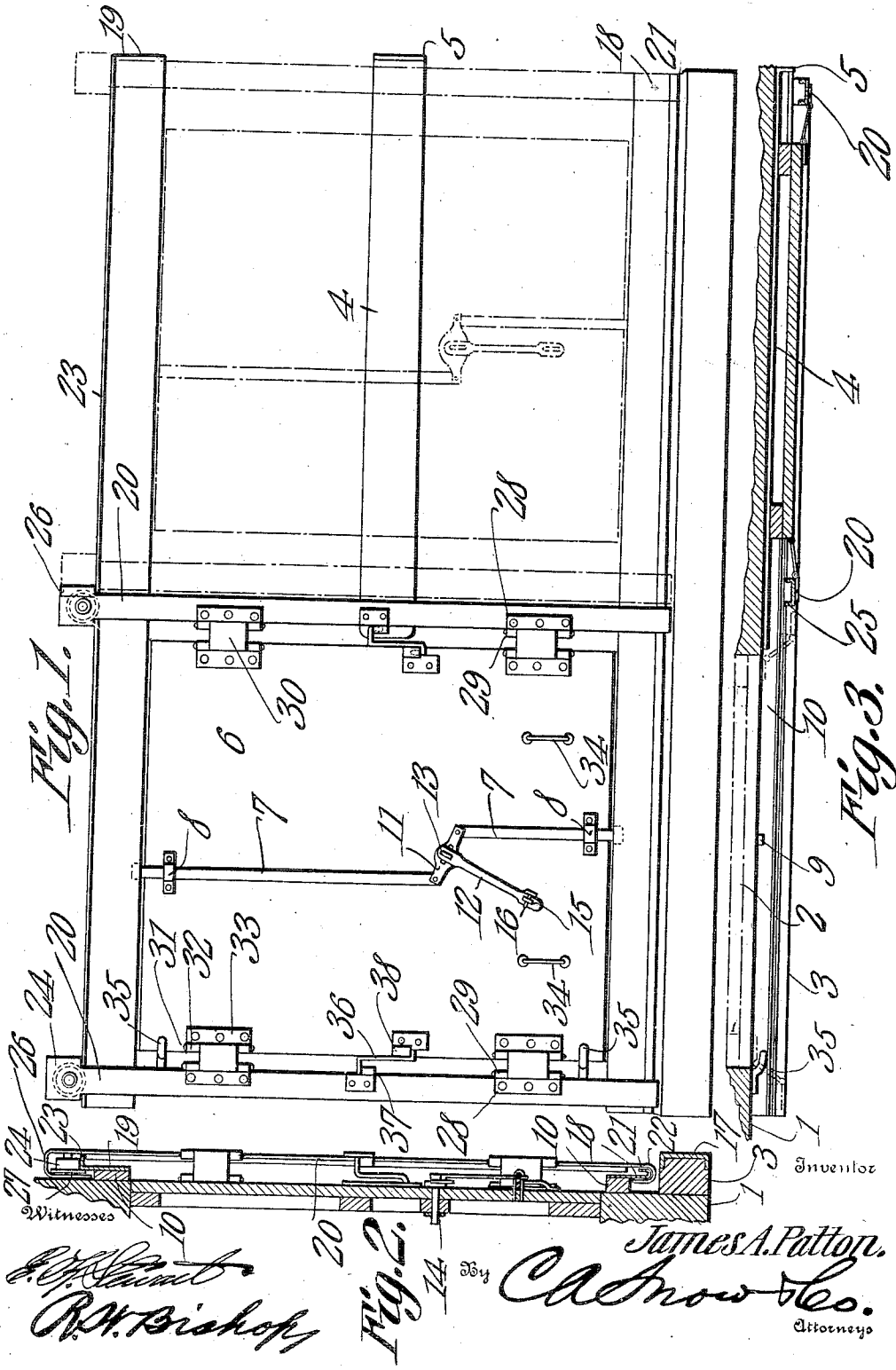


J. A. PATTON.
 FLUSH CLOSING FREIGHT CAR DOOR.
 APPLICATION FILED AUG. 16, 1909.

971,305.

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UNITED STATES PATENT OFFICE.

JAMES A. PATTON, OF HANOVER, PENNSYLVANIA.

FLUSH-CLOSING FREIGHT-CAR DOOR.

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Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed August 16, 1909. Serial No. 513,076.

To all whom it may concern:

Be it known that I, JAMES A. PATTON, a citizen of the United States, residing at Hanover, in the county of York and State of Pennsylvania, have invented a new and useful Flush-Closing Freight-Car Door, of which the following is a specification.

This invention relates to freight car doors and the object of the invention is to provide a sliding door which may be readily operated and which will be so supported that there will be no projecting parts beyond the plane of the sill of the car in either the open or closed position of the door so that the car may be moved past posts or telegraph poles or carried around sharp curves without any liability of collision with the objects at the side of the track and the consequent injury to the door.

With this object and such other incidental objects as will hereinafter appear in view, the invention consists in certain novel features of the device illustrated in the accompanying drawings, all of which will be hereinafter first duly described and then particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of a car door embodying my invention. Fig. 2 is a transverse vertical section of the same, and Fig. 3 is a horizontal longitudinal section showing the door in its opened position.

The body of the car 1 may be of any desired construction and is provided with the usual door opening 2 and longitudinal sill 3 below the said opening. Upon the side of the body and extending horizontally from the door opening is a metallic wear strip 4 which serves to prevent contact between the door and the car body in the act of opening the door and a stop 5 is provided at the end of the said wear strip to limit the opening sliding movement of the door. The door 6 is of a size to fit closely within the door opening and upon the outer side of the door I provide the vertically movable bolts 7 which are slidably mounted in keepers 8 secured on the door and adapted to engage suitable sockets 9 in the upper and lower bars 10 secured longitudinally upon the outer side of the car body and substantially coinciding with the upper and lower edges of the door opening. The inner

ends of the said bolts 7 are connected by a link 11 which has its ends pivoted to the ends of the bolts and is fulcrumed upon the door at a point midway between its ends. A handle 12 is fitted upon a flat lug or projection 13 rising from the outer face of the link 11 so that when the said handle is oscillated the link will be turned about its fulcrum and the bolts consequently thrown into or out of the locking position. The pivot pin of the link extends through the door and is held against withdrawal from the same by means of a cotter pin 14 inserted through the end of the pivot pin. The free end of the handle 12 is longitudinally slotted, the slot being engaged over a keeper or loop 15 on the outer side of the door and a retaining pin or seal 16 will be inserted through the said loop so as to maintain the locked condition of the door until the car has reached its destination.

The longitudinal sill 3 is provided with a protective metal sheathing 17 so that when a delivery wagon or a heavy dray is backed against the car the splitting or damaging of the sill will be prevented. Inasmuch as the battering of the sill is thereby prevented, the outer face of the sill will be maintained in its proper vertical plane so that the delivery wagons which may be backed against the car, for purposes of loading or unloading, will be prevented from coming in contact with any of the essential elements of the door and its supports. The longitudinal bars 10 are provided with metallic facing plates 18 and 19 and these facing plates serve to protect the bars against injury from lateral blows and are so constructed as to also serve as guide rails for the support and guiding of the door hangers 20. The lower plate 18 depends below the lower bar 10 and has its lower edge turned outward and then upward, as shown at 21, to provide a guiding bead or flange which is engaged by the lower inwardly and upturned end 22 of the door hanger, as clearly shown in Fig. 2. The construction just described holds the door hanger in effectual engagement with the strip 18 and thereby prevents lateral swaying of the door hanger in the operation of the same. At the same time, the construction permits sufficient play to provide for an easy convenient sliding movement of the hanger along the rail. The upper strip

or plate 19 rises above its bar 10 and has its upper edge turned outward, as shown at 23, to provide a horizontal longitudinal flange or track upon which rollers 24 at the upper ends of the door hangers may travel in the operation of the device. It will be observed that the guiding strips or plates 18 and 19 as well as the wear plate 4 are flat faced so that they may be secured closely and firmly against the side of the car body or the bars on the same and will not unduly project from the side of the car body. By referring to Figs. 2 and 3 it will be readily seen that all of the parts are between the side of the car and the vertical plane of the outer face of the sill 3 in both the open and closed positions so that a disastrous contact with a car on a parallel track or a pole or other object at the side of the track will be avoided. The door hangers 20 are likewise flat metallic bars and are preferably constructed of channel iron, as shown most clearly in Fig. 3, the side flanges 25 of the said channel irons serving to impart the necessary rigidity to the hangers and the said flanges being cut away at the upper and lower ends of the hangers so as to offer no interference with the bending of the hangers and their engagement with the guiding rails. The upper ends of the door hangers are thus expanded to provide hoods 26 in which the rollers 24 are journaled, the inner sides of the hoods being carried downward in rear of the rollers and terminating close to the bars 10 so that they serve the purpose of keepers to maintain the rollers 24 upon and their flanges 27 in engagement with the inner side of the track or guide rail 19 and thereby maintain the door hangers in the proper vertical position. To the door hangers are secured brackets 28 having vertically disposed eyes 29 on their inner edges, and hinge pins are inserted through the said eyes 29, as will be readily understood, to pass through vertically disposed sleeves on the edges of links or hinge plates 30 which extend from the inner edges of the door hangers toward the door to which they are connected by means of hinge pins 31 passing through sleeves on the inner edges of the hinge plates and through eyes 32 at the ends of brackets 33 secured to the door and similar in construction to the brackets 28 secured to the door hangers.

The construction just described provides a flexible hinge connection between the door hangers and the door so that the door may be readily swung into or out of the door opening, and upon reference to Figs. 2 and 3 it will be seen that in no position of the door will any part of the connections project beyond the outer face of the sill 3 in position to be struck by any object past which the car travels. In the closed position of the door the links or hinge plates 30 will

extend obliquely inward and converging from the door hangers toward the car door and in the open position of the door the said plates will extend between the door hangers and the edges of the door at an inclination less pronounced but still extending inward from the face of the hanger and of the longitudinal bottom sill 3. This feature of the invention will be readily appreciated upon reference to the full lines in Fig. 3 which show the open position of the door and the dotted lines in the same figure which show the closed position of the door.

It will be noticed upon reference to Fig. 1, that the inner edges of the links or hinge plates 30 project slightly over the face of the door so as to extend beyond the sides of the same, the result of said arrangement being to limit the outward movement of the door by reason of the edges thereof coming in contact with the rear sides of the links, as will be readily understood. It will be, moreover, observed that the door hangers are not connected with each other except through the door and the described flexible hinge connections with the door so that in the act of opening the door the door hangers may move independently of each other sufficiently to accommodate the swinging movement of the hinge plates 30 about the edges of the door hangers.

The door is provided with the usual grips or handles 34 by which the operator may move the door longitudinally of the car and into either open or closed position. At the side of the door opening are provided the guides 35 which are adapted to project over the edge of the door when the same is closed so as to cause the proper entrance of the door into the door opening.

In order to relieve the flexible connections composed of the brackets 28 and 33 and the hinge plates 30 from the strain of supporting the weight of the door I employ the intermediate supports consisting of the hanger bars 36 adapted to engage the eyes 37 and 38 on the door hangers and the door, as shown most clearly in Fig. 1. The hanger bars 36 are substantially S-shaped in formation and consist of a central shank or stem having its ends bent laterally in opposite directions and then longitudinally parallel to the main shank or stem so as to form oppositely disposed hooks. The said hooks are engaged in the eyes 37 and 38 on the door hanger and the door, respectively, so that the downturned hook will engage and rest upon the upper end of the eye 37 on the hanger and the upturned hook will engage and bear against the lower end of the eye 38 on the door. After the door hangers have been placed in position and connected with the door through the described flexible hinge connections the door is lifted slightly, about a quarter of an inch in a full sized door, and

the hanger bars 36 are then engaged in the eyes 38 and 37 so that the weight of the door will be carried by the said hanger bars and the eyes engaged thereby and, consequently, there will be no weight placed on the connections at the upper and lower corners of the door. It will be observed that the supporting devices are disposed at about or slightly below the horizontal medial line of the door, and, consequently, the door will be supported in such manner that it may be very easily moved when it is desired to open or close the same.

It is thought the operation and advantages of the device will be readily appreciated from the foregoing description, taken in connection with the accompanying drawings. When it is desired to load or unload a car the handle 12 is oscillated so as to release the bolts 7, after which the grips or handles 34 are grasped and the door is swung slightly outward so that one edge of the door will clear the side of the door opening. The door may then be pushed sidewise along the car body to the position indicated in dotted lines in Fig. 1 and in full lines in Fig. 3 thereby exposing the door opening and permitting access to the interior of the car. After the car has been loaded the door may be moved back to enter the door opening and close the same, as will be readily understood. The described manner of supporting the door and the connections between the same and the door hangers permits the door to be swung easily and quickly and avoids the use of any parts which would unduly project from the car so that a compact and simply arranged door is provided and the liability of injury to any of the parts is overcome.

Having thus described my invention, what I claim is:

1. The combination with a car body having a door opening, tracks across the same, and hangers movable on said tracks independent of each other; of a door, flexible hinge connections between the hangers and door for permitting the latter to move laterally into the door opening, and pivotal supports between the vertical center of the door and the hangers relieving said connections of the weight of the door.

2. The combination of a car body, upper and lower track rails on the side of the car body, the lower edge of the lower track rail being formed into a bead, door hangers having their upper ends projecting over the upper track rail to travel thereon and having their lower ends formed into hooks adapted to engage the bead on the lower track rail, a door disposed between the said hangers, and swinging connections between the door and the door hangers.

3. The combination of a pair of door hangers, a door, swinging connections between the sides of the door and the hangers, eyes upon the hangers, similar eyes on the door, and S-shaped supporting rods having their upper ends engaging the eyes on the hangers and their lower ends engaging the eyes on the door.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES A. PATTON.

Witnesses:

C. E. DOYLE,
GEO. B. PITTS.