No. 667,949. Patented Feb. 12, 1901.

C. D. NORMAN.

GRAIN DOOR FOR FREIGHT CARS.

(Application filed June 9, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

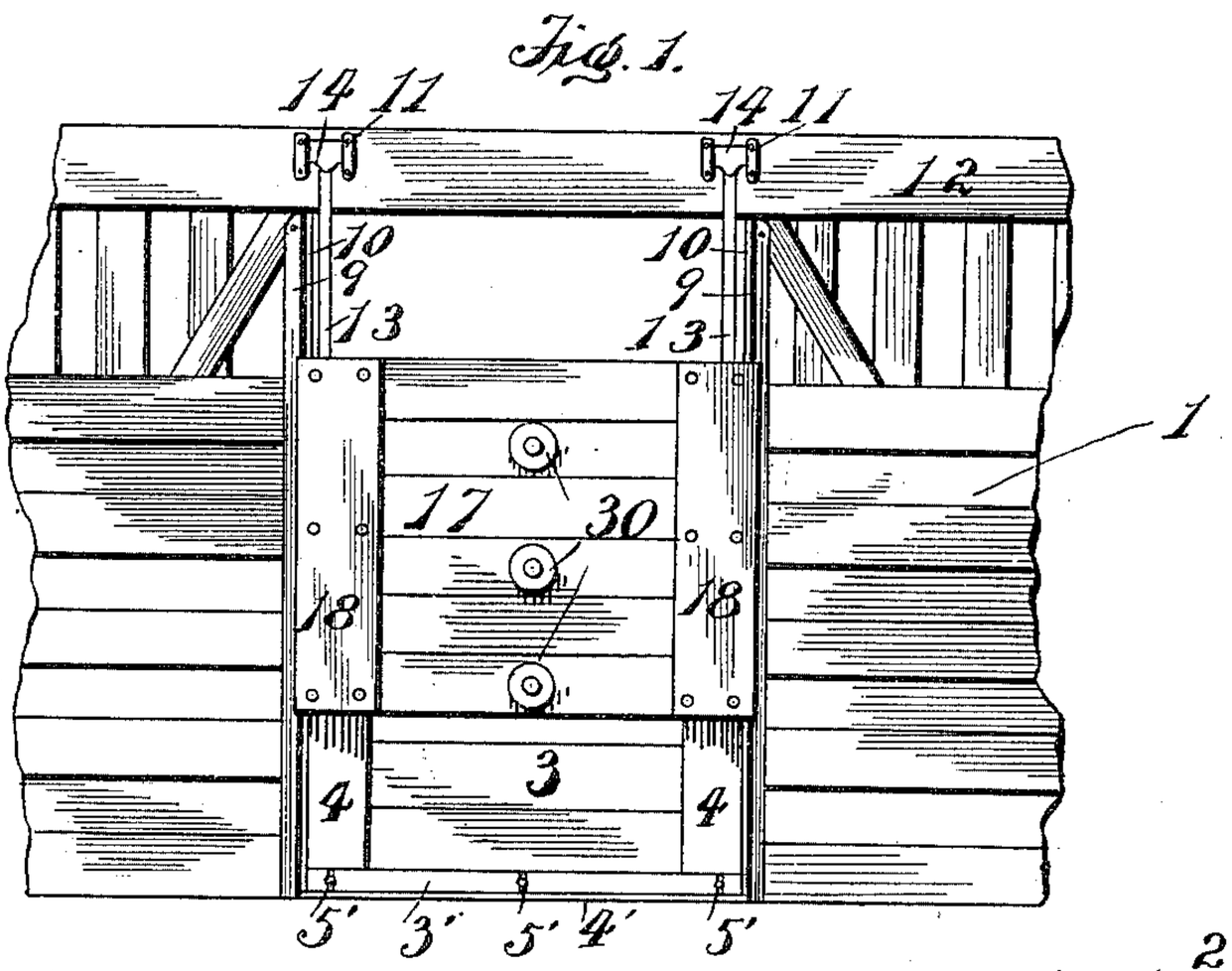


Fig. 2.

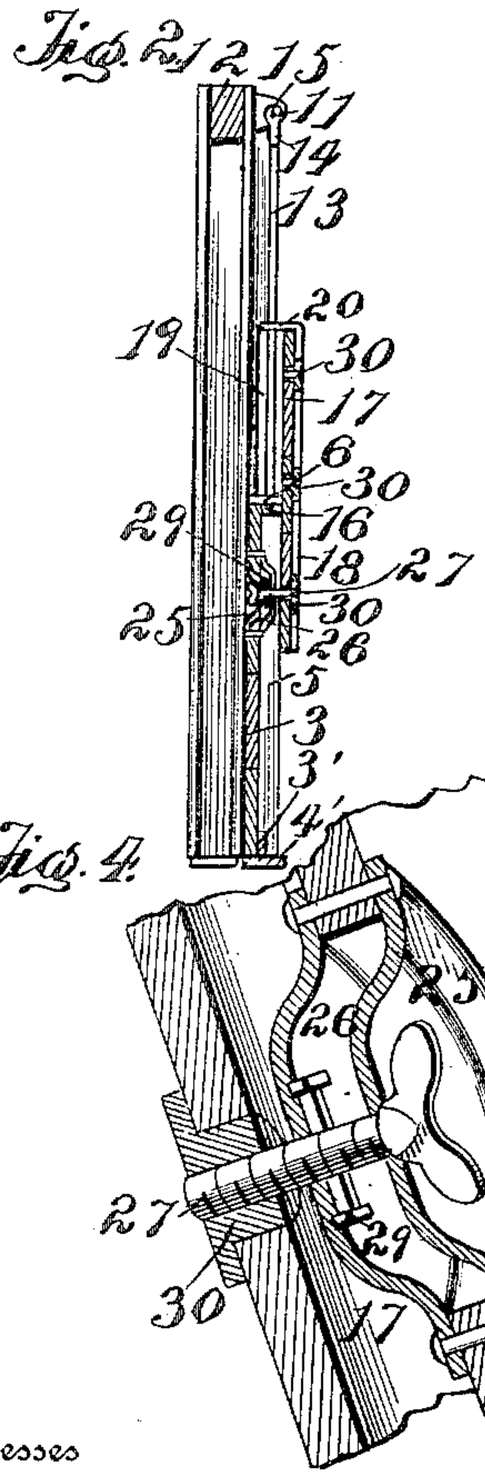


Fig. 3.

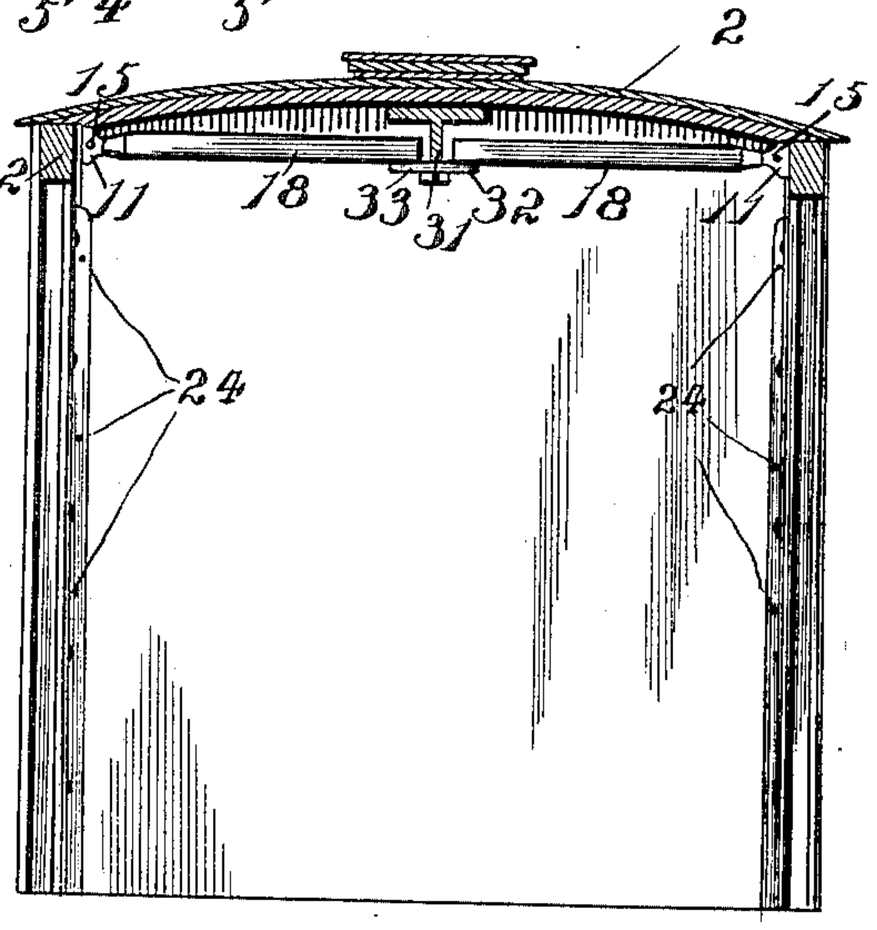
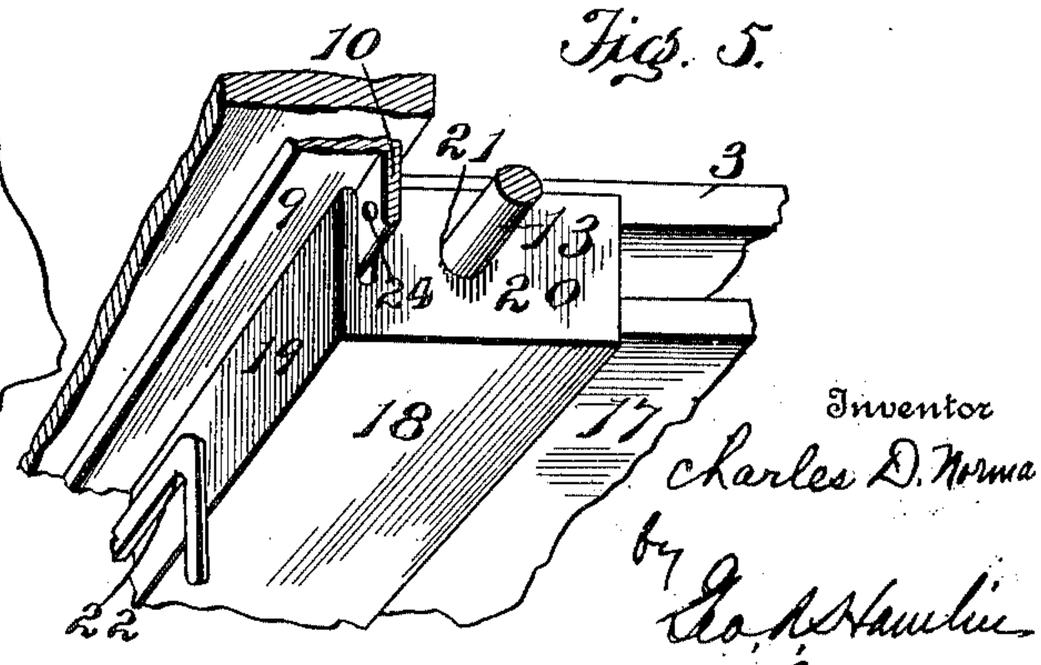


Fig. 4.

Fig. 5.



Witnesses

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(Application filed June 9, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 6.

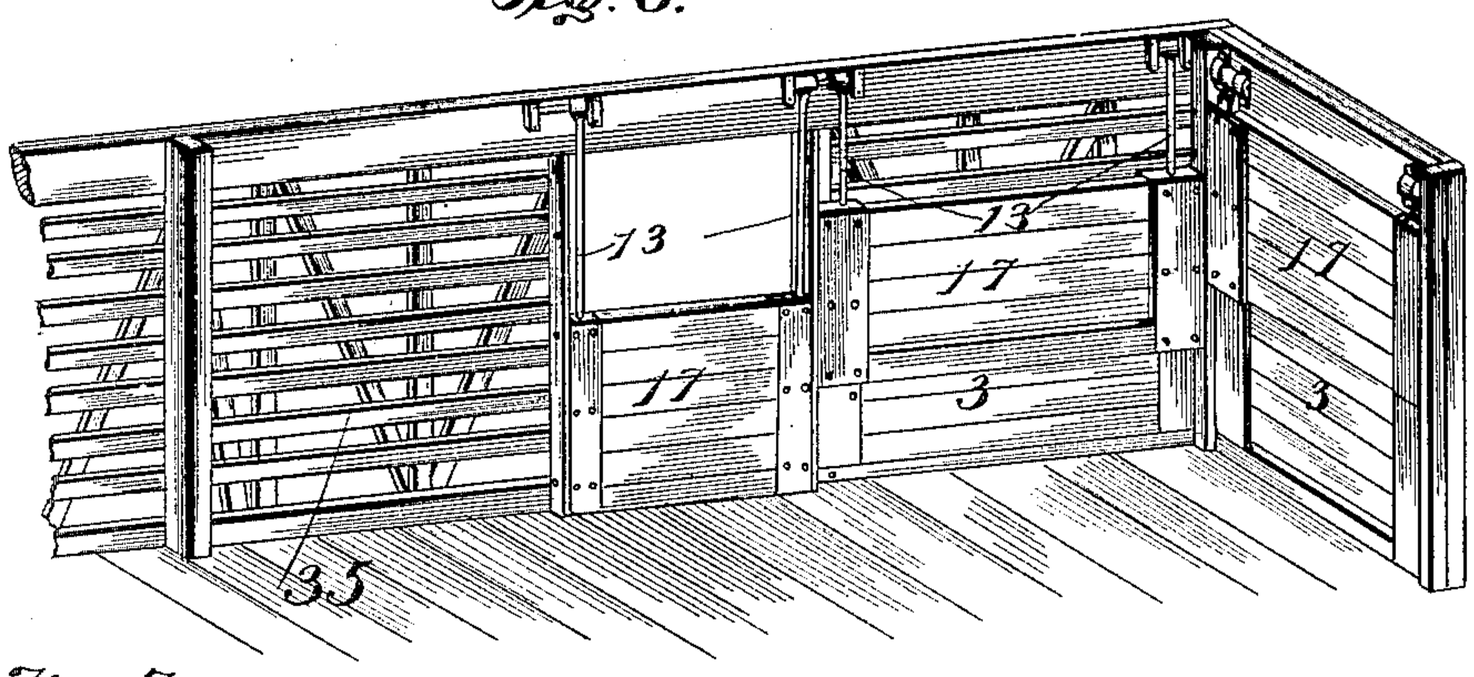


Fig. 7.

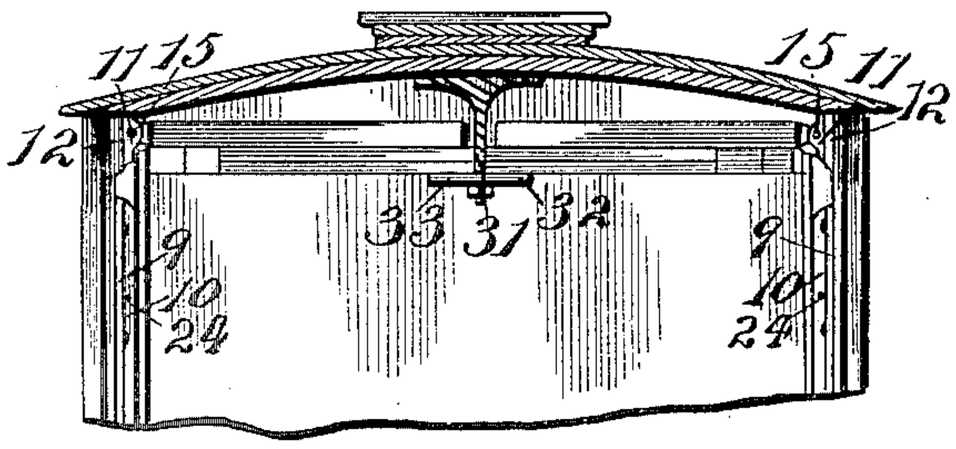


Fig. 8.

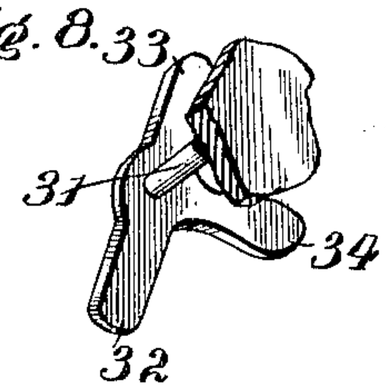


Fig. 9.

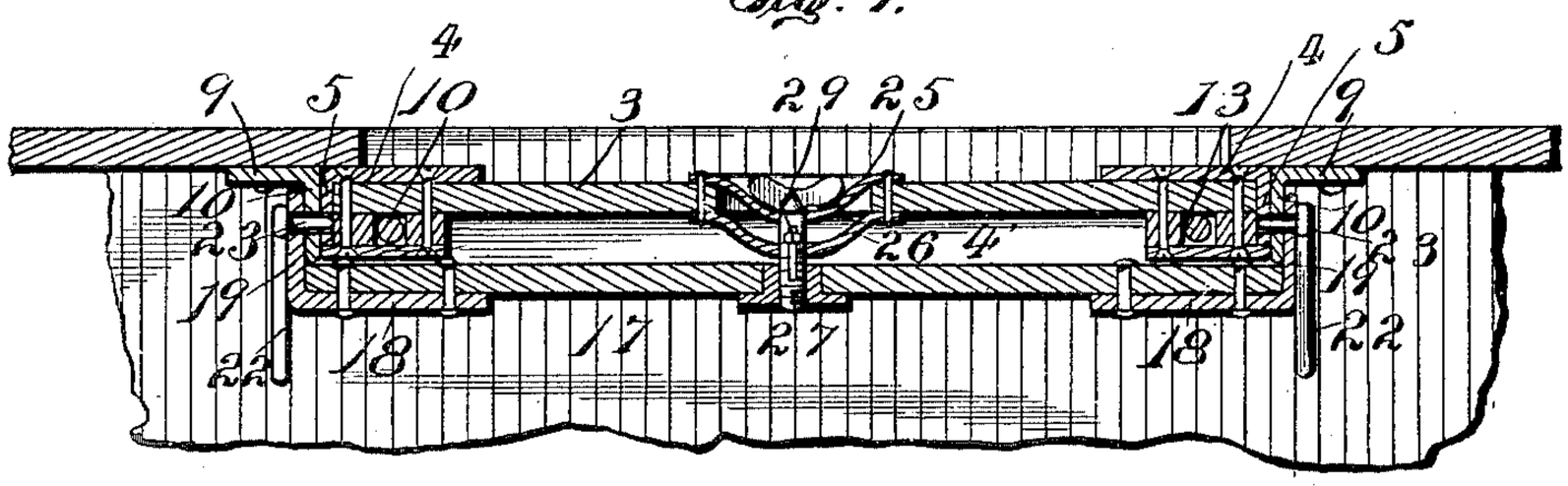


Fig. 10.

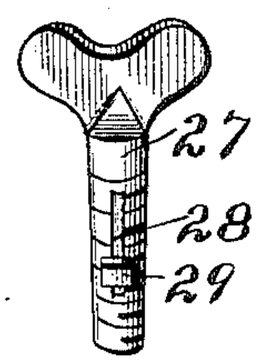
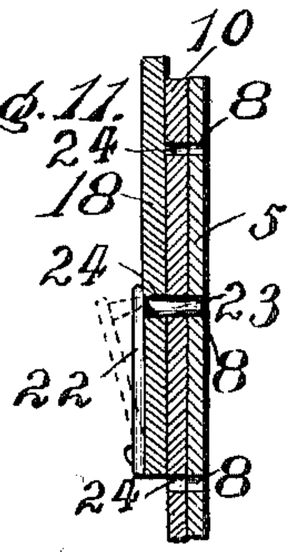


Fig. 11.



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UNITED STATES PATENT OFFICE.

CHARLES D. NORMAN, OF CLINTON, IOWA.

GRAIN-DOOR FOR FREIGHT-CARS.

SPECIFICATION forming part of Letters Patent No. 667,949, dated February 12, 1901.

Application filed June 9, 1900. Serial No. 19,722. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. NORMAN, a citizen of the United States, residing at Clinton, in the county of Clinton and State of Iowa, have invented certain new and useful Improvements in Grain-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.

This invention relates to freight-car grain-doors of the upwardly-swinging type adapted to be suitably secured after being raised, and, further, to convertible cars.

One object is to provide a grain-door for freight-cars of simple, durable, and strong construction which will be strong, light, and not liable to get out of repair and will provide a tight joint with the side of the car, and thereby prevent leakage of the grain, and adapted to prevent the nailing of the door to the side of the car.

Another object is the provision of a supplemental door for use in connection with the main grain-door which can be utilized to give the main door greater height when desired or if not so used will serve to strengthen the main door and in both instances be so disposed that it can be swung upwardly and secured, together with the main door, and not interfere in any way with the manipulation of the same or occupy space required for other purposes.

A further object of the invention is to provide a simple and comparatively inexpensive means for converting a stock-car into a grain and merchandise car which will permit conversion from the one type of car to the other with facility.

I accomplish the foregoing and other objects by the provision of certain improved features of construction and novel combinations of parts, all of which will be fully described hereinafter and recited in the appended claims.

In the accompanying drawings, Figure 1 is an elevation looking from the inside of the car; Fig. 2, a vertical section; Fig. 3, a transverse section through a car-body, showing the manner in which the doors are supported after being raised to the top of the car; Fig. 4, an enlarged sectional perspective view of the device for securing the main and supplemental doors together; Fig. 5, an enlarged top perspective view showing the construction at the top of the supplemental door; Fig. 6, an interior perspective view of the stock-car equipped with doors at its side and ends, whereby it can be converted into a grain and merchandise car; Fig. 7, a transverse section through such a car as shown in Fig. 6, showing the manner in which the doors at the end of the car are supported when raised; Fig. 8, a detail of the device for supporting the doors under the roof of the car; Fig. 9, a horizontal section of the doors; Fig. 10, a detail of the screw for securing the main and supplemental doors together, and Fig. 11 a sectional detail showing the means for locking the doors at different heights in relation to the side of the car.

The side of an ordinary grain or freight car is shown at 1, while 2 is the roof. The main grain-door is shown at 3, said door being provided with angular plates 4 at both ends, which have their inner faces of sufficient breadth to prevent nailing the door to the side of the car, while their remaining portions 5 fit against the ends of the door and their tops 6 embrace the upper corners of the same. Said angular plates are suitably secured or fastened to the door and constitute protectors for the same. The tops of the plates are provided with apertures. Secured to the sides of the car are angle plates or irons 9, having inwardly-projecting flanges 10, which lie closely adjacent to the ends of the door 3. A foot-plate 3′, having a lip 4′, is adjustably secured to the lower end of the door 3 by slots and bolts 5′, which allow it to be adjusted vertically, and this plate forms a tight joint and prevents escape of the grain.

Hangers 11 are secured to the upper sill 12 of the car in a horizontal position, and 13 designates hanger-rods provided with sleeves 14 at their upper ends, which are journaled on bolts 15 in the hangers. The rods pass loosely through the apertures in the top 6 and are provided with heads 16 to prevent them from pulling out of position.

The numeral 17 designates a supplemental grain-door, which is provided with angle plates or irons 18 at its opposite ends, the

same having the end pieces 19 and top pieces 20. The top pieces are provided with apertures 21 to receive the rods 13, and the end pieces 19 lap over the parts 10 of the plates 9, so that the supplemental door can be slid up or down in relation to the main door. Secured to the end piece 19 is a leaf-spring 22, having a pin 23 on its free end, which is adapted to be projected into any of the series of pin-holes 24 provided in the parts 10, and into the corresponding pin-holes 8 in the parts 5.

In the top of the main door I provide two caps 25 and 26, through which loosely passes a thumb-screw 27, having a slot 28 in its shank, in which is loosely received a pin 29, which is located between the caps 25 and 26. The pin prevents the screw from falling out, while giving it freedom of movement. In the supplemental door at different heights I provide internally-screw-threaded bushings 30. By the provision of such a construction the supplemental grain-door can be slid upwardly or downwardly and locked to the main door at any desired point by engaging the thumb-screw with a bushing, so that a grain-door of greater or lesser height can be provided, as found desirable, while, on the other hand, if the supplemental door is allowed to remain all the way down a much stronger door is provided and the joint with the side of the car is made tighter. At the same time owing to the disposition of the main and supplemental doors both of them can be swung upwardly and out of the way and secured to the top of the car, leaving the space below perfectly clear, or they can both be raised and locked at any height by the catch 22. I provide a bracket 31, depending from the ridge-beam of the car and equipped with a rotatable door catch or support, having the arms 32, 33, and 34, two of which are disposed diametrically opposite and the third one at right angles to the others. With such a support or catch both of the doors can be secured in elevated position and independently released. One of the arms will always be in position for use as a handle.

In Figs. 6 and 7 I have shown the manner in which my invention can be used on a stock-car to render it convertible into a closed box or grain and merchandise car. Here the stock-car is shown at 35. I apply my improved doors, heretofore described, to the sides and end of the car, inside the same, as usual, and it will be seen that upon raising the supplemental doors to the proper height the car can be closed entirely on all sides and the grain removed, when desired, by opening the grain-door I provide at the usual opening. The doors can be swung upward and secured in the upper part of the car, as shown in Fig. 7, when it is desired to convert the car back into a stock-car.

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

1. The combination with the side of a freight-car, of angle-plates secured thereto having inwardly-projecting flanges, and a suspended grain-door adapted to fit in between the projecting flanges, said flanges and door being so arranged that the door can be swung directly down in between the flanges or swung directly upward from between them.

2. The combination with the side of a car having a door-opening therein, of a main grain-door extending entirely across the door-opening, an independent supplemental grain-door extending entirely across the door-opening and adjustable up and down across the face of the main grain-door to assume positions above the main grain-door, and locking devices on the doors for directly connecting the said doors together when adjusted to different heights in relation to each other.

3. The combination with the side of a freight-car, of a main grain-door, flanges secured to the side of the car and disposed adjacent the ends of the main door, a supplemental grain-door which is slidable or adjustable up and down in relation to the main door, and plates or flanges on the supplemental door, which overlap the flanges on the side of the car, whereby a tight joint is provided.

4. The combination with the side of a freight-car, of a main grain-door, angle plates or irons secured to the ends of the said door which have apertures or pin-holes, angle-plates secured to the side of the car with their flanges located adjacent the ends of the door and also provided with pin-holes, a supplemental door adjustable on the main door, angle-irons secured to the ends of the said supplemental door, and overlapping the flanges of the angle-plates on the side of the car, and locking-pins carried by the supplemental door which are adapted to be entered through the flanges on the side of the car and into the irons on the ends of the main door.

5. The combination with a freight-car, of a main grain-door having angle-plates on its ends which are provided with apertured top pieces, rods hinged to the upper part of the car and passing loosely through said apertured pieces, whereby the door can slide on said rods and swing with them, a supplemental grain-door having angle-plates on its ends which are provided with apertured top pieces through which the rods loosely pass, whereby said supplemental door can slide on the rods independently of the main door, and means for locking the doors together in different positions relatively to each other.

6. The combination with a stock-car, of vertically-sliding and upwardly-swinging doors ranged along the sides and ends thereof, means for holding said doors raised when slid upwardly, and means for holding them raised when swung upwardly, whereby the car can be converted from a stock-car into a grain-car and vice versa.

7. A convertible car having doors ranged along the sides and ends thereof, each com-

prising a plurality of sections the members of which are slidable vertically, one over the face of the other, in relation to each other and slidable in relation to the sides of the car, and means for holding the sections where adjusted.

8. A convertible car having doors ranged along the sides and ends thereof, each comprising a plurality of sections the members of which are slidable vertically in relation to each other and are hinged for upward swinging together, means for holding said doors at the point to which they are raised, and means for holding them raised when swung upwardly.

9. In a grain-door for freight-cars, the combination with a main door, of separated cap-plates thereon, a thumb-screw passed loosely through said plates and having a slot therein and a pin in the slot between the plates to prevent detachment of the thumb-screw, a supplemental door slidable vertically across the face of the main door, and internally-threaded bushings on said supplemental door at different heights which are adapted to receive the screw aforesaid.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES D. NORMAN.

Witnesses:
E. W. SCHULTZ,
H. H. AHLFF.