C. M. CHRISTENSEN.

CAR DOOR.

APPLICATION FILED MAY 3, 1910.

975,209.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

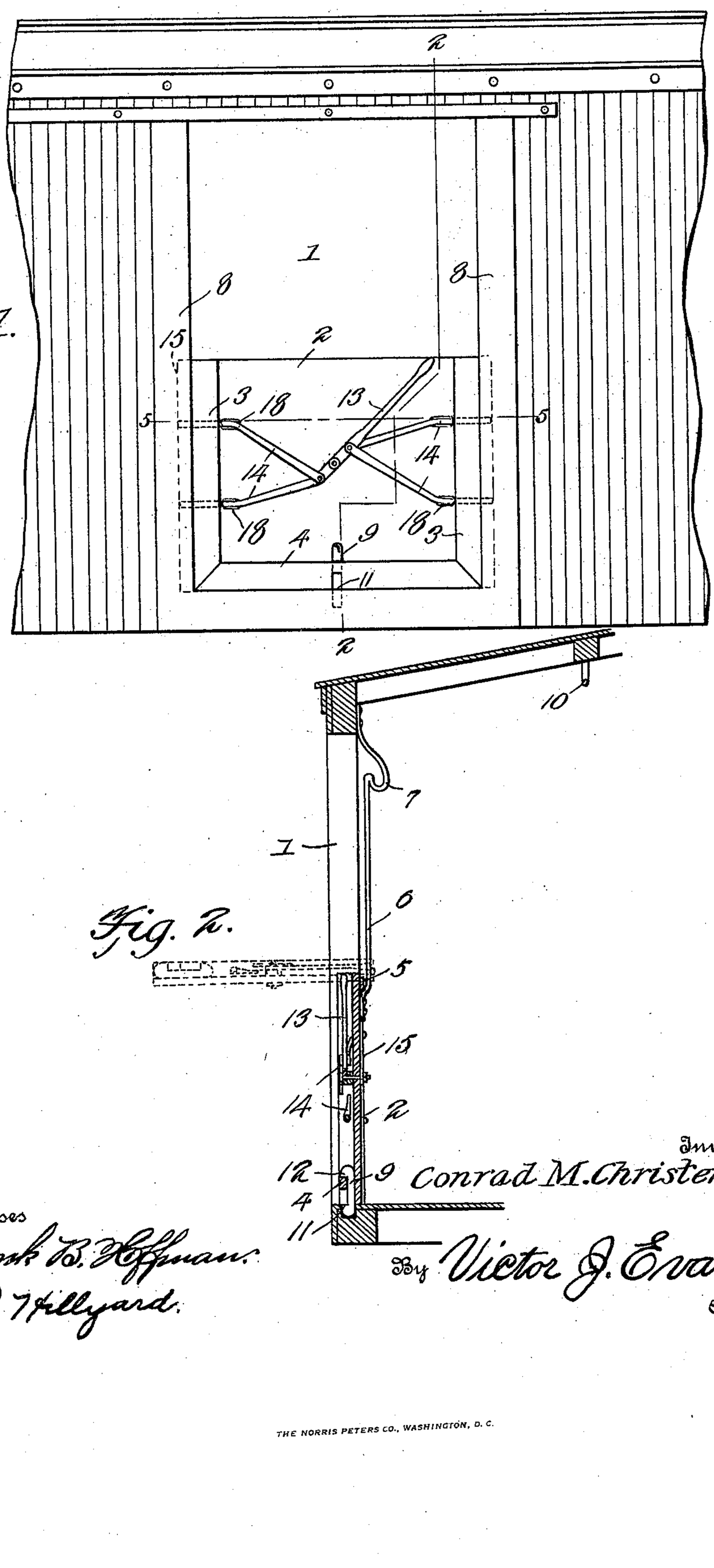


Fig. 2.

Witnesses

Frank B. Hoffman.

U. B. Tillyard.

Inventor

Conrad M. Christensen

By Victor J. Evans

Attorney

C. M. CHRISTENSEN.

CAR DOOR.

APPLICATION FILED MAY 3, 1910.

975,209.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 2.

Fig. 3.

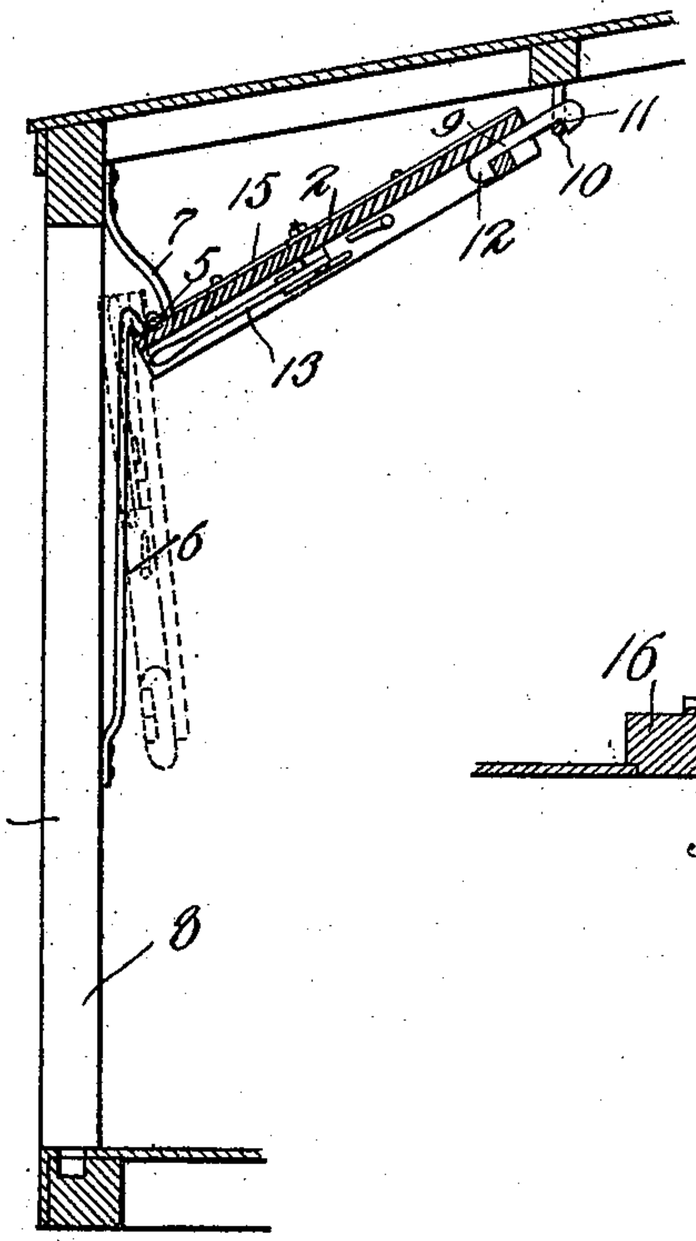


Fig. 5.

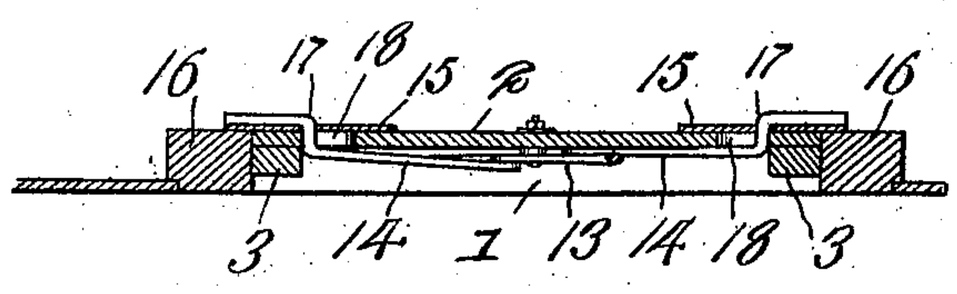
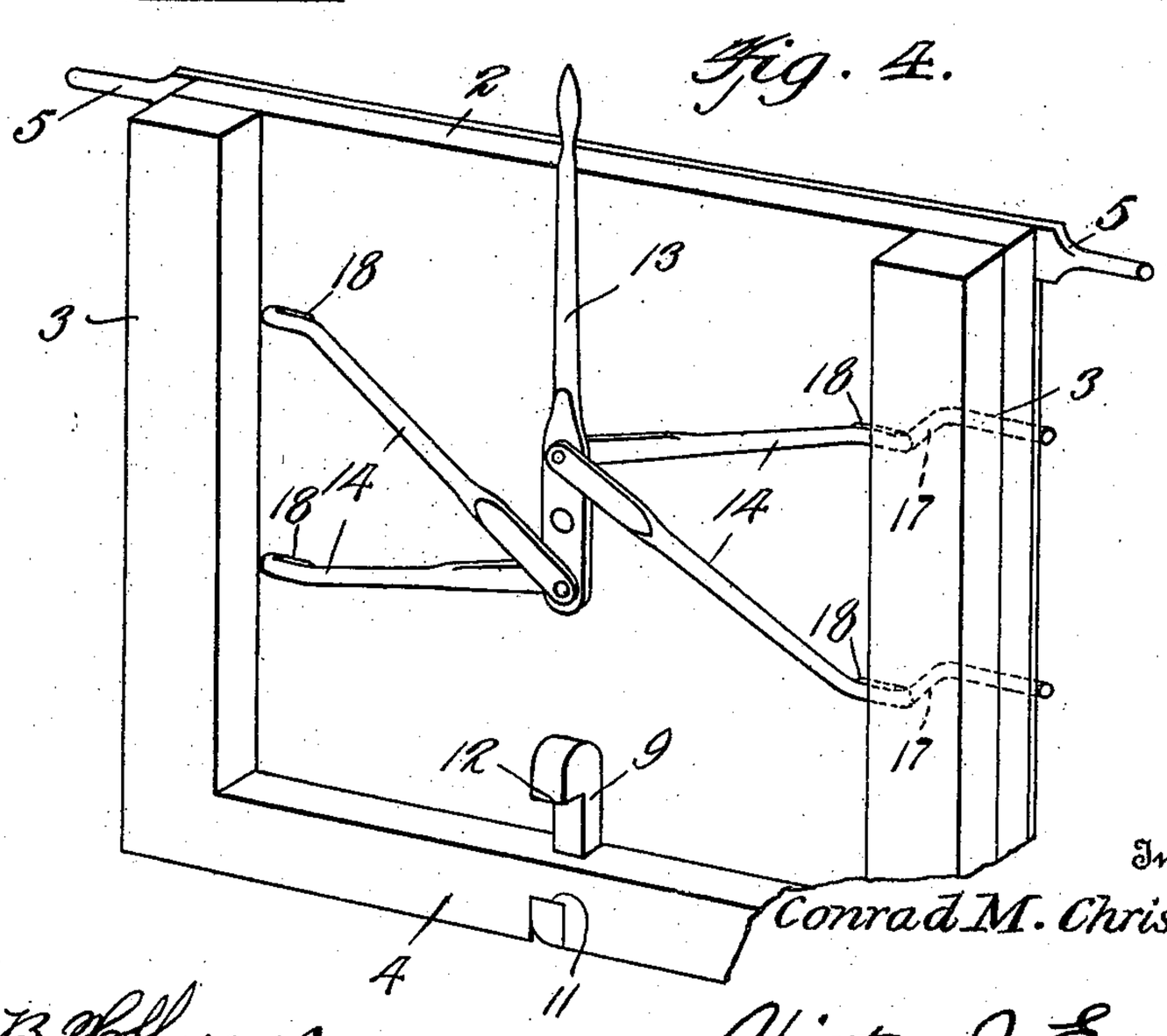


Fig. 4.



Witnesses

Frank B. Hoffman

V. B. Hillyard.

Inventor

Conrad M. Christensen

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

CONRAD M. CHRISTENSEN, OF LEEDS, NORTH DAKOTA.

CAR-DOOR.

975,209. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed May 3, 1910. Serial No. 559,052.

To all whom it may concern:

Be it known that I, CONRAD M. CHRISTENSEN, a citizen of the United States, residing at Leeds, in the county of Benson and State of North Dakota, have invented new and useful Improvements in Car-Doors, of which the following is a specification.

The present invention appertains to the type of doors for use in connection with cars for hauling grain and other commodity in bulk, the purpose being to devise novel mountings and securing means whereby the door when closed may be held in place against casual movement, and whereby when it is required to discharge the load the door may be released and swung outward or moved upward and when not required for immediate service may be suspended from the roof of the car so as to be wholly out of the way, the same catch or bolt employed for securing the lower end of the door also answering for holding the door suspended from the roof.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claim.

Referring to the drawings, forming a part of the application, Figure 1 is a front view of a car door embodying the invention, showing a portion of a grain car to illustrate the application of the invention. Fig. 2 is a section on the line 2—2 of Fig. 1, the dotted lines showing the door swung outward at its lower end. Fig. 3 is a section similar to Fig. 2 with the door suspended from the ceiling, the dotted lines illustrating the door when elevated and supported by the suspending loops of the guide rods. Fig. 4 is a perspective view of the door. Fig. 5 is a horizontal section on the line 5—5 of Fig. 1.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The side of the car for receiving the grain or other commodity to be hauled in bulk is provided with the usual door opening 1, which is adapted to be closed by a door 2 mounted both to swing inwardly and outwardly and to move vertically. The door 2 may be of any substantial construction and is strengthened at its vertical edges by means of cleats 3 and its lower edge by means of a horizontal cleat 4, said cleats being secured to the outer side of the door. A rod or bar 5 is secured to the upper end of the door, preferably upon the inner side thereof, and its ends project beyond the vertical edges of the door so as to engage guide rods 6 attached to the posts upon opposite sides of the door opening so as to retain the door in proper position and direct the same in its movements. The guide rods 6 are secured to the inner sides of the door posts and are formed near their upper ends with crimped portions 7, which constitute suspending loops to receive the projecting ends of the rod or bar 5, so as to hold the door elevated, as shown most clearly in Fig. 3. The door 2 is of a width to fit snugly between the door posts 8, thereby preventing longitudinal movement when the door is closed. When the door is released it may be swung outward at its lower end, as indicated by the dotted lines in Fig. 2, or it may be elevated and suspended from the loops 7 or it may be both elevated and swung inward and suspended from the ceiling, as shown by the full lines in Fig. 3. The door is suspended in the latter manner so as to be entirely out of the way when not required for immediate service for closing the door opening.

A sliding catch or bolt 9 is fitted in an opening formed in the horizontal cleat 4 and is adapted to enter an opening formed in the door sill so as to secure the door against internal pressure when closed. When the door is elevated and swung inward the catch or bolt 9 is adapted to engage an eye 10 secured to a beam or other part of the roof structure. The lower end of the catch or bolt 9 is enlarged so as to form a shoulder 11, which is adapted to engage with the eye 10 to prevent possible slipping when the door is suspended from the ceiling, as indicated in Fig. 3. The upper end of the catch or bolt 9 is likewise enlarged, as indicated at 12, to provide both a finger piece and a stop, whereby the catch may be easily manipulated and whereby it is prevented from loss or outward displacement.

An operating lever 13 is pivoted to the outer side of the door 2 and occupies an approximately vertical position. Pairs of bolts 14 have their inner ends overlapping opposite sides of the lever 13 and pivoted

thereto, the outer ends of the bolts passing through openings formed in the vertical cleats 3 and adapted to enter openings formed in the sides of the door posts 8 facing the door opening 1. A pair of bolts 14 are provided for each side of the door and the bolts have pivotal connection with the operating lever upon opposite sides of the fulcrum thereof, whereby both pairs of bolts are simultaneously operated either to release or to secure the door. The inner portions of the bolts 14 are flattened and are arranged upon opposite sides of the operating lever to which they are secured by the same pivot fastening. The outer or engaging ends of the bolts are spaced apart a distance to secure both the upper and lower portions of the door, thereby providing a reliable fastening.

When the door is closed and secured it fits between the door posts 8 and the catch 9 engages the door sill and the outer ends of the bolts 14 engage the door posts 8, thereby securing the door against movement in any direction. When it is required to discharge the load the catch 9 is moved to disengage it from the door sill, after which the lever 13 is operated to withdraw the bolts 14 from engagement with the door posts, when the door will swing outward at its lower end under the pressure exerted thereagainst from within the car. As the pressure is relieved from the inner side of the door the latter may be elevated and suspended from the loops 7, thereby admitting of free access to the interior of the car, or if desired the door 2 after being suspended from the loops 7 may be swung inward and suspended from the ceiling by means of the catch 9, as indicated in Fig. 3.

Plates 15 are placed against the inner side of the door 2 at opposite ends thereof and are slidable so as to engage the inner sides of the door posts 16 and insure a close joint therewith to prevent the escape of grain or other commodity. The plates 15 also serve to prevent outward displacement of the door when subjected to pressure from within. Any means may be employed for securing the plates 15 to the door 2, which will admit of a limited sliding movement of said plates. The bolts 14 are utilized both as securing means for the plates and also as operating means therefor. For this purpose the bolts 14 have offset portions 17 near their outer ends, which pass through slots 18 formed in the door 2, the offset portions 17 passing through openings formed in the plates 15 and the end portions of the bolts beyond the offset portions 17 engaging the plates 15 so as to confine the same to the door, as shown most clearly in Fig. 5. When the bolts 14 are moved longitudinally the offset portions 17 moving in the slot 18 and being in engagement with the plates 15 effect a corresponding movement of the latter. The horizontal openings 18 near the vertical edges of the door through which the offset portions 17 of the bolts pass are closed upon their inner sides by means of the plates 15, thereby preventing any waste of material or the choking of the slots by the material packing therein.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claim appended hereto.

Having thus described the invention what is claimed as new, is:—

In combination a car provided in its side with the usual door opening, a door for closing said opening having horizontal slots in opposite portions near its vertical edges, an operating lever pivoted to the outer side of the door, bolts pivoted to the operating lever and arranged upon the outside of the door and having offset portions near their outer ends passing through the horizontal slots of the door and having their terminal portions extending along the inner side of the door and adapted to engage the door jambs, and plates arranged upon the inner side of the door adjacent its vertical edges and having openings through which the offset portions of the bolts pass, said plates serving to close said horizontal slots and to extend across the joints formed between the door and the jambs of the door opening.

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

CONRAD M. CHRISTENSEN.

Witnesses:
D. M. Wardrope,
A. T. Hilmen.