

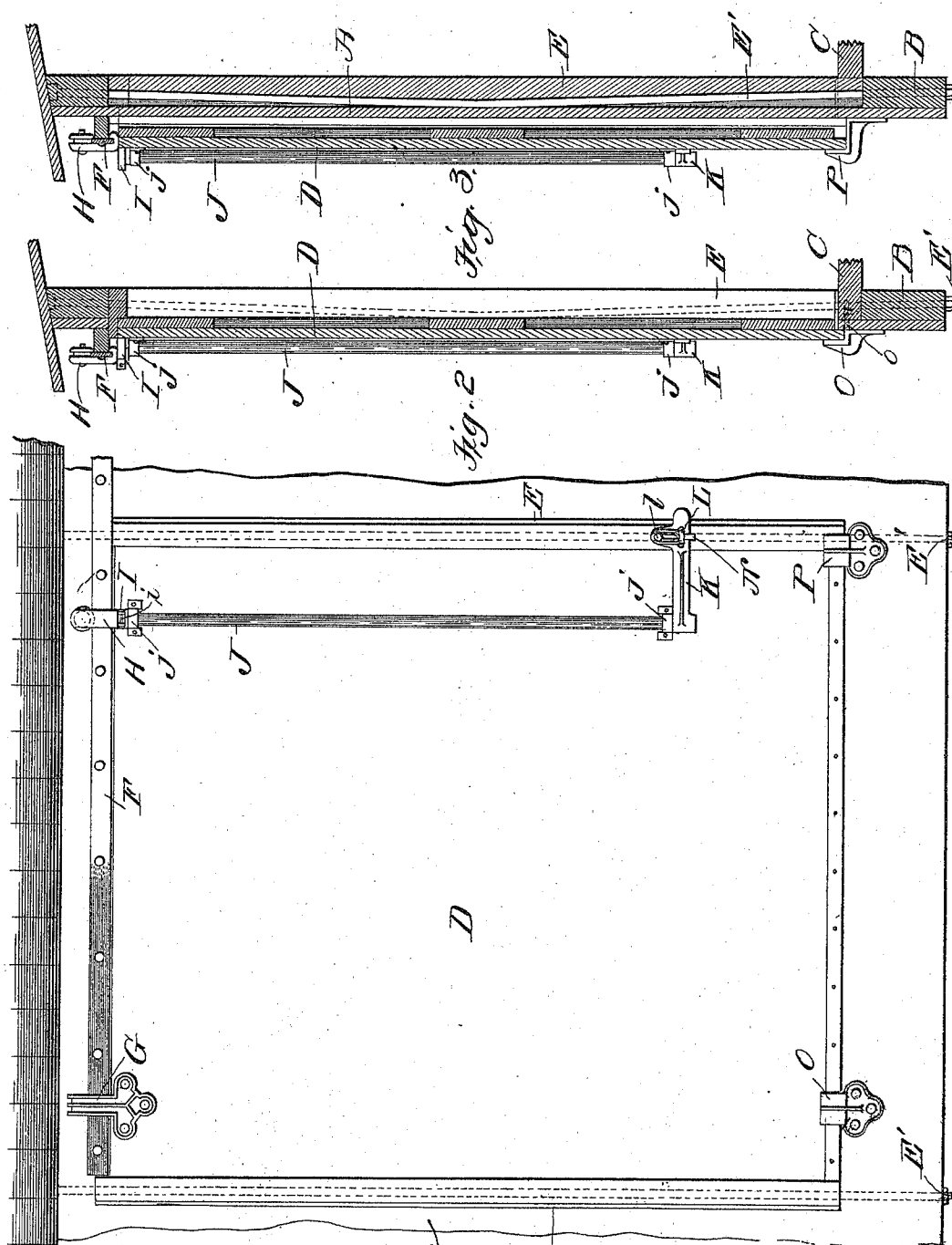
(No Model.)

2 Sheets—Sheet 1.

E. S. MARSHALL.
CAR DOOR.

No. 575,257.

Patented Jan. 12, 1897.



Witnesses:
E. A. Pennington
J. R. Cornwall.

Fig. 1.

Inventor
Edward S. Marshall
by Paul B. Keyes
his atty.

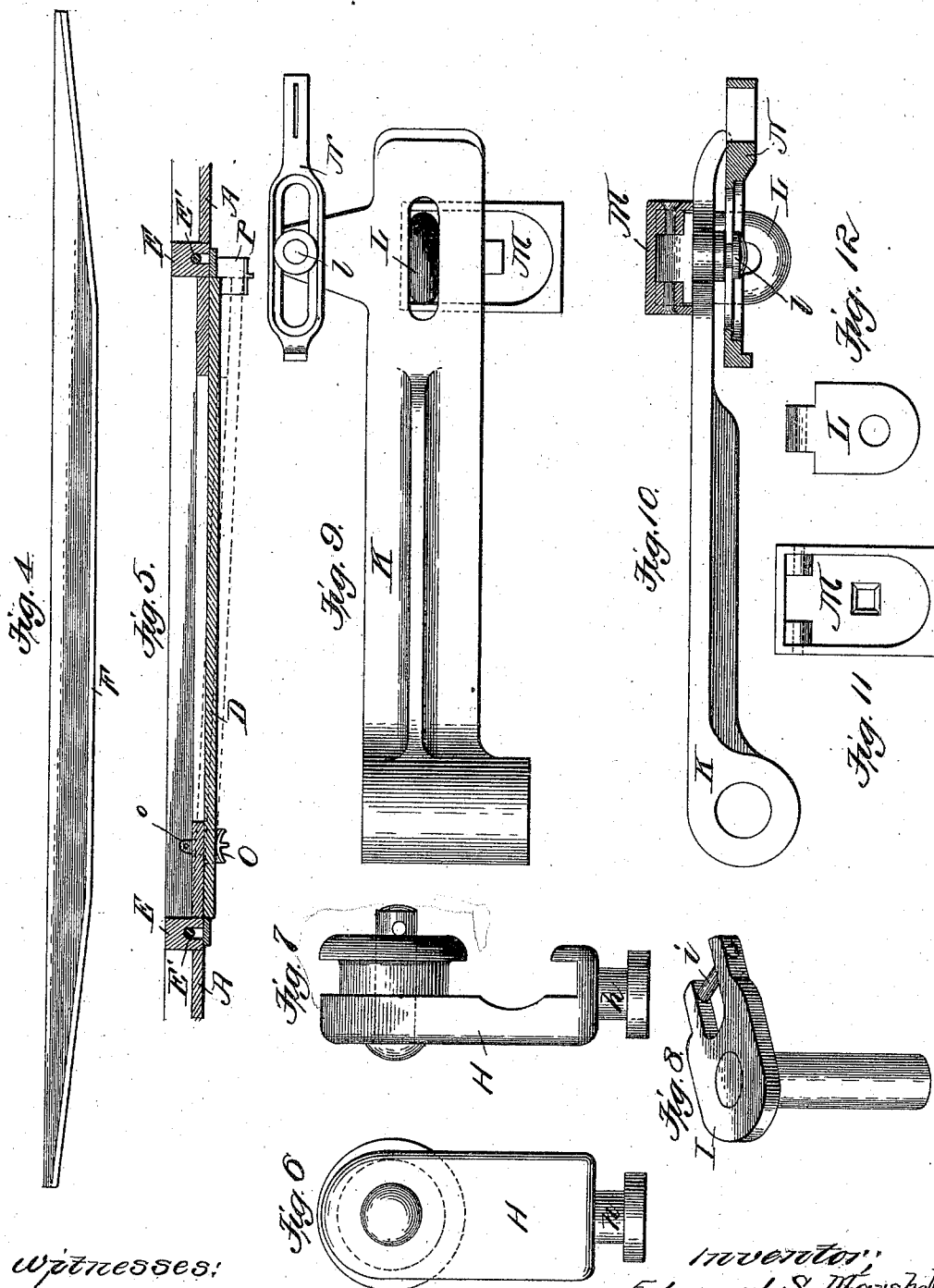
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E. S. MARSHALL.
CAR DOOR.

2 Sheets—Sheet 2.

No. 575,257.

Patented Jan. 12, 1897.



Witnesses:
G. A. Pennington,
J. R. Cornwall

Inventor:
Edward S. Marshall
by Paul Bakewell
his atty

UNITED STATES PATENT OFFICE.

EDWARD S. MARSHALL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE
AMERICAN RAILWAY EQUIPMENT COMPANY, OF EAST ST. LOUIS,
ILLINOIS.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 575,257, dated January 12, 1897.

Application filed August 7, 1896. Serial No. 601,980. (No model.)

To all whom it may concern:

Be it known that I, EDWARD S. MARSHALL, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Car-Doors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a side elevational view showing my improved car-door in a closed position. Fig. 2 is a vertical sectional view through the same. Fig. 3 is a vertical sectional view through one of the door-posts and door, the latter being shown open. Fig. 4 is a plan view of the track. Fig. 5 is a longitudinal sectional view through the door, showing the same in its closed position. Fig. 6 is a side elevational view of the roller-hanger which coöperates with the crank-arm. Fig. 7 is an edge view of the same. Fig. 8 is a detail view of the crank-arm which is mounted in the upper end of the operating-rod and which coöperates with a stud on the bottom of the roller-hanger. Fig. 9 is a side elevational view of the handle or hasp which is mounted on the lower end of the operating-rod. Fig. 10 is a top plan view of the same, showing the countersunk frame for the pivoted staple in section. Fig. 11 is a plan view of the countersunk frame for the pivoted section. Fig. 12 is a detail view of the pivoted staple.

This invention relates to a new and useful improvement in car-doors, and more particularly to the mechanism for closing and locking the same.

The objects of this invention are to provide a car-door of that class known as "flush-doors" which is simple in construction, easily operated, and readily locked to effectually prevent entrance to the car without breaking or mutilating the seal.

With these objects in view the invention consists in mechanism which is mounted upon one end of the door, said mechanism being adapted to coöperate with that end of the door to throw the door into and out of its flush position relative to the posts which form the side edges of the doorway. Incidental to this the track from which the door is suspended is so arranged that it guides the front

end of the door into a flush position, permitting the rear end of the door to be swung into and out of a flush position.

Another feature of the invention resides in the construction of the handle on the lower end of the operating-rod, which handle acts in a capacity of a hasp, carrying its own locking-bolt and coöperating with a pivoted staple, which, when the bolt is withdrawn and the hasp swung out to operate the rod and throw the rear end of the door out from its flush position, said staple will automatically fall to a position flush with its support, out of the way of the passage of the door.

Another feature of the invention resides in the provision of truss-rods for the door-posts, whereby said posts are strengthened against being bulged out in the middle, which would prevent the door from moving freely.

Another feature of the invention resides in the construction of the guide at the lower left-hand corner of the door and the manner of securing the same to a car, rendering its removal impossible when the door is closed or locked.

Other features of the invention reside in the construction, arrangement, and combination of the several parts, all as will be hereinafter described and afterward pointed out in the claims.

In the drawings, A indicates the side wall of the car, B the side sill, C the floor, and D the door, all of such parts being of any ordinary or approved construction.

E indicates posts at the side edges of the door, which posts are grooved on their outer faces to receive a truss-rod E', which extends through the sill at the bottom of the car and through the facia at the top of the car. When the car is heavily loaded, the tendency of the side walls of the car is to bulge outwardly, which would tend to bind the door and prevent its easy operation. By the presence of these truss-rods in the door-posts, by tightening the nut on the lower ends of said rods said posts may be readily straightened from their bulged position and cambered inwardly, if desired.

F indicates the track for the door-hangers, which is arranged near the top and on the outside of the side wall of the car. This

track preferably consists of a fillet of wood, to which the strap-iron forming the track proper is secured. This construction, however, is unimportant, as other forms of track could as satisfactorily be used in connection with my improvements. This track recedes at its end toward the side wall of the car, so as to guide the front and back ends of the door inwardly when the door is moved to its two positions. Incidental to this the crown or bulged portion of the track guides the door outside of the post, which the door passes in the opening and closing operation.

G indicates the slide-hanger, secured to the upper front end of the door, and which coöperates with the track F.

H indicates a roller-hanger which coöperates with the track F, said hanger being provided with a stud or projection *h* on its lower end for engagement by a crank-arm I, mounted on the upper end of an operating-rod J, journaled in suitable bearings *j*, secured to the car-door. This crank-arm is preferably formed with an opening or slot for receiving the stud *h*, which stud is preferably formed with a head on its lower end, and after the stud is in position in the slot the end is closed by a pin *i*, which is secured to the jaws forming the slot. This crank-arm is fixed to the upper end of the operating-rod.

By the above construction it will be noted that a half-revolution being imparted to the crank-arm will throw the car-door inwardly or outwardly the distance of the diameter of the arc described by the open end of the slot in said block.

K indicates a handle mounted on the lower end of the operating-rod, said handle being in the form of a hasp which is adapted to coöperate with a pivoted staple L, mounted in a frame M, countersunk in the door-post, so that when said staple is not in an operative position it will fall by its own gravity to within the lines of the post.

N indicates a bolt pivotally and slidingly mounted on a stud *l*, extending from an extension of the handle K. This bolt is slotted to receive the stud, and the lower end of said bolt is also formed with an opening for the passage of the seal-wire, whereby the door may be sealed when locked.

O indicates a guide for the front lower end of the door, said guide being provided with an inward extension *o*, which is adapted to be secured by a wood screw to the sill. By this manner of securing guide O the same is practically burglar-proof, because it is impossible to remove the same unless the door is opened and the sill-plate taken out.

P indicates a guide at the rear end of the door, said guide being of such width as to permit the rear end of the door to swing outwardly a sufficient distance to clear the post, as shown by the dotted lines in Fig. 5.

In operation when the door is closed the upper front end is guided inwardly by the slide-hanger coöperating with the receding portion

of the track, and the lower front end of the door is secured in place by passing inside of the guide O. The handle K is now turned, we will say, from left to right, which forces the upper rear end of the door inwardly, so that the door is between the two posts and flush with the same. The pivoted staple is now raised so as to pass through the opening in the free end of the handle, and when the pivoted and sliding bolt is inserted through the opening in the staple the lower rear end of the door is locked in position. A seal may now be applied to this bolt, as is common.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with a car-door, of a post forming the edge of the doorway, and with which the door is adapted to coöperate, said door being also capable of clearing the post in its movement to and from the doorway, said post being grooved on its outer face, and a truss-rod seated in said groove and having its ends passing through timbers above and below the post; substantially as described.

2. The combination with a car-door, of grooved posts arranged at the side edges of the doorway and with which said door is adapted to coöperate, truss-rods in the grooves of said posts, a track whose end portions recede toward the body of the car, hangers on the door for coöperating with the track, the hanger at the front end of the door being fixed relative to the track and door, so that the front end of the door will be guided inwardly to be flush with the post, and means for coöperating with the rear hanger so that the rear end of the door may be thrown into and out of its flush position relative to its coöperating post, said truss-rods passing through timbers above and below the posts, so that by tightening said rods, the posts can be drawn inwardly out of the path of movement of the door; substantially as described.

3. The combination with a car-door, of posts arranged at the side edges of the doorway, and with which said door is adapted to coöperate, a track having a receding portion for guiding the front end of the door so that it will be flush with the post, hangers on the door for coöperating with the track, a crank-arm mounted on the door for coöperating with the hanger at the rear end of the door, and a staple in the door-post contiguous to the rear end of the door, whereby, when the handle is turned to force the rear end of the door in front of the post, said handle engages the staple in the door-post, substantially as described.

4. The combination with a car-door, of

grooved posts arranged at the side edges of the doorway and with which said door is adapted to cooperate, truss-rods arranged in the grooves of said posts, means for tightening the truss-rods of the posts, whereby, the rear post is drawn in out of the path of the door a track for guiding the front end of the door so that it will be flush with its cooperating post, a guide for cooperating with the lower front end of the door for holding said end of the door in its flush position, and means for throwing the rear end of the door into and out of its flush position relative to its cooperating post, said means being also adapted to lock the door in its flush position; substantially as described.

5. In a car-door, the combination with the track, of a roller-hanger arranged on said track, a crank-arm mounted on the car-door, an operating-rod for said crank-arm, and a handle on said rod, said handle being in the form of a hasp and means on the side wall of the car for engaging the hasp to lock the crank-arm and door in place; substantially as described.

6. The combination with a car-door, of a track, a roller-hanger on said track, a headed stud on the lower end of said hanger, a crank-arm mounted on the car-door, said crank-arm having an open-ended slot in which said hanger-stud is received, a pin or bolt for closing the outer end of said slot, an operating-rod for said crank-arm, a handle on said rod, said handle being in the form of a hasp, and means on the side wall of the car for engaging the hasp to lock the crank-arm and door in place; substantially as described.

7. The combination with a car-door, of a crank-arm for moving the same into and out of a flush position relative to its doorway, a rod for operating said crank-arm, a handle for operating said rod, said handle being in the form of a hasp, and a vertically-swinging

gravitating pivoted staple for cooperating with said hasp, said staple when not in engagement with its cooperating hasp, being flush with the face in which it is mounted, to permit the free passage of the door; substantially as described.

8. The combination with a car-door, of a crank-arm, for moving the same into and out of a flush position relative to its doorway, a rod for operating said crank-arm, a handle for operating said rod, said handle being in the form of a hasp, a vertically-swinging pivoted staple for cooperating with said hasp, said staple when not engaged by the hasp falling by gravity to a flush position to be out of the path of movement of the door and a pivoted and sliding bolt mounted on the hasp for cooperating with the pivoted staple; substantially as described.

9. The combination with a car-door, of a hasp pivotally mounted thereon, a pivoted and sliding bolt mounted on the hasp, a vertically-swinging staple with which said pivoted and sliding bolt cooperates, and a frame countersunk in the side wall of the car, in the upper part of which frame the vertically-swinging staple is pivoted, substantially as described.

10. The combination with a car-door, of a guide therefor, said guide having an inward projection which extends beneath the sill-plate and is adapted to be secured to the sill of the car, the vertical portion of the guide being adapted to be secured to the side of the car; substantially as described.

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 30th day of July, 1896.

EDWARD S. MARSHALL.

Witnesses:

F. R. CORNWALL,
HUGH K. WAGNER.