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R. R. TICHENOR.
GRAIN DOOR.

APPLICATION FILED MAR. 31, 1905.

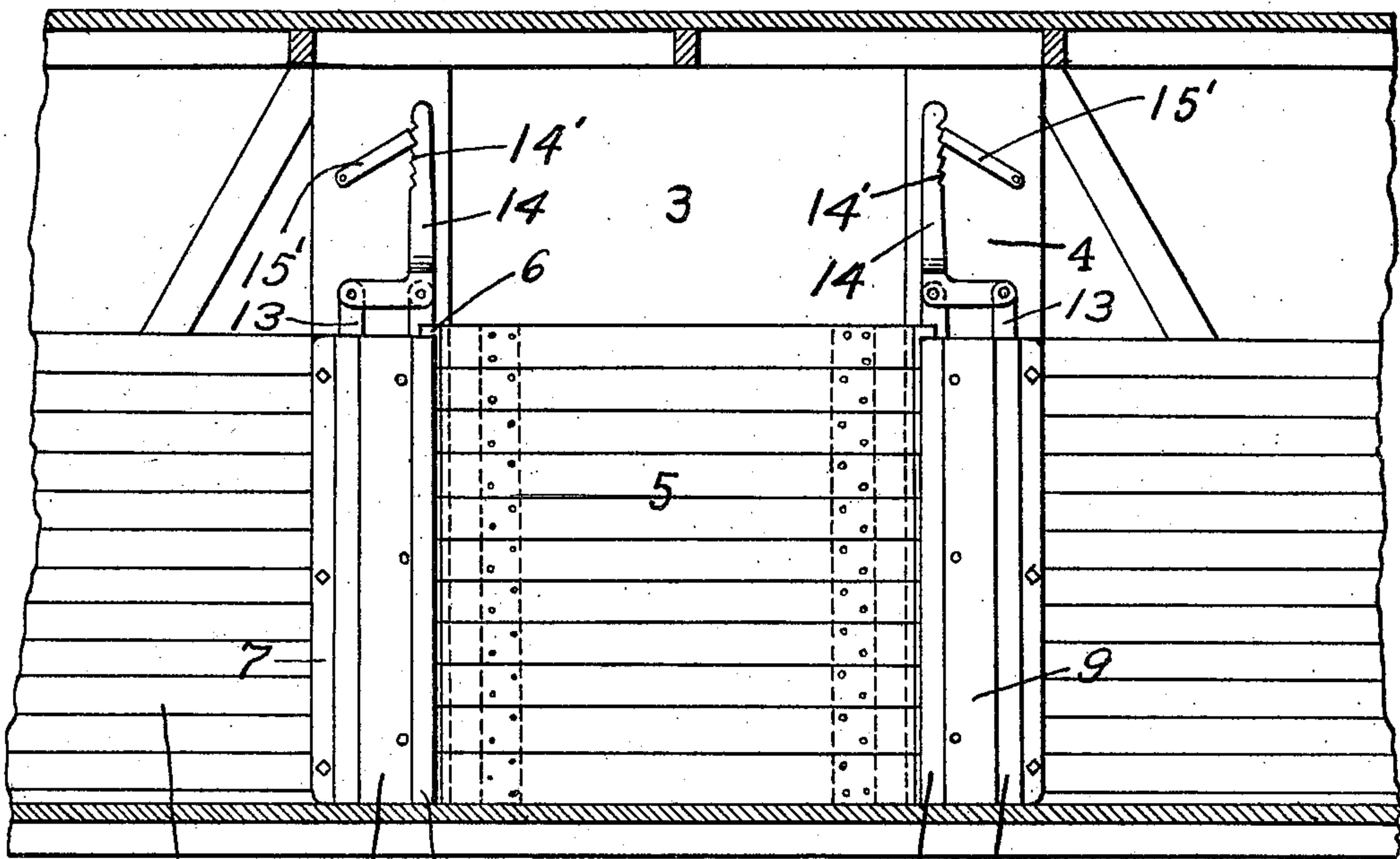
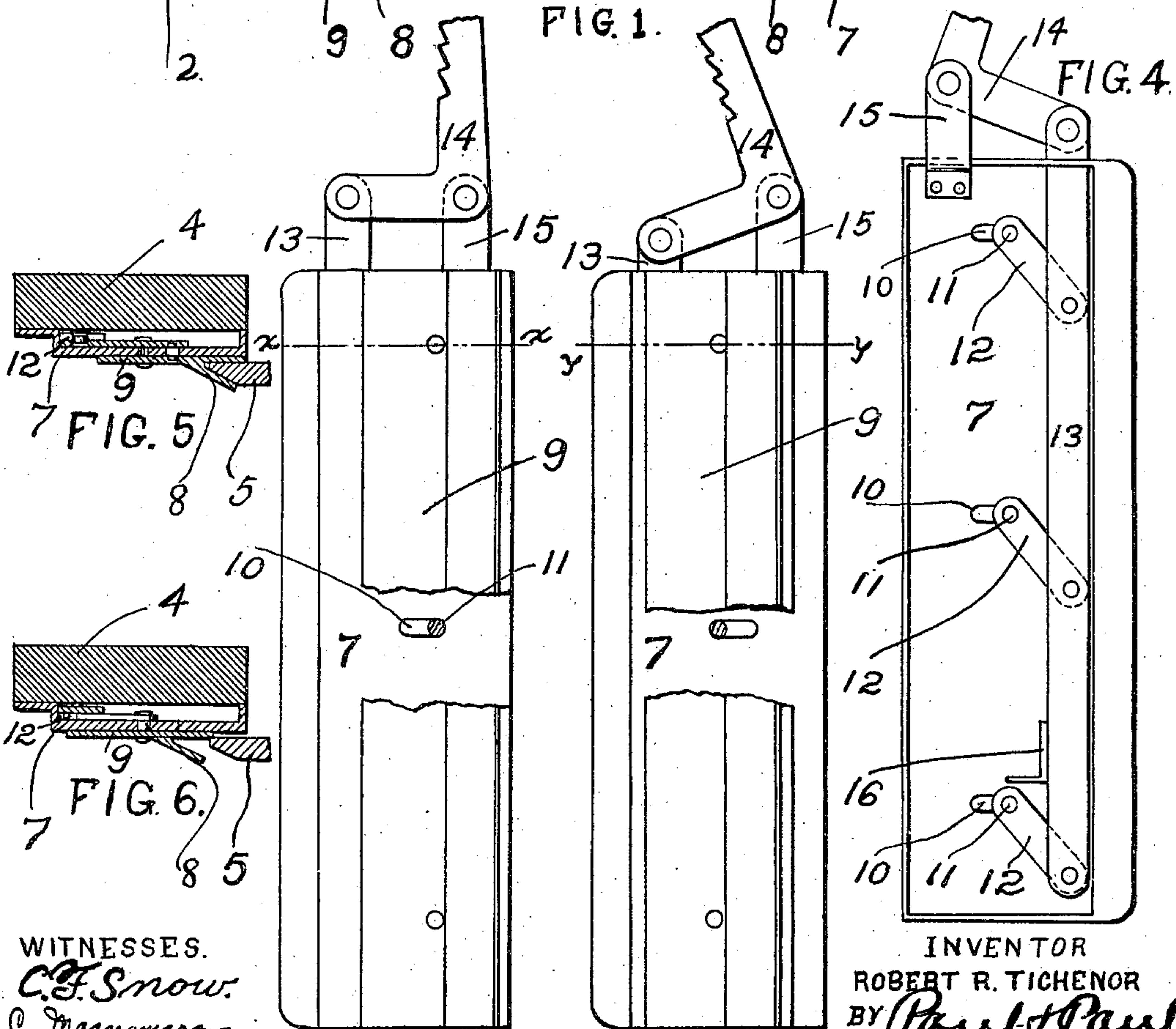


FIG. 1.



WITNESSES.
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INVENTOR
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UNITED STATES PATENT OFFICE.

ROBERT R. TICHENOR, OF FEELEY, MINNESOTA, ASSIGNOR OF ONE-HALF
TO JASPER M. POGUE, OF FEELEY, MINNESOTA.

GRAIN-DOOR.

No. 810,893.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed March 31, 1905 Serial No. 253,017.

To all whom it may concern:

Be it known that I, ROBERT R. TICHENOR, of Feeley, Itasca county, Minnesota, have invented certain new and useful Improvements in Grain-Doors, of which the following is a specification.

My invention relates to grain-doors for freight-cars; and the object of the invention is to provide a door of simple and economical construction and one that can be easily applied to a freight-car and can be readily operated and not easily broken.

The invention consists generally in the various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional view of a portion of a freight-car, showing my invention applied thereto. Fig. 2 is a detail view of the mechanism for locking the door in its raised position and showing the mechanism locked. Fig. 3 is a similar view showing the mechanism in its unlocked position. Fig. 4 is a detail view looking at the back side of the casing that incloses the locking mechanism. Fig. 5 is a sectional view on the line *xx* of Fig. 2. Fig. 6 is a sectional view on line *yy* of Fig. 3.

In the drawings, 2 represents the side wall of a freight-car of ordinary construction, having the usual side-door opening 3 and frame 4.

5 is a door, of any suitable material, having beveled side edges 6, as shown in Figs. 5 and 6.

7 represents casings that are secured to the frame of the door on each side and conceal the operating parts of the locking mechanism. These casings may be secured by bolts, screws, or any other suitable means.

8 represents vertical guides that are V-shaped in cross-section, preferably to receive the beveled ends of the door 5. The bevel on the door ends may be omitted, if preferred. These guides are carried upon plates 9, that slide back and forth on the casing 8, and are connected, through slots 10 in said casing, by pivot-pins 11 with links 12. There are preferably three of these slots and links in each casing, and bars 13 connect them at one end, as shown in Fig. 4, to operate all of them simultaneously. The ends of these bars project through the ends of the casing and are pivotally connected to bell-crank levers 14,

provided on standards 15 and extending up beside the door-opening, where they can be conveniently reached and operated. The levers are provided with notches 14', to be engaged by locking-latches 15'.

Guides or stops are provided on the casing, between which and the edge of the casing the bars 13 slide. The reciprocation of the levers 14 will move the bars 13 lengthwise and oscillate the links 12 to move the plate 9 toward or from the door, according to the direction of the movement of the levers.

When it is desired to unload a car, the door is raised to the desired height, and by moving the guides toward one another the ends of the door will be clamped and held securely. Whenever desired, the clamps may be released from the door, and it will then drop by gravity to its normal closed position. The use of clamping devices of this kind permits me to lock the door at any desired elevation to leave either a large or small opening into the car.

The operating parts, with the exception of the levers, are all concealed and protected, and there will be no danger of the mechanism becoming broken or deranged when the car is used for hauling lumber or merchandise.

I claim as my invention—

1. The combination, with a freight-car, of casings provided upon each side of the door-opening and having transverse slots at intervals arranged one above another, of guides mounted on said casing, links pivotally connected with said guides through said slots, a bar connecting said links, means for moving said bar lengthwise to move said guides toward or from each other, and a door vertically movable between said guides.

2. The combination, with a freight-car, of casings provided on each side of the door-opening, guides mounted on said casings, links pivotally connected at one end with said guides and having a sliding connection with said casings, a vertically-movable bar connecting the free ends of said links, means for raising and lowering said bar to move said guides toward or from each other, and a door vertically movable between said guides.

3. The combination, with a freight-car, of casings provided on each side of the door-opening and having transverse slots 10, guides provided on said casings, links 12 having pivot-pins 11 extending through said slots and secured

to said guides, a bar 13 connecting said links, means for raising or lowering said bars to move said guides toward or from each other, and a door provided between said guides.

5 4. The combination, with a freight-car, of casings provided on each side of the door-opening, guides provided on said casings, vertically-movable bars, means connecting said bars and said guides for imparting a horizontal movement to said guides when said bars are raised or lowered, bell-crank levers 14 pivoted on said casings and connected with said bars, and a door vertically movable between said guides.

15 5. The combination, with a freight-car, of casings provided on each side of the door-opening, guides carried by said casings and substantially V-shaped in cross-section, links slidably mounted in said casings and secured 20 at one end to said guides, vertically-movable bars pivotally connected with the opposite ends of said links, means for raising and lowering said bars to move said guides toward

or from each other, and a door having beveled ends provided between said guides. 25

6. The combination, with a freight-car, of casings provided upon each side of the door-opening, guides mounted on said casings, links 12 pivotally secured to said guides through transverse slots 10 in said casings, vertically-sliding bars 13 connecting said links, bell-crank levers 14 pivoted on said casings and having one arm pivotally connected with said bars 13, the other arms of said bell-crank levers extending vertically upon each side of the door-opening when the guides are in their locked position, and a door arranged to slide vertically between said guides, substantially as described. 30 35

In witness whereof I have hereunto set my hand this 20th day of March, 1905. 40

ROBERT R. TICHENOR.

Witnesses:

KARL W. HEYMAN,
ANDREW JOHNSON.