. HANSEN, OF PITTSBURG, PENNSYLVANIA.

## FLAT-BOTTOM CAR WITH FLUSH DOOR.

SPECIFICATION forming part of Letters Patent No. 720,245, dated February 10, 1903.

Application filed May 28, 1902. Serial No. 109,279. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. HANSEN, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Flat-Bottom Cars with Flush Doors; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to door locking and operating mechanism for hopper-bottom cars, and more especially for flat-bottom cars provided with flush doors. Its object is to improve car-door locking and operating mechanism in the details of construction herein-  
after described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section through a portion of the car body and floor, showing my invention applied thereto. Fig. 2 is an inverted plan view of the same, and Figs. 3 and 4 are similar views showing a modification.

I have shown my invention applied to a flat-bottom metallic car of the gondola type, although this is not absolutely essential. In the drawings, 1 indicates the side of the car, 2 the floor-plates, and 3 one of the center sills. All of these parts are shown as composed of metal, although this is not essential, and the specific construction of these parts may be varied as desired.

The floor will be provided with suitable openings, preferably two on each side of the center sills, which openings are closed by the flush doors 4. In the drawings I have shown only one of the openings and doors, it being understood that the others in the car are identical with the one illustrated. The door 4 is hinged on lugs 6, secured to the transverse floor-support 7. The door-locking mechanism comprises a latch 9, together with suitable mechanism for normally projecting the same, which mechanism comprises a bell-crank lever 10, provided with a counterweight 11. These parts may be mounted either on the door, as shown in Figs. 1 and 2, or on the stationary part of the floor, as shown in Figs. 3 and 4. When mounted on the door, the bell-crank lever 10 is fulcrumed in a bracket 11<sup>a</sup>, depending from the door, and the latch 9 is guided in an opening in the stiffening-angle 12 of the door. In all cases preferably two latches and bell-cranks for moving the same

will be employed. The latch is prevented from being projected too far forward by a stop 13, secured thereto, which is adapted to come in contact with the guide-angle 12. The latch is adapted to engage a catch 14, secured to the stationary floor, which catch is provided with an inclined face 15 in such position as to be engaged by the end of the latch 9 when the door is being closed and which inclined face will push the latch back until the latter has cleared the upper face of the catch, when the counterweight 11 will project the latch so that it will lie above the catch, thus holding the door locked. A chain 16 is attached to the door and passes over a guide-sheave 17 and has its other end attached to the winding-shaft 18, journaled in the longitudinal sills of the car, by means of which the door is closed.

In order to release the latch from the catch 15, I provide a bolt or rod 20, which is guided in the brackets 21, and spring-pocket 22, secured to the car-floor. To this bolt is connected an arm 23 on a rock-shaft 24, mounted in the longitudinal sills and provided with a square outer end 25 for receiving a wrench, crank, or other tool for turning the same. The end of the bolt 20 lies adjacent the end of the latch 9, and by turning the rock-shaft 24 the bolt will be caused to press the latch backward until it becomes free of the catch 15, and the door will then drop by gravity. In the spring-pocket 22 is a spring 26, which surrounds the bolt 20 and bears at one end against said spring-pocket and at its opposite end against a washer 27, which bears against a sleeve 28, surrounding said rod and connected to move therewith by means of the cotter-pin 29. When the bolt 20 is projected to disengage the latch from the catch, the spring 26 is put under compression, and as soon as the rock-shaft 24 is released the spring will return the bolt to its retracted position.

In the modification shown in Figs. 3 and 4 the bolt 9, bell-crank 10, and counterweight 11 are identical with those shown in Figs. 1 and 2. The bolt, however, is mounted underneath the stationary part of the floor, and its forward end is guided in an opening in the transverse floor-support or transom 30 and is adapted to engage the stiffening-angle



12 on the door. A stop 31 on the latch is adapted to engage a guide-bracket 32, so as to limit the forward projection of said latch. The bell-crank 11 is secured to a rock-shaft 32<sup>a</sup>, journaled in the longitudinal sills of the car and which is provided with a square end by means of which it may be turned. The latch is provided with the inclined outer end, as shown at 33, and normally is held in its projected position by the counterweight; but when the door is being closed its edge will engage the inclined face 33 of the latch and push the same back; but as soon as the door has passed the latch the counterweight 11 will project the same to lock the door. To unlock the door, a wrench or crank is applied to the shaft 32<sup>a</sup>, and said shaft is turned so as to withdraw the latch and release the door. The horizontal arm of the bell-crank 10 is of such length that its end will engage the floor of the car, and thus prevent the latch being withdrawn to such an extent as to become disengaged from the guide-bracket 12.

As above stated, there will preferably be two latches and bell-cranks and latch-releasing mechanism for each door, and the rock-shafts 24 and 32<sup>a</sup> will preferably extend entirely across the car, so that the two doors on both sides of the center sills can be operated simultaneously.

In both forms of my invention the locking of the door is entirely automatic, the latches being projected forward by the adjustable counterweights 11 to lock the door, and as the unlocking mechanism in both cases is not connected in any manner to the door there is nothing to interfere with the free opening of the door as soon as the latches are disengaged from the catches.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a car-floor, the combination with a hinged drop-door, of a latch, means for guiding the same, a weighted bell-crank lever connected to the latch and acting normally to keep the same projected, and means independent of said bell-crank lever for retracting said latch.

2. In a car-floor, the combination with a hinged drop-door, of a latch attached to the door, means for guiding the same, means for normally keeping the latch projected, and means mounted on the stationary floor and disconnected from said latch and adapted to engage and retract the same.

3. In a car-floor, the combination with a hinged drop-door, of a latch, means for guiding the same, means for normally keeping the same projected, a rock-shaft, and means operated thereby and arranged to contact with the latch for releasing the same.

4. In a car-floor, the combination with a

hinged drop-door, of a latch, means for guiding the same, a stop on the latch for engaging said guiding means and limiting the projection of said latch, a weighted bell-crank lever, connections from the same to the latch acting normally to keep the latter projected, and means independent of said bell-crank lever for retracting said latch.

5. In a car-floor, the combination with a hinged drop-door, of a latch attached to the door and arranged to move in a plane approximately parallel to the door and in a direction at right angles to the edge of the door, a catch attached to the stationary floor in position to be engaged by the latch when the door is closed, and means mounted on the stationary floor and disconnected from and adapted to engage said latch for retracting the same.

6. In a car-floor, the combination with a hinged drop-door, of a latch mounted on the door, a weighted bell-crank lever pivoted to depending brackets on the door and connected to the latch and acting normally to keep the same projected, a catch on the stationary floor in position to be engaged by the latch when the door is closed, and means independent of said bell-crank lever for retracting said latch.

7. In a car-floor, the combination with a hinged drop-door, of a latch mounted on the door, a catch on the stationary part of the floor arranged to be engaged by the latch when the door is closed, a rod mounted under the stationary floor with its end in proximity to the latch, and means for projecting said rod to push the latch backward to disengage the catch.

8. In a car-floor, the combination with a hinged drop-door, of a latch mounted on said door, means for normally keeping said latch projected, a catch on the stationary floor engaged by said latch when the door is closed, of a rod mounted on the stationary floor, a rock-shaft, and connections between the same and the rod to project the same to push the latch off the catch.

9. In a car-floor, the combination with a hinged drop-door, of a latch mounted on said door, means for normally projecting said latch, a catch on the stationary floor arranged to be engaged by the latch when the door is closed, a rod mounted underneath the stationary floor, means for projecting said rod to push the latch off the catch, and means for normally keeping said rod retracted.

In testimony whereof I, the said JOHN M. HANSEN, have hereunto set my hand.

JOHN M. HANSEN.

Witnesses:

A. R. FRASER,  
ROBERT C. TOTTEN.