(No Model.)

5 Sheets—Sheet 1.

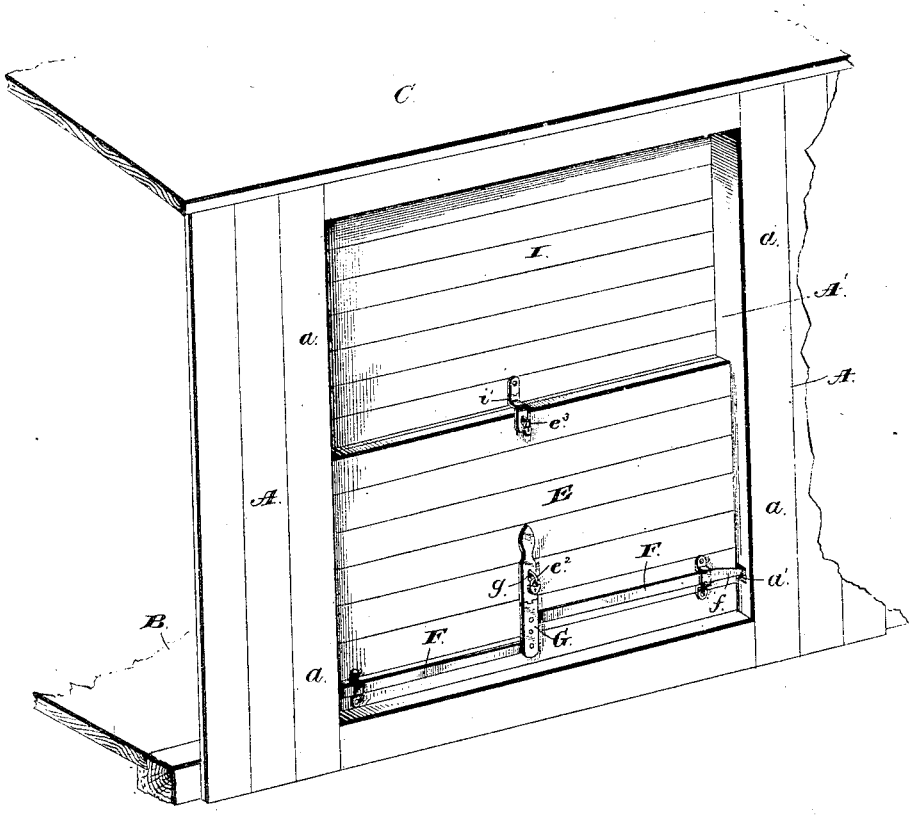
J. MILLER.

CAR DOOR.

No. 419,057.

Patented Jan. 7, 1890.

Fig. 1.



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Inventor.
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Crindle & Russell, his Attys

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Fig. 2.

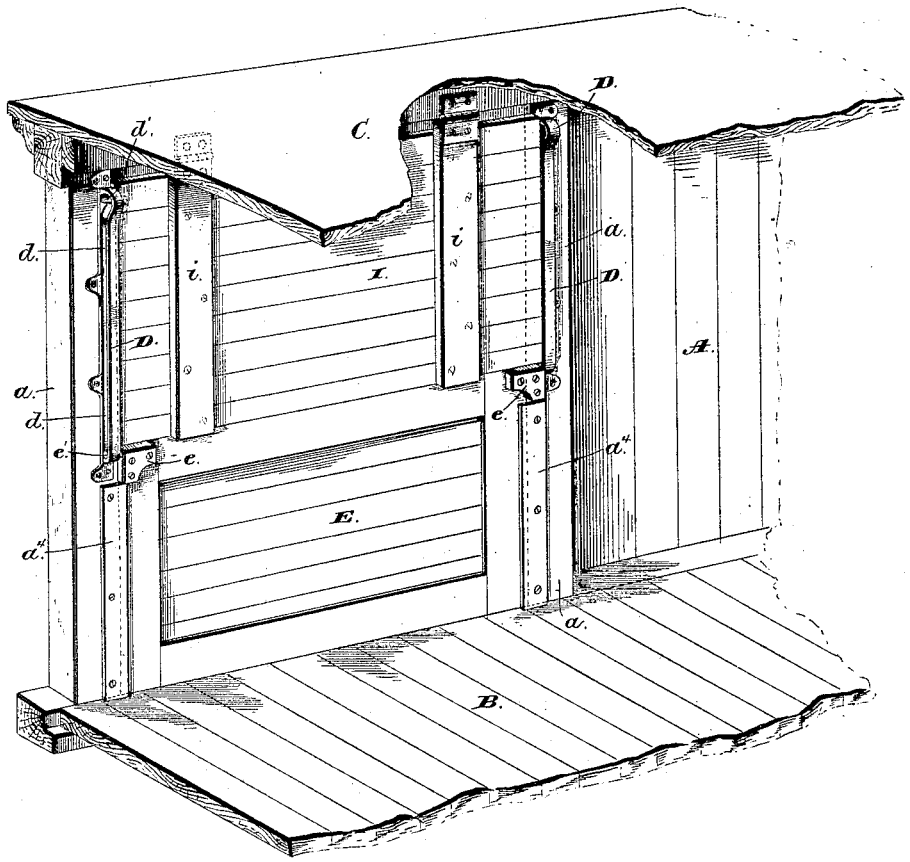

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Fig. 3.

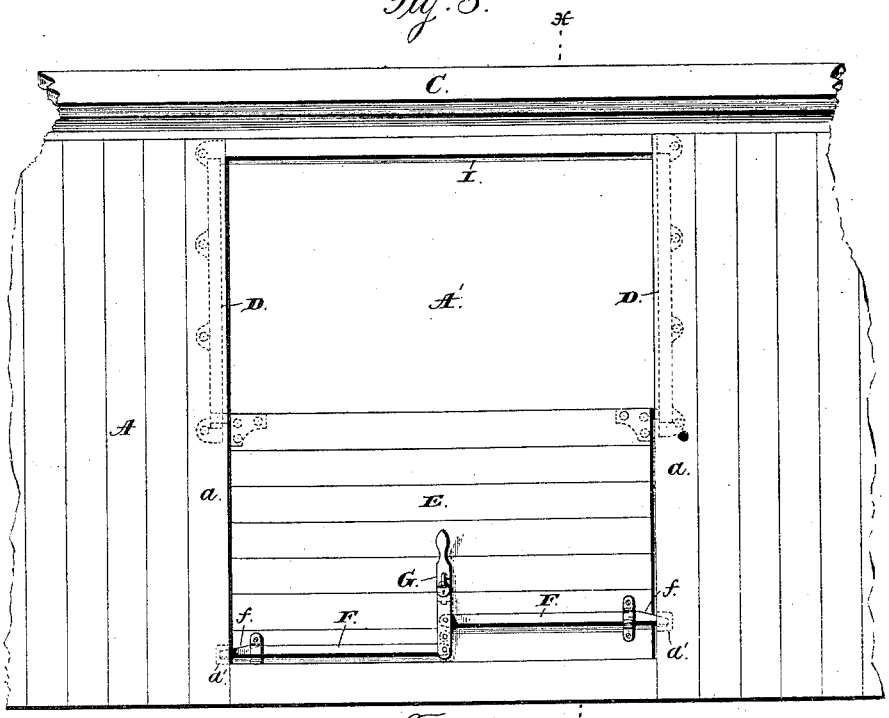
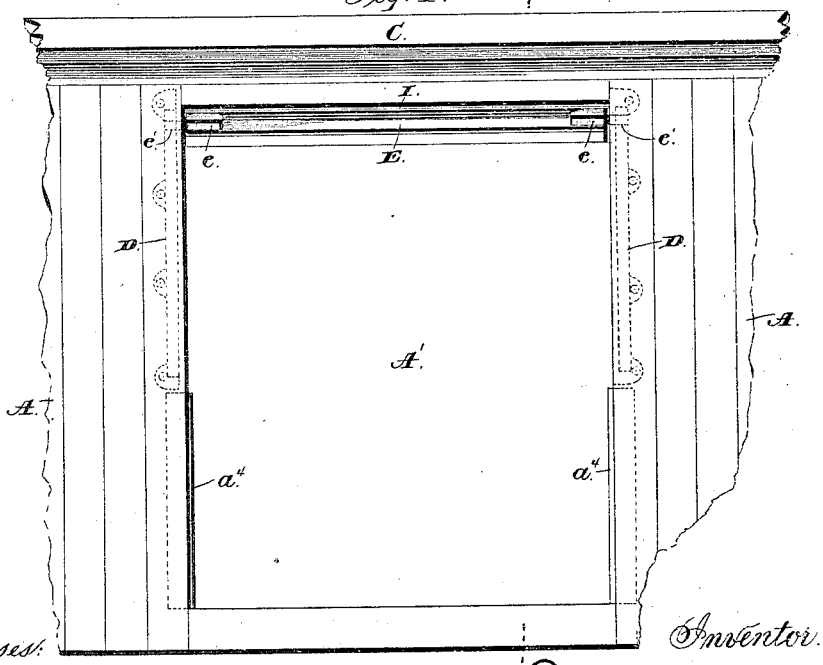


Fig. 4.



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(No Model.) 5 Sheets—Sheet 4.

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CAR DOOR.

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Fig. 5.

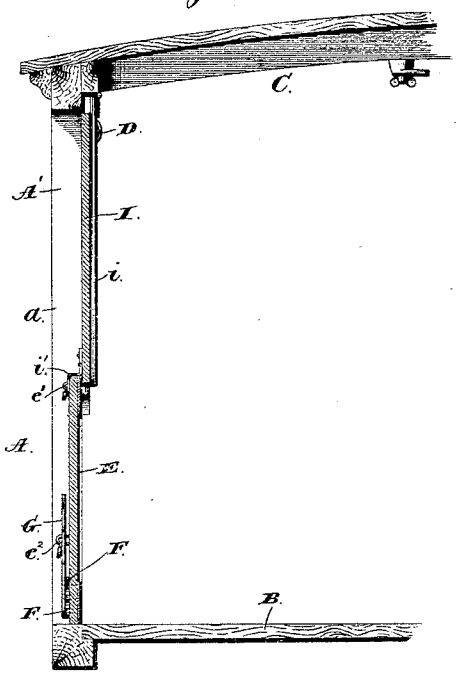
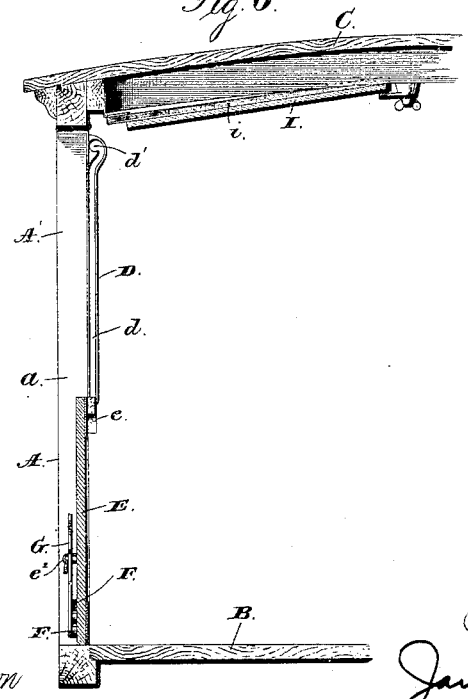


Fig. 6.



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J. MILLER.

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Fig. 7.

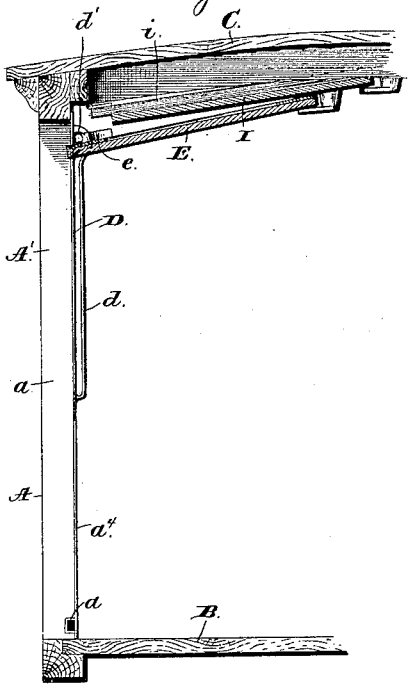
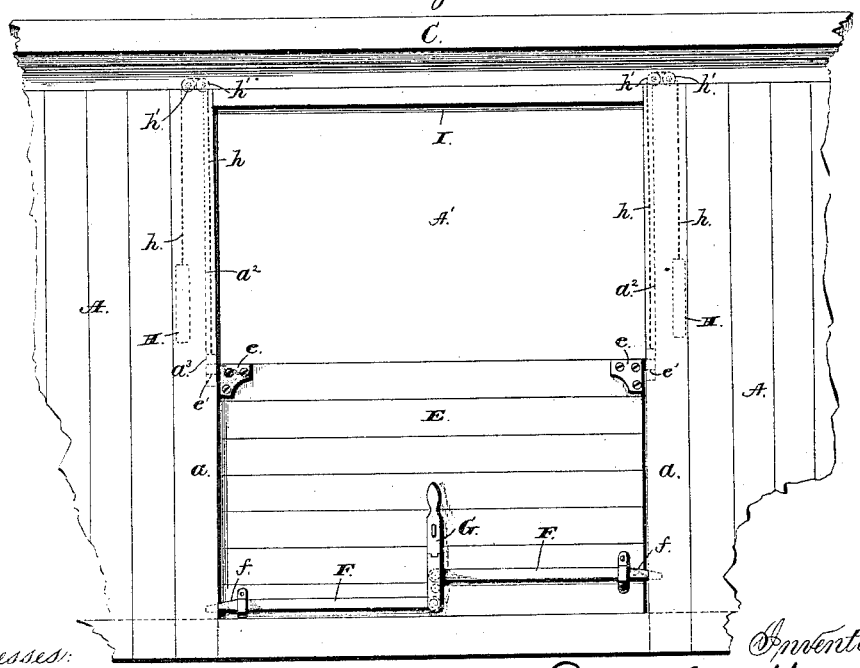


Fig. 8.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES MILLER, OF LAFAYETTE, INDIANA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 419,057, dated January 7, 1890.

Application filed January 19, 1889. Serial No. 296,902. (No model.)

To all whom it may concern:

Be it known that I, JAMES MILLER, of Lafayette, in the county of Tippecanoe, and in the State of Indiana, have invented certain new and useful Improvements in Car-Doors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view from without of a car-side having its doorway inclosed by means of my doors. Fig. 2 is a like view of the same from within. Fig. 3 is an elevation from without of said car-side with the upper door opened. Fig. 4 is a like view of the same with both doors opened and secured in position beneath the car-roof. Figs. 5, 6, and 7 are sections upon lines *x x* of Figs. 3 and 4, and show, respectively, the arrangements of doors shown in Figs. 1, 2, 3, and 4; and Fig. 8 is an elevation from without of the car-side, doorway, and door, and shows a modification in the means used for retaining the door in place and means for counterbalancing the weight of said door.

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

The design of my invention is to enable the door-openings of freight-cars to be inclosed by doors that may be easily opened for the removal of freight, and which, when not in use, may be conveniently stored where they will occupy no space that is useful for the reception of freight; to which end my said invention consists in the construction and combination of the doors with the car-side, the means employed for locking the doors in position to close the doorway, and the means used for storing the doors when opened, substantially as and for the purpose hereinafter specified.

My improvements are applicable to the ordinary construction of freight-car, in which the side wall A is provided with a doorway A′, that extends from the floor B to the roof C, and has any desired width.

Secured upon the inner face of each door-post *a* is a metal plate D, that has the form in front and side elevations shown in Figs. 3, 5, and 6, and within its side adjacent to the door-opening is provided with a longitudinal groove *d*, that extends its entire length, and at its upper end terminates in an upward, inward, and downward curve *d′*.

Fitted within the lower portion of the doorway A′, and extending horizontally between the posts *a* and *a*, is a door E, which has such longitudinal size as to enable it to be readily placed within or removed from said doorway. To each upper corner of said door is secured a metal plate *e*, that is provided with a pintle *e′*, which pintle projects laterally outward therefrom into the groove *d* of the adjacent plate D, and normally rests within the lower end of such groove. The lower ends of the grooves *d* and *d* terminate at such points above the lower end of the doorway A′ as to cause the door E to be suspended wholly by its pintles, so as to be capable of having its lower end swung into or outward from the doorway; but when said door is hanging straight downward it may be locked in such position by means of two bolts F and F, that are arranged horizontally upon the lower portion of the outer face of the door and are capable of being moved longitudinally thereon within suitable guides. The bolts F and F are arranged at different relative elevations and their inner ends are pivoted upon a lever G, which lever is placed vertically and is pivoted upon the face of the door E at a point midway between the pivotal connections of said bolts. As thus arranged, by moving the upper end of said lever in one direction said bolts will be simultaneously drawn inward, while by moving said lever in an opposite direction said bolts will be simultaneously moved outward.

Within each door-post *a*, near its lower end, is provided a socket *a′* for the reception of the outer end *f* of the contiguous bolt F when the same is moved outward. In order that said bolt may exert a downward strain upon the door E, said bolt end *f* has its upper edge beveled downward and outward, and such edge, engaging with the upper side of said socket, operates as a wedge and forces said door downward as far as permitted by the grooves *d* and *d* of the guide-plates D and D. By arranging said parts so that the lower edge of the door will bear against the sill of the door-frame said bolts will then act to press said

door firmly down upon said sill, and thus tightly close the doorway at such point.

The door described is intended for use when a car is used for carrying in bulk grain, coal, or other like articles, in which event to unlock the car it is only necessary that the bolts be drawn, when the door will swing outward and upward and afford free egress for the contents of the car. When not in use, said door may be moved upward until its pintles rest within the curved upper ends d' and d' of the grooves d and d, after which it may be swung inward and upward against the roof of the car and secured in such position by buttons, hooks, or any like means.

If desired, the grooved plates D and D may be omitted, and in their stead a groove a^2 may be formed within the face of each door-post a, and within such groove is provided a metal block a^3, that is adapted to slide readily lengthwise of the same and to journal one of the pintles e' of the door E. When using such construction, I prefer to have the weight of the door counterbalanced by means of weights H and H, which are connected therewith by cords h and h, that extend over pulleys h' and h', as in case of window-sash, or by means of springs that are in any usual manner adapted to act as counterbalances.

The door E is intended to have such height as to cause it to retain within the car any usual load of grain or other like freight; but in order that the entire doorway may be inclosed when desired, I provide for the upper portion of the same a second door I, that has such width as to cause it to lap over the inner sides of the door-posts a and a, and such length as to enable it to extend from the top of said doorway downward below the upper edge of the door E, so as to lap over the latter upon its inner side. Said door I is provided upon its inner face with two or more battens i and i, that extend upward to the roof C, and at their upper ends are hinged to the same, the arrangement enabling such door to be turned upward against and secured to said roof when not in use.

For the purpose of enabling the door E to be securely locked when closed the lever G is hinged so as to permit its upper end to be swung forward, and within the upper portion of said lever is provided a slot g, that is adapted to pass over and engage with a staple e^2, which projects forward from the contiguous face of said door. As thus constructed, the lever is engaged with the staple when the door is locked, and within the projecting end of said staple may be placed any of the usual forms of seals or locks.

The upper door I when closed may be locked in place by means of a hasp i', that is hinged upon the lower portion of its outer face, and is adapted to be turned downward into engagement with a staple e^3, which projects outward from the contiguous portion of the outer face of the door E.

In order to prevent the escape of grain between the edges of the door E and the doorway, I preferably provide within the lower half of the doorway cleats of iron or other suitable material a^4 a^4, which project over the ends upon the inner side of said door and form bearings against which said door may close.

Having thus described my invention, what I claim is—

1. In combination with the doorway of a car, a door composed of two sections, one of which is adapted to slide vertically between the door-posts and the other hinged to the roof of the car, substantially as and for the purpose specified.

2. In combination with the door-posts of a car, grooved plates secured thereto, and a door composed of two sections, one of which has sliding bearings in said plates and the other hinged to the roof of the car, substantially as and for the purpose shown.

3. In combination with the door-posts of a car, grooved guide-plates secured thereto, and a door which is composed of a swinging vertically-movable section, having sliding bearings in said guide-plates, and a swinging section hinged to the roof of the car, substantially as and for the purpose set forth.

4. In combination with the doorway of a car, a door composed of two sections, one adapted to slide vertically between the door-posts and the other hinged to the roof of the car, and devices for locking said sections to each other and to the car when arranged to close the doorway, substantially as and for the purpose described.

5. In combination with the doorway of a car, a door which at its upper end is pivoted between the door-posts and is adapted to be moved vertically to the upper end of such doorway and then turned inward and upward against the car-roof, and a second door that is hinged to the roof and is adapted to be turned downward and outward and caused to close the upper portion of the doorway, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of January, A. D. 1889.

JAS. MILLER.

Witnesses:
J. DESMOND,
C. J. NASH.