

T. H. GARLAND.
DOOR OPERATOR AND LOCK.
APPLICATION FILED APR. 3, 1912.

1,037,893.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

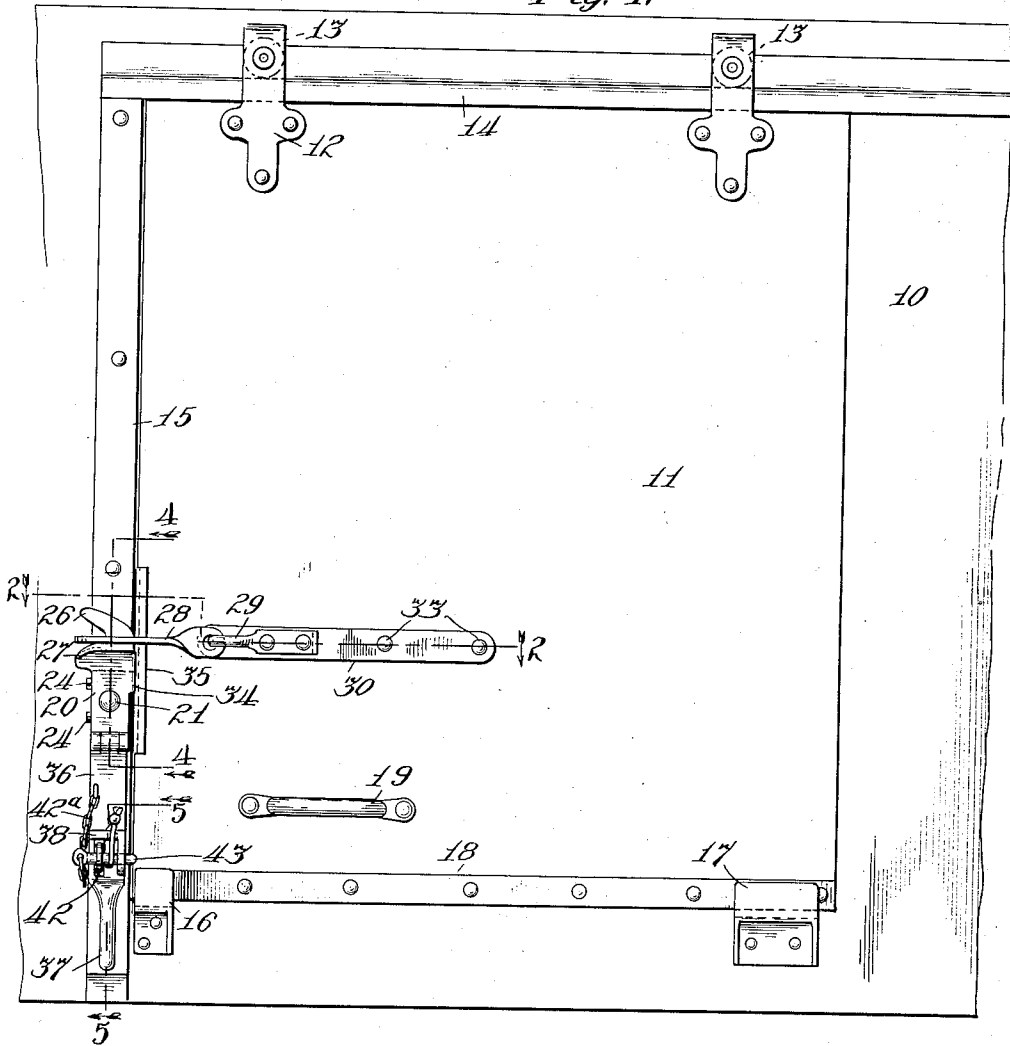
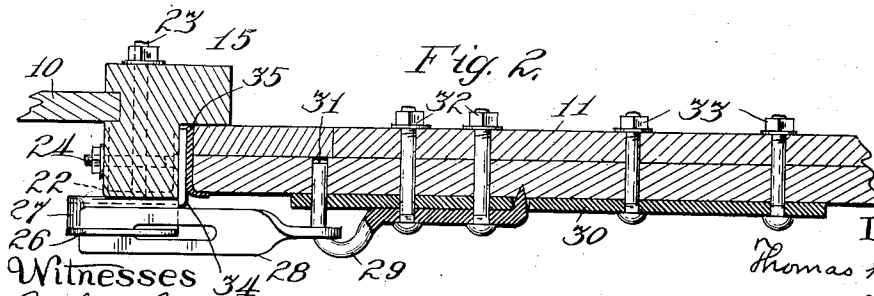


Fig. 2.



Witnesses
Milton Lenoir
L. M. Andrew.

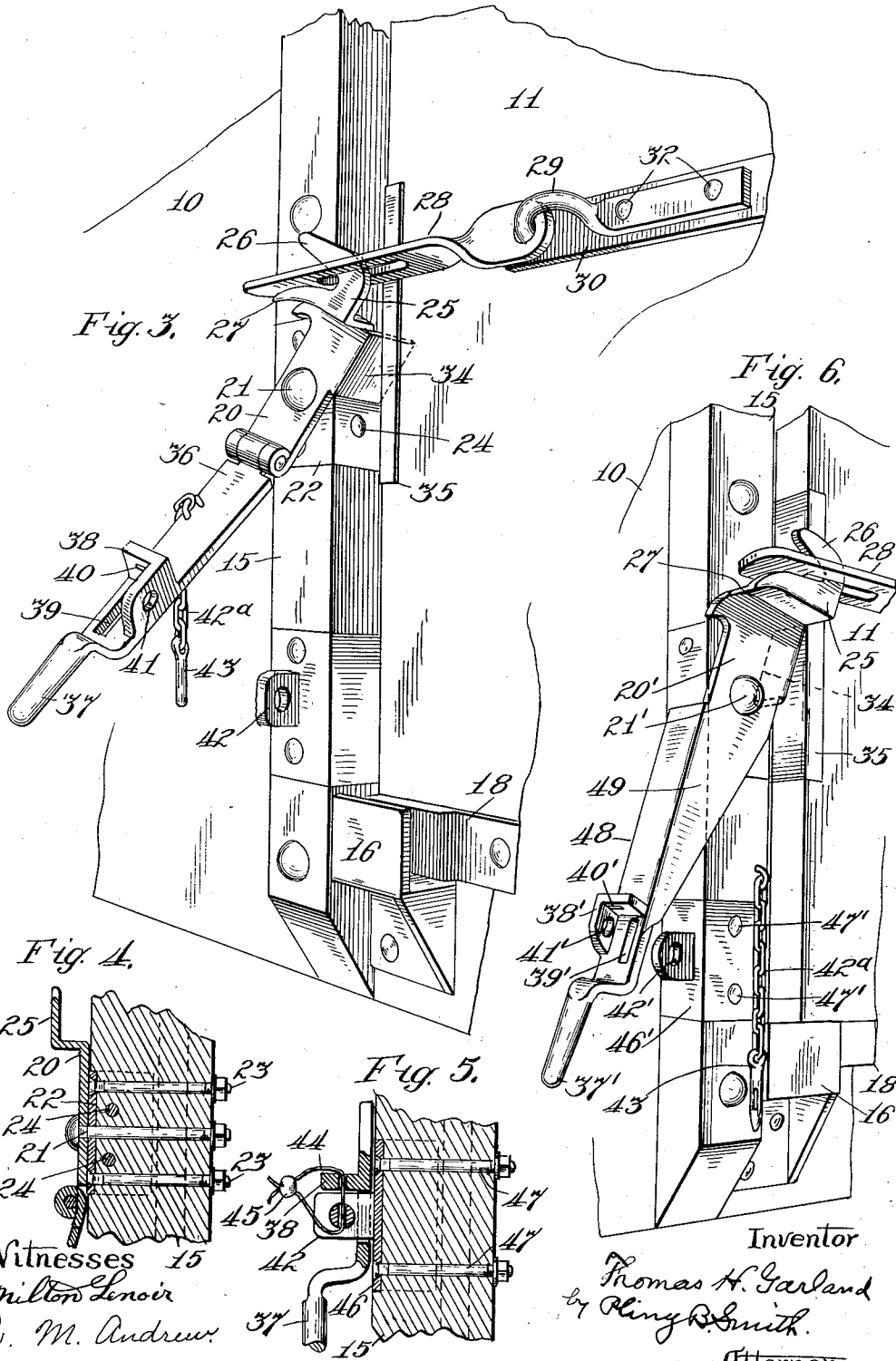
Inventor
Thomas H. Garland
Pliny B. Smith.
Attorney.

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2 SHEETS—SHEET 2.



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Milton Lenoir
L. M. Andrews

Inventor
Thomas H. Garland
by Kling & Smith.
Attorney.

UNITED STATES PATENT OFFICE.

THOMAS H. GARLAND, OF CHICAGO, ILLINOIS.

DOOR OPERATOR AND LOCK.

1,037,893.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS H. GARLAND, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Door Operators and Locks, of which the following is a specification.

The present invention relates generally to opening and closing devices for doors and more particularly to devices of this class which are applicable to the sliding doors of freight cars. In practice, from one cause or another, such doors repeatedly fail to operate freely as they should. Sometimes the running gear at the top of the door is out of order. Sometimes the door is in bad repair, due to warping, hard usage, or other cause. In all such cases, considerable force must be applied both to close and open the doors.

The main object of the present invention is to provide a closing and opening device which will meet these conditions of service and will positively open and close the door when desired.

In carrying out my invention, I employ a lever to apply force to the door at the end of its closing movement and at the beginning of its opening movement. In this way, extra force is applied just when needed. I also provide parts which may be readily and cheaply manufactured and assembled, while at the same time performing all their functions efficiently.

The various features and details of my invention, together with their functions and advantages, will be best understood upon reference to the following detailed description taken in connection with the accompanying drawings, and the scope of the invention will be pointed out in the appended claims.

In the drawings, Figure 1 is an elevation of a portion of a freight car having a door provided with a closing and opening device constructed in accordance with the present invention; Fig. 2 is a section through a portion of the same taken on a plane indicated by the line 2—2 of Fig. 1; Fig. 3 is a perspective view of the device showing the lever in open position; Fig. 4 is a section through a portion of the lever and the door jamb, taken on a plane indicated by the line 4—4 of Fig. 1; Fig. 5 is a similar section through another portion of the lever and jamb, taken on a plane indicated by the line

5—5 of Fig. 1; and Fig. 6 is a perspective view similar to Fig. 3, but viewed in a different direction, of a modified form of the invention.

Throughout these figures, like characters refer to like parts.

Referring to the drawings in detail, 10 designates the body of the car provided with a sliding door 11, supported by hangers 12 having grooved wheels 13 which engage the track 14 carried by the body 10 at the upper edge of the door opening. A jamb 15 extends vertically along the left-hand edge of the door opening and is adapted to be engaged by the edge of the door when the latter is in closed position. Guiding brackets 16, 17 are secured to the body 10 and cooperate with the lower edge of the door 11 in the usual manner. A rubbing strip 18 of usual construction is also provided at the lower edge of the door. A handle 19 is secured to the door for the purpose of opening and closing it.

The structure thus far described is that of the usual freight car and of itself constitutes no part of the present invention.

In applying my invention to this car structure, I locate the lever 20, by which force is applied to the door at the end of its closing movement and the beginning of its opening movement, upon the jamb 15. It is pivoted upon a pivot bolt 21 which extends through the jamb 15. A wear plate member 22, secured by bolts 23, is located upon the jamb 15 so as to engage the rear of the lever 20. This plate is U-shaped and embraces the face and a portion of two sides of the jamb, as more clearly illustrated in Fig. 2. Cross bolts 24 unite the lateral flanges of this member 22. The upper end of the lever 20 is provided with an offset extension 25 which is notched on the left-hand side so as to provide a hook 26 and a guiding lip 27. A hasp 28 is slotted at one end for the reception of the hook 26 and is loosely secured to the door 11 at the other end by a staple 29. As shown, the hasp is twisted so that its ends lie in planes at right angles to each other. By this, the hasp may be more readily moved up and down about its connection with the door and more readily engaged by the hook 26, which is formed upon the offset 25. As illustrated more particularly in Fig. 2, the staple 29 is mounted upon a plate 30. At one end, it passes through an opening in the plate 30

and into a hole 31 in the door 11. At the other end, it is pointed and likewise passes through a hole in plate 30 into the door 11. The staple 29 and the plate 30 are secured to the door 11 by bolts 32 and 33, bolts 32 passing through staple, plate and door, and bolts 33 through the plate and door only. The lever 20 is provided with a projection 34 which extends into the space between the jamb 15 and the door 11. The hook 26 and hasp 28 coöperate in closing the door, while this projection 34 is employed in opening it, as will be explained more fully hereinafter. A wear plate 35 is set into the edge of the door and has a lip which extends around the corner to its front face. This plate is engaged by the projection 34 in the operation of the device and the lip serves to engage the hasp 28 to prevent its wearing off the corner of the door. The lever 20 is provided with a lower hinged extension 36 having a handle 37 at its lower end, an angular projection 38 and slot 39. The horizontal portion of the projection 38 is provided with a slot 40, and the vertical portion with a hole 41. When the lever is in closed position, a staple 42 extends through the slot 39, and a locking pin 43, connected to the hinged extension 36 by a chain 42^a, extends through the hole 41 and the opening in the staple 42. An opening in the pin allows a sealing wire or tin 44 to be passed through the pin 43 and the slot 40. Its ends are fastened together by the usual seal 45. The staple 42 is formed upon a plate 46 which is similar to the plate 22 and is similarly held in position by bolts 47 passing through the plate and the jamb 15.

In the modified form of the invention, the lever 20' is the same in construction at its upper end as the lever 20, but its lower end is bent so as to provide two angular webs 48 and 49. The handle 37', the projection 38' having the openings 40', 41', and the slot 39' are the same in construction as the corresponding parts in the other figures, but are located at the lower end of the web 48 so that they occupy a position at right angles to that occupied in the other form of the invention. Because of this change, staple 42' upon plate 46' is shifted around to the left side of the jamb 15. When the parts are in closed position, the pin 43' passes through the opening 41' and the opening of staple 42', just as in the other form.

In operation, the car door 11 is closed by hand until it approaches the jamb 15 near enough to allow the slot in the hasp 28 to pass over the hook 26. Then the handle of the lever is grasped and it is drawn around to the right and force is thus applied to close the door 11 against the jamb 15.

When the parts are in closed position, the projection 34 will lie close against the jamb

15, but when it is desired to open the door and the lever is moved in the opposite direction, the upper edge of the projection 34 will engage the wear plate 35 on the adjacent edge of the door to force the latter open. When thus opened, the hasp 28 may be removed from the hook 26 and the further opening of the door accomplished by hand. When the lever has been moved to locking position, it may be sealed, as before explained. In the one case, the hinged extension of the lever must be moved about its hinge so as to freely pass to a position in which the staple will pass through the slot. In the other case, this movement is unnecessary.

In carrying out my invention, it will be apparent that certain alterations and modifications may be made in the embodiments herein described without departing from its spirit and scope. It will also be apparent that my invention is applicable to two sliding doors as well as to one, as illustrated. Other applications may also suggest themselves to those skilled in the art. I have sought, by the terms of the appended claims, to cover the various applications of my invention and the possible alterations and modifications, which come within its spirit and scope, by the terms of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination with a sliding door and a coöperating jamb, of a lever pivoted to said jamb, a detachable connection between said door and lever, including a member movable independently of said door and lever, whereby, in response to the operation of said lever in one direction, said door may be closed tight against said jamb, and means responsive to the operation of said lever in the other direction to force said door from said jamb.

2. The combination with a sliding door and a coöperating jamb, of a lever pivoted to said jamb and having open and closed positions corresponding to the open and closed positions of said door, and means, including a member movable independently of said door and lever, for connecting the open lever to the open door and closing said door tight against said jamb in response to the closing movement of said lever.

3. The combination with a sliding door and a coöperating jamb, of a lever pivoted to said jamb and having open and closed positions corresponding to the open and closed positions of said door, and means, including a projection extending between said jamb and door, responsive to the opening movement of said lever to force said door from said jamb.

4. The combination with a sliding door and a coöperating jamb, of a lever pivoted

to said jamb and having open and closed positions corresponding to the open and closed positions of said door, means, including a member movable independently of said door and lever, for connecting the open lever to the open door and closing said door tight against said jamb in response to the closing movement of said lever, and means independent of said member for forcibly opening said door from said jamb in response to the opening movement of said lever.

5. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb and having open and closed positions corresponding to the open and closed positions of said door, and a hook and hasp for connecting the open lever to the open door and closing said door tight against said jamb in response to the closing movement of said lever, said hasp having a movement independent of said door and lever.

6. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb and having open and closed positions corresponding to the open and closed positions of said door, a hook and hasp for connecting the open lever to the open door and closing said door tight against said jamb in response to the closing movement of said lever, and a projection extending from said lever between said jamb and door and operative to forcibly open said door from said jamb in response to the opening movement of said lever.

7. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb and having an off-set extension notched at one side to form a hook, and a hasp loosely secured to said door at one end and slotted to engage said hook at the other.

8. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb, a hook on said lever, a lateral extension from said lever extending into the space between said jamb and door, and a hasp loosely secured to said door at one end and slotted to engage said hook at the other.

9. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb, a hook on said lever, a hasp loosely secured to said door at one end and slotted to engage said hook at the other, a staple on said jamb, and a slot at the lower end of said lever for receiving said staple.

10. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb, an extension from said lever into the space between said jamb and door, a staple on said jamb, and a slot at the lower end of said lever positioned to receive said staple when said projection lies close against said jamb.

11. The combination with a sliding door and a cooperating jamb, of a lever pivoted to said jamb and having an off-set extension notched at one side to form a hook, a lateral projection from said lever extending into the space between said jamb and door, a staple in said jamb, a slot at the lower end of said lever positioned to receive said staple when said projection lies close against said jamb, and a hasp slotted at one end to engage said hook and loosely secured at the other end to said door in a position to tightly close said door when said slot in said lever engages said staple.

In witness whereof, I hereunto subscribe my name this 30th day of February, 1912.

THOMAS H. GARLAND.

Witnesses:

L. M. ANDREW,
D. J. NORMOYLE.