(No Model.)

W. F. LYON.

GRAIN DOOR FOR CARS.

No. 456,381. Patented July 21, 1891.

Fig. 1.

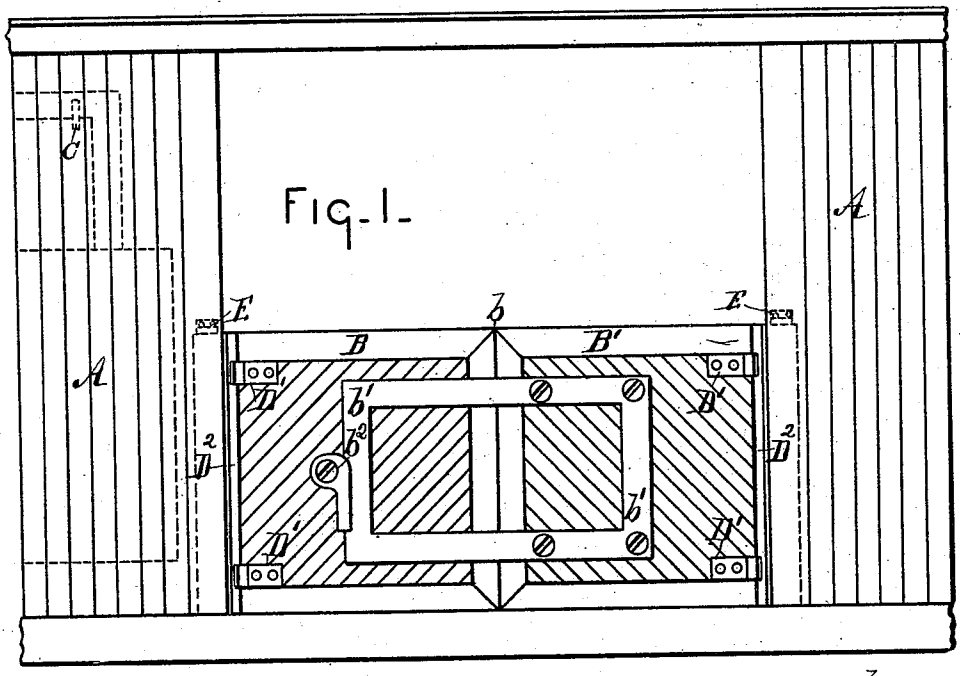


Fig. 2.

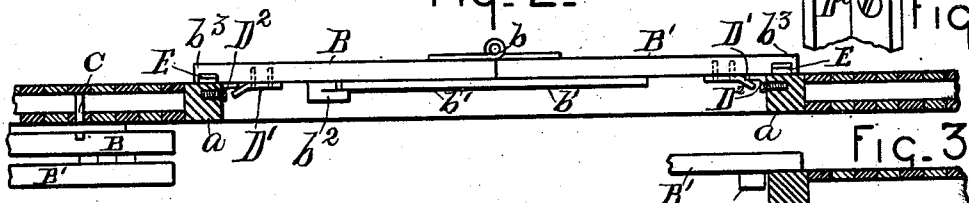


Fig. 7.

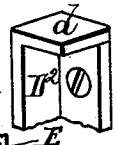


Fig. 3.

Fig. 4.

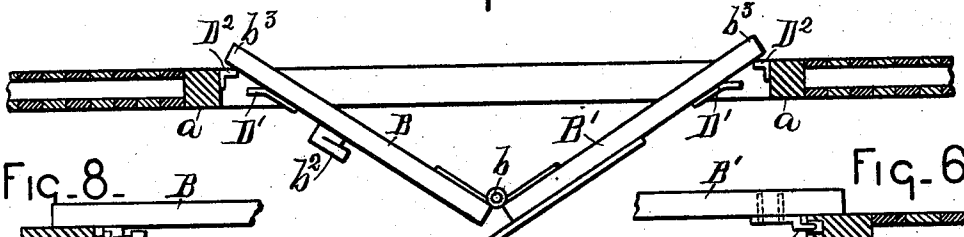


Fig. 8.

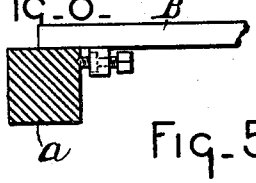


Fig. 6.

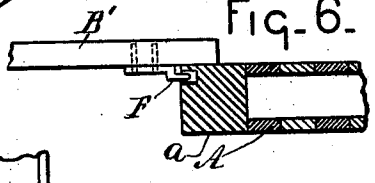
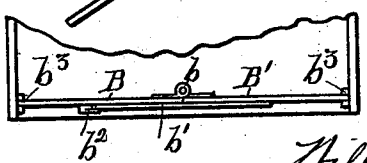


Fig. 5.



WITNESSES

C. J. Shipley.

F. Clough.

INVENTOR

William F. Lyon

By Wells W. Leggett & Co.

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM F. LYON, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-FOURTH TO WILLIAM R. CHAMPNEY, OF SAME PLACE.

GRAIN-DOOR FOR CARS.

SPECIFICATION forming part of Letters Patent No. 456,381, dated July 21, 1891.

Application filed November 22, 1890. Serial No. 372,372. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. LYON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Grain-Doors for Cars; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 is a view in elevation of a portion of the side of a car with my improved grain-car door applied thereto. Fig. 2 is a sectional plan view of the same. Fig. 3 is a detail sectional view of a modification. Fig. 4 is a detail sectional plan view similar to Fig. 2, showing the door partly open. Fig. 5 is a broken top plan view of a modification wherein the door is applied as the tail-board of a wagon. Fig. 6 is a detail sectional view of another modification wherein a pin enters a hole in the door-post to prevent displacement of the door. Fig. 7 is a broken perspective view of a modified construction of cleat to prevent vertical displacement of the door, and Fig. 8 is a detail sectional plan view of another modification wherein a set-screw is utilized to retain the door in position.

It is the purpose of my invention to provide an improved car-door which shall be adapted for use upon any freight-car; and it consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed.

It is the purpose of my invention to obviate all of these difficulties. To this end A represents the usual freight-car or grain-car.

B B′ represents my door. It consists of the two parts B B′, hinged together at the middle of the door-opening at *b*.

b′ represents a frame fastened rigidly to one of the leaves and extending out over the other leaf, where it may be firmly bound to the door by a suitable latch or lock b^2. It is apparent that when thus locked at b^2 the said frame binds the doors in line with each other, so that they constitute a single rigid door. This door need be in no way fastened to the car itself; but, as shown in Fig. 2, it may be simply caused to rest at its edges b^3 back of the door-posts *a*, so that the pressure from within will come against the hinge side of the door. Having once been placed in position, the pressure of the load from within operates to hold it in place snugly against the door-posts, and not being held free from the posts by hinges of any description, the said door will hug the posts closely and prevent leakage of grain or other matter from the car around the said edges of the door. Now when it is desired to unload the car the latch or lock b^2 is released, thus freeing the end of the frame *b′*. The pressure of the load from within then instantly forces the door outward, as shown in Fig. 3, and it may be removed wholly from the opening and laid to one side or hung up upon suitable supports C upon the interior of the car, as shown by dotted lines in Fig. 1.

To prevent the car-door from shifting endwise, it may, if desired, be provided with a wooden cleat D, Fig. 3, near each end between and close to the door-posts. I prefer, however, to provide a metallic cleat or cleats D′, Figs. 2 and 4, on the door, adapted to engage corresponding cleats D^2 upon the door-post. It is obvious that this construction will serve not only to prevent endwise shifting of the door, but will also prevent the door from falling inward before loading and will serve to bind the door snugly against the door-posts at its extremities. The door may be prevented from rising by suitable blocks or stops E, located above its edges upon the interior of the car on the door-posts.

When the door is not in use, the portion B folds down against the portion B′, and the free end of the frame *b′* serves as a bail whereby the door may be hung up against the inside of the car, as explained.

I would have it understood that this device is equally applicable for the tail-boards of carts and wagons, and the patent is designed to cover its use in such or similar localities. Such use of it as a tail-board is illustrated in Fig. 5, the door being in all respects similar to the car-door and its ends b^3 projecting into the usual tail-board receptacle.

Instead of locating the edges of the door as

explained, the cleat D^2 may be itself provided with a lip *d*, as shown in Fig. 7, projecting over the cleat D′, whereby vertical displacement may be prevented; or, as shown in Fig. 6, the cleats and stops might be dispensed with, and instead thereof pins F might be located on the door adjacent to its extremities and adapted to enter holes bored to receive them in the door-posts *a*, which would serve at once to prevent endwise, inward, or vertical displacement; and I would have these constructions regarded as equivalents and as contemplated by my invention.

The car-door might be fastened snugly in place against displacement in a direction toward the inside of the car by set-screws, substantially as shown in Fig. 8.

It will be observed that this grain-door contrivance obviates wholly the necessity of any special construction of door-posts of the car and is adapted to fit any car-door without in any wise changing the construction of its door-posts. Again, it obviates the necessity of retaining-cleats being secured to the door-posts on the inside surface of the car-wall, as heretofore, which inside cleats interfere materially with the loading and unloading of freight when used as a freight-car. The grain-door is therefore adapted for immediate use upon any car-door without changing the car construction and without the addition of objectionable attachments to the car.

It will be observed that the frame *b*′, being wide and open, supports the middle of the doors both at their upper and lower edges. This is very material, for it is quite essential to the production of a door which shall be sufficiently stiff to withstand the outward pressure from within. It also enables me to employ much lighter material in the construction of the doors, making them less cumbersome to handle and dispensing with useless weight—a feature quite essential in car constructions.

I am aware that it is not broadly new to make a grain-car door of two sections hinged at the middle of the door-opening and arranged to open outward and to be locked together when in use; but such constructions have required material changes in the door-posts of the car or the addition of objectionable cleats upon the interior of the car and have not been suitably braced along the hinged edges.

What I claim is—

1. The door consisting of the sections B and B′, hinged together, with the frame *b*′ rigidly connected to one of said sections, and means for detachably engaging the same with the other section, said frame *b*′ made in wide-open form, with bars crossing the hinged edges of the door adjacent to the upper and lower portions of the door, substantially as and for the purposes described.

2. The door consisting of sections B and B′, hinged together, and frame *b*′, attached to one section and detachably engaged with the other, said frame made in open polygonal form with bars crossing the hinged edges adjacent to the upper and lower portions of the door, said door provided with cleats adjacent to its edges in position to bear against the door-posts when the door is in place, and thus prevent displacement, substantially as described.

3. The combination, with the door consisting of hinged sections B B′ and bracing-frame *b*′, of cleats D′ upon the door and cleats D^2 upon the door-posts, projecting in a direction between the said posts, adapted to engage with the cleats D′, and the edges of the said door adapted to rest against the inner faces of the door-posts, substantially as described.

4. The combination, with the door B B′, bracing-frame *b*′, and the door-posts, of cleats upon the door, adapted to rest between and in contact with the door-posts to prevent longitudinal displacement, and blocks or stops secured to the door-posts to prevent vertical displacement of the door, substantially as described.

5. The door consisting of sections B B′ and the open rectangular frame *b*′, crossing the hinged edges rear the upper and lower portions of the door, cleats upon the door, corresponding engaging-cleats upon the door-posts, and means upon the door-posts for preventing vertical displacement of the door, substantially as described.

6. The combination, with a door B B′, of an open polygonal locking-frame *b*′, crossing the hinged edges near the upper and lower portions of the door, said door adapted when in use to rest at its ends against the inner faces of the door-posts, and means whereby the extremities of said door are prevented from inward or vertical displacement, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

WILLIAM F. LYON.

Witnesses:
MARION A. REEVE,
WELLS W. LEGGETT.