2 Sheets—Sheet 1.

D. F. VAN LIEW.

Car-Door.

No. 201,306. **Patented March 12, 1878.**

Fig. 1.

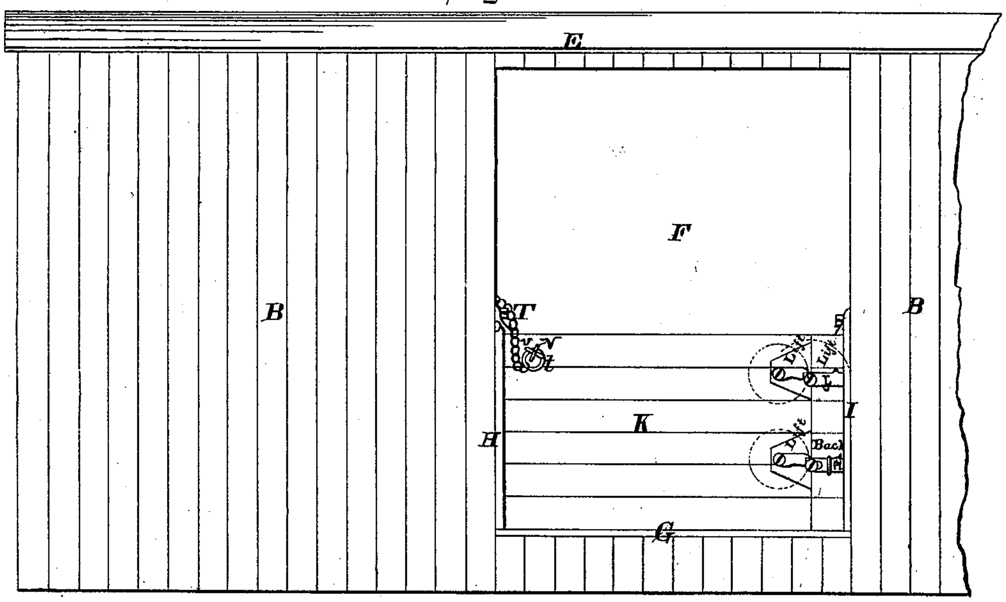
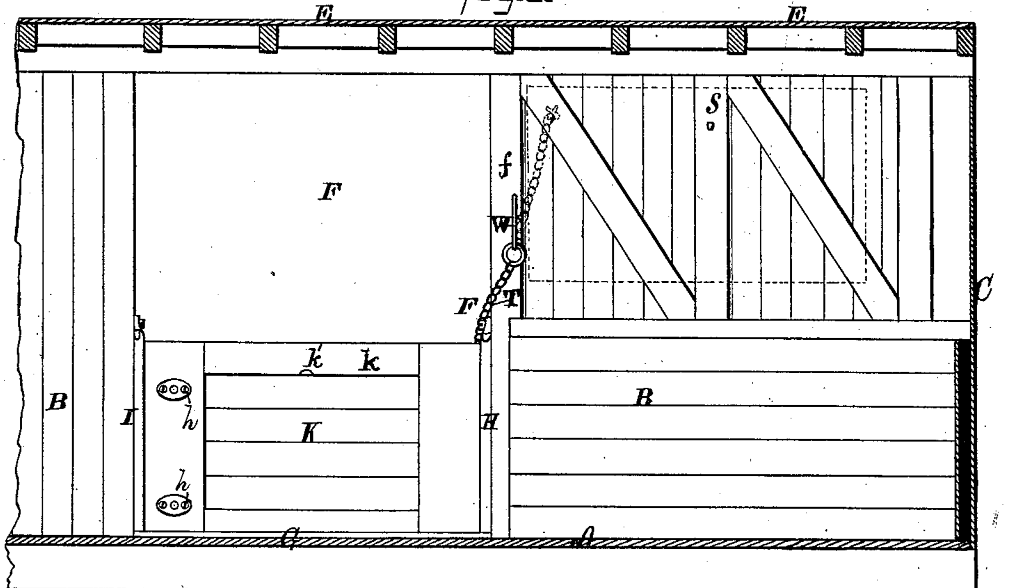


Fig. 2.



WITNESSES:

Jas. E. Hutchinson

Henry C. Hazard

INVENTOR

D. F. Van Liew, by

Prindle and Co., his Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

D. F. VAN LIEW.

Car-Door.

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Fig. 3.

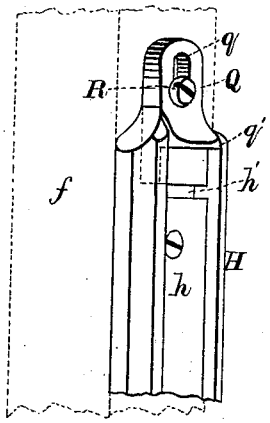


Fig. 4.

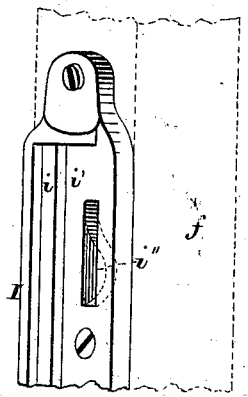


Fig. 5.

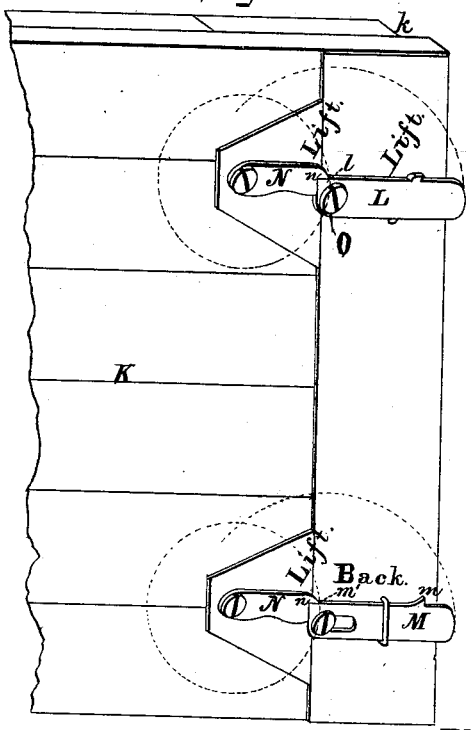


Fig. 6.

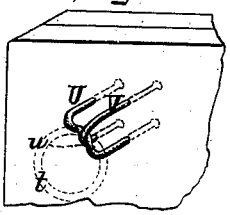


Fig. 7.

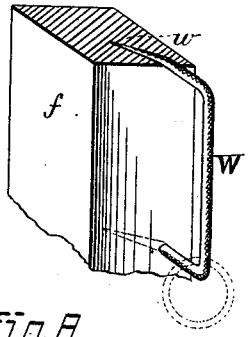


Fig. 8.

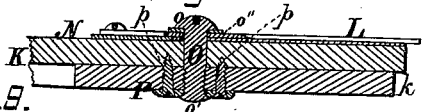
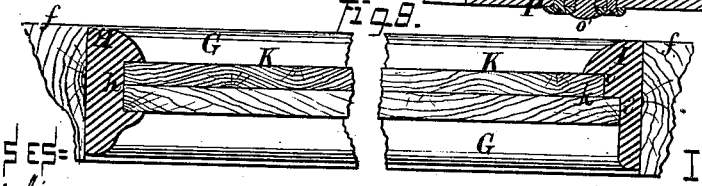


Fig. 9.



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N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DENNIS F. VAN LIEW, OF AURORA, ILLINOIS.

IMPROVEMENT IN CAR-DOORS.

Specification forming part of Letters Patent No. **201,306**, dated March 12, 1878; application filed February 16, 1877.

To all whom it may concern:

Be it known that I, DENNIS F. VAN LIEW, of Aurora, in the county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Grain-Doors for Railroad-Cars; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of the outer side of a car containing my improved grain-door. Fig. 2 is a like view of the inner side of the same. Figs. 3 and 4 are perspective views of the upper ends of the socket and rabbeted jamb, respectively, which receive the ends of my door. Fig. 5 is an enlarged perspective view of the forward end of said door. Fig. 6 is a like view of the fastening employed for connecting the end of the guard-chain to or with the door. Fig. 7 is a like view of the staple for connecting said chain to or with the door-post. Fig. 8 is a horizontal section of the pivot of the swinging bolt, and Fig. 9 is a like view of the door and its jamb.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to produce a simple, efficient, and inexpensive grain-door, which may be easily and quickly placed in or removed from position, and which, with the door-jamb, shall be incapable of injury from nails or spikes that are frequently employed by careless operatives to fasten a door in position; to which end it consists, principally, as a means for securing a door within a doorway, in a metal socket for containing one end of said door, a rabbeted jamb for receiving the opposite end of the same, and bolts or latches arranged upon the outer face of said door and capable of engagement with said jamb, substantially as and for the purpose hereinafter specified.

It consists, further, in the means employed for limiting the motion of the end of said door which is contained within said socket, substantially as and for the purpose hereinafter shown.

It consists, finally, in the means employed for connecting the guard-chain to or with the door, substantially as is hereinafter shown and described.

In the annexed drawings, A represents the floor, B the side, C the end, and E the roof, of a freight-car, which is constructed in the usual manner, and is provided within its said side B with an opening, F, for the discharge of grain or other freight.

The lower edge of the door-opening F is incased by a metal sill, G, of usual construction, which extends to the outer face of the side B, while one of the jambs of said opening is covered by a metal plate, H, which corresponds in width to said sill, extends slightly above the point designed for the upper edge of the door, and is provided within its front side with a right-angled longitudinal groove, *h*, that corresponds to and is intended for the reception of one end of said door.

The opposite end of the door-opening is covered by a plate, I, which corresponds in general dimensions to the metal jamb H, and is provided within its front face with a double rabbet, *i* and *i'*, as shown in Figs. 4 and 9.

The grain-door K is constructed of or from wood in the usual manner, and has such height as to cause it to extend from the sill G nearly to the upper end of the jambs H and I, and in length corresponds to the space between the bottom of the recess *h* of said jamb H to the outer rabbet *i'* of said jamb I. The end of said door which bears against the rabbet *i* is provided with a rabbet, *k*, which enables it to fit its rabbets, as seen in Fig. 9.

It will be seen that the rear end of the door K is held in lateral position by means of the grooved jamb H, while its opposite forward end is supported from within by the steps or rabbets of the jamb I; and in order that said end may be prevented from moving outward, I employ two fastenings, the upper of which, L, is a latch, which is pivoted at one end upon the outer face, near the forward end and upper edge of said door, and is capable of being turned upon its pivotal bearing toward or from the jamb I.

When turned toward the jamb I until it occupies a horizontal position, the latch L extends beyond the door K, and its forward end is contained within a pocket, *i''*, that is formed in said jamb, in which position said latch locks said door in lateral position, and prevents its outward movement.

their interlocking bows receives the full strength of each. The arrangement of said staples at right angles to each other prevents such weakening of the door as would result from the passage through the latter of two staples arranged parallel with each other.

The opposite end of the guard-chain T is attached to or upon the inner face of the door-post *f* by means of a staple, W, which has a considerable length vertically, in order to permit the door K to be suspended upon the car-side, as before described.

As the staple W is subjected to severe lateral strains, it is necessary that it should be so inserted within the door-post *f* as to prevent the latter from being split by said strains.

The desired result is secured by driving the prongs *w* of the staple W diagonally into the inner corner of the door-post *f* which is farthest from the doorway, so as to cause them to penetrate the wood at a right angle to the line of its greatest transverse dimensions, by which arrangement said post is not only enabled to offer the greatest resistance to a splitting strain, but, as the strain upon said staple is nearly or quite at a right angle to the line of its said prongs, no force less than such as is required to split said post or to break said staple can separate said parts.

In order that the staple W may not project beyond the side of the door-post *f*, so as to interfere with the suspension of the door K from the car-side, and also subject it to injury from the carelessness of those engaged in loading and unloading ordinary merchandise from the cars, the portion of each prong *w* outside of said post is bent to a right angle with the inner face of the latter, as seen by Fig. 7.

The door thus constructed and operated is simple, is easily placed in or removed from position, it cannot be injured or broken by any ordinary usage, and can be applied to any car without change.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. As a means for securing the door K within the doorway F, the metal socket or jamb H which contains its rear end, the double-rabbeted jamb I for receiving the front end of said door, and bolts or latches L and M, arranged upon the outer face of the latter, and capable of engagement with said jamb I, substantially as specified.

2. As a means for limiting the vertical motion of the rear end of the door K, the plate Q, provided with the elongated opening *q* and shoulder *q'*, fitted within the opening *h'* at the upper end of the socket H, and secured to or upon the post *f* by means of the screw R, substantially as shown.

3. In combination with the latch L, the locking-latch N, pivoted to or upon the door K, and provided within its forward end with a notch, *n*, which embraces the correspondingly-shaped upper rear corner *l* of said latch, substantially as and for the purpose set forth.

4. As a means for connecting the guard-chain T to or with the door K, the staples U and V, secured to or within the latter, with their bows arranged at a right angle to each other and interlocked, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of January, 1877.

D. F. VAN LIEW.

Witnesses:
GEO. S. PRINDLE,
WILLIAM FITCH.