F. JAGER.

CAR DOOR.

APPLICATION FILED DEC. 31, 1919.

1,376,697.

Patented May 3, 1921.

2 SHEETS—SHEET 1.

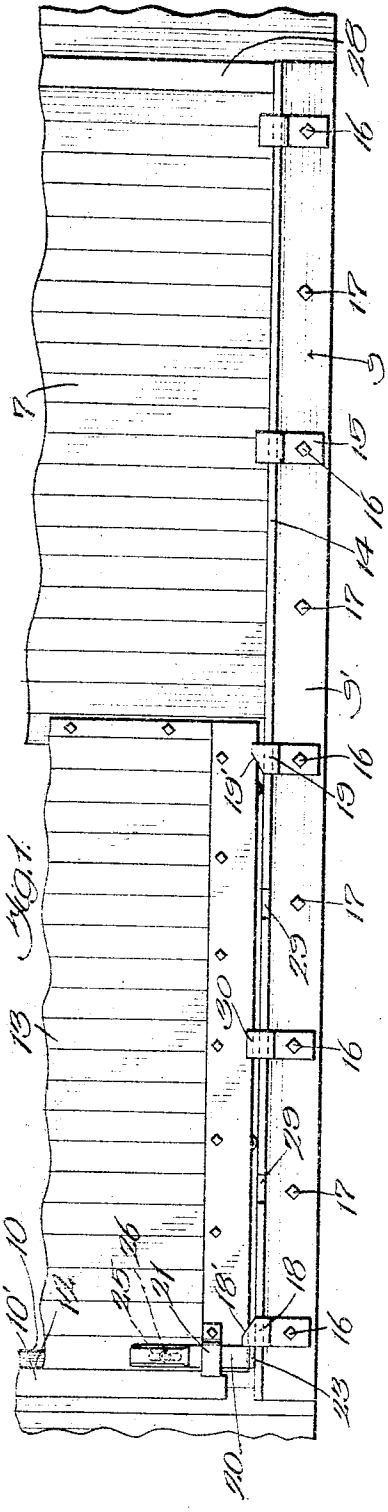


Fig. 1.

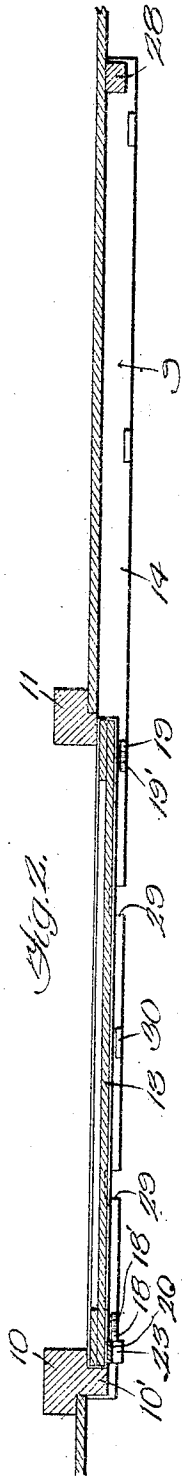


Fig. 2.

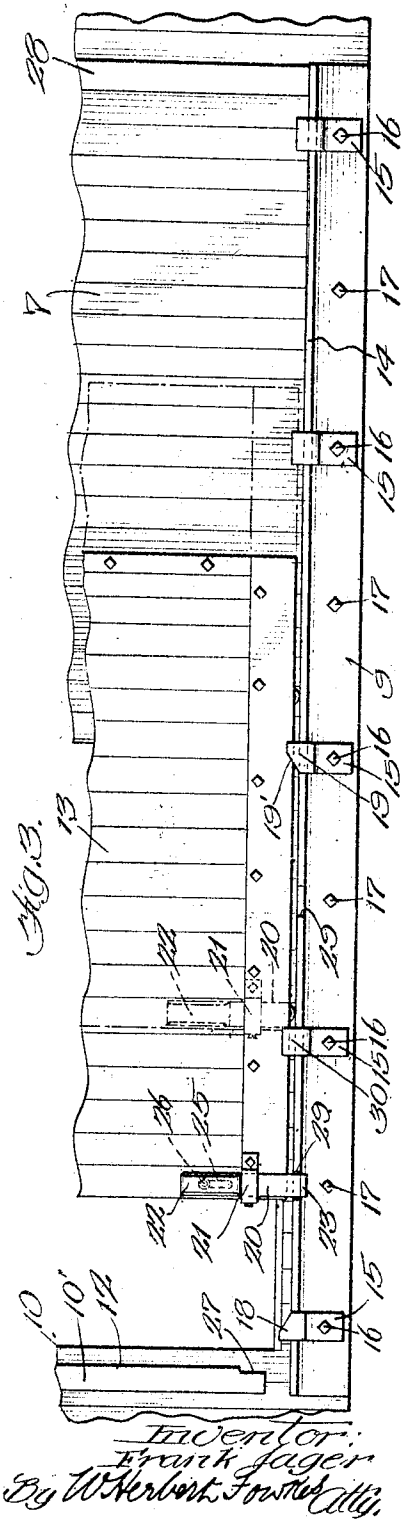


Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4

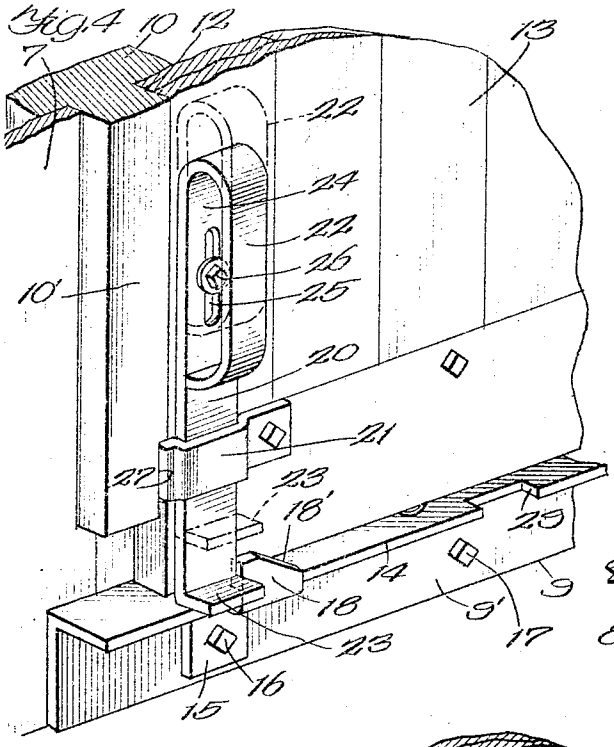


Fig. 6.

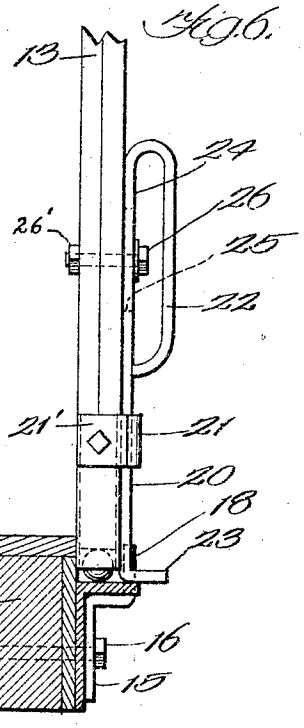
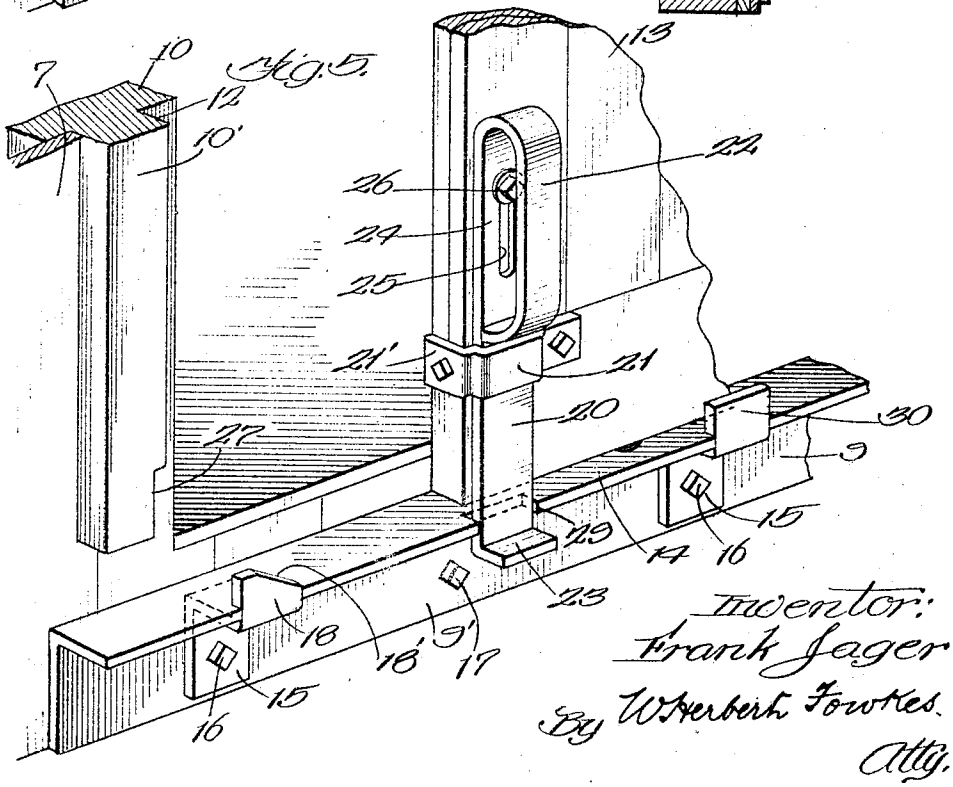


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CAR-DOOR.

1,376,697. Specification of Letters Patent. Patented May 3, 1921.

Application filed December 31, 1919. Serial No. 348,696.

To all whom it may concern:

Be it known that I, FRANK JAGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Doors, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification.

My present invention relates in general to car doors which are slidable longitudinally of the car to open and close the doorway opening and has reference more particularly to that type of sliding door described in my co-pending application for U. S. Letters Patent, Serial Number 321,619 wherein the door is designed to readily roll on anti-friction balls interposed between the bottom edge of the door and the supporting track or rail. However, this door is extremely responsive, so much so that if left by trainmen or others concerned in loading or unloading the car in an intermediate or half-open position, any abrupt movement of the car either when at rest or in motion may result in an involuntary slamming or closing movement of the door.

The salient object of my invention is the provision in a sliding door of means whereby this destructive slamming of the door is prevented and the elimination of any possibility of accident occurring to one standing in the doorway opening, due to this involuntary door closing movement. Another object is to improve the construction and increase the efficiency and utility of sliding doors of this type. The invention further contemplates the provision of certain novel details of construction, combination and arrangement of parts whereby the door is automatically held in its full open or closed position, the door automatically locking when moved to either or these positions and being readily releasable from its locked engagement when it is desired to move the door from one position to the other.

These, together with such other objects as may hereinafter appear, or are incident to my invention, I attain by means of a construction illustrated in a preferred form in the accompanying drawings, wherein:—

Figure 1 is a view in front elevation of the door and its track illustrating the door in its closed position with reference to the doorway opening;

Fig. 2 represents a longitudinal sectional view taken in a horizontal plane along a line just above the door brackets;

Fig. 3 is a view similar to that of Fig. 1 wherein the door is shown held in an intermediate position;

Figs. 4 and 5 are views in perspective of the locking bolt and the means with which it coöperates to hold the door in closed and intermediate positions, respectively;

Fig. 6 represents a view in front elevation of the forward edge of the door, the track and sill member being sectioned.

In the drawings, the reference character 7 denotes the car siding, 8 the sill member carrying the angle bar rail 9, and 10 and 11 the left and right hand door posts constituting members of the doorway frame. The post 10 is grooved to provide a seat 12 for the front edge portion of the door 13, though it will be readily understood that the projecting portion 10′ of the post 10 may take the form of a separate piece secured to the front face of the post so as to provide a means for determining the closed position of the door. In the present instance anti-frictional balls are interposed and housed between the bottom edge portion of the door and the upper track flange 14 on which the door rolls.

In order to maintain the door on the track I provide a series of door brackets positioned at intervals along the length of the track to hold the door to the car.

These brackets preferably comprise Z-bar shaped metal sections whose lower flanges 15 are rigidly secured against the outer face of the basal flange 9′ of the rail 9 by means of headed bolts which in passing into the sill 8 also serve to secure the rail to that member, in which case only the bolt heads 16 are exposed. Additional rail securing elements 17 may also be employed, if desired. Two of these door brackets are so positioned in the doorway opening that their upwardly extending terminal flanges 18 and 19 which seat in the track flange 14 may cooperate with a door locking device, now to be described, so as to permit of the automatic locking of the door in its closed and open positions, respectively.

This device comprises a bolt 20 normally supported by the track and vertically slidable in a socket member desirably formed from a metal bar whose central portion is bent to provide a socket 21 or slideway for the bolt to move in when it is lifted from

the track 14 by the hand-hold 22 or when raised by the inclined faces 18′ and 19′ of the bracket flanges 18 and 19 as the door approaches its final closed or open position. Obviously, when the door is finally closed, the lower bent end portion 23 of the bolt after being cammed up by the face 18′ gravitates to the locked position shown in Figs. 1 and 4. Similarly the door is locked in full open position when the bolt end portion 23 has passed the cam face 19′ to fall into operative locking position to the right of the bracket flange 19. A stop bar 28 is provided for the rear edge of the door, as is the usual practice in this art. In the present instance, the rear portion 24 of the hand-hold may be slotted to form a guideway 25 for the pin or headed bolt 26 to additionally steady the bolt in its vertical sliding movement, the bolt passing through the door and being secured in place by the nut 26′. Furthermore, if desired, the socket member for the sliding bolt 20 may have its ends secured as shown, in which event the outer end 21′ may be bent for attachment to the front edge of the door, the door post being grooved or recessed at 27 to receive it when the door is in its closed locked position.

Means coöperating with said bolt 20 are also provided at intervals along the rail 9 to check involuntary slamming or closing of the door, usually due to abrupt train movement, should it have been left by the trainmen in a position intermediate its locked extremes of movement. With this end in view, the track is at suitable points therealong provided with recesses 29, cut into the forward margins thereof, so that at least one of them may receive the end 23 of the sliding bolt and thereby hold the door from impacting against the door post seat 12. Apart from obviating possible damage occasioned the door as a result of this slamming, my primary object in this connection is to absolutely prevent accident occurring to any one standing in the doorway near the door post 10.

The central bracket flange 30 serves as an additional safety feature, coming into play as a positive stop means should the locking bolt ride over a recess 29 in the event of an extraordinary shock to the car. Fig. 4 illustrates in dotted lines the position of the door in this case; the full lines indicating its position when the locking bolt has dropped into a recess in one of the intermediate positions of the door. The bolt is maintained in its predetermined lower position by the bolt 26 acting against the upper terminal of the slot 25. Obviously when in such position the locking bolt may be manually grasped and lifted to elevated position, whereupon the door may be moved longitudinally to any desired situation. It will be observed that all parts enumerated above may very readily be fabricated from sections of commercial shaped iron, as shown in the drawings, thereby materially reducing their cost of manufacture and maintenance and permitting their replacement in a facile manner by unskilled labor at any car repair shop.

I claim:

1. In a car construction, the combination of a track, a door slidably supported upon said track, and a vertically movable bolt slidably mounted on said door with its lower end normally resting on said track, said track being provided in the path of travel of said bolt with spaced recesses adapted to receive the end of said bolt to lock the door against movement and with spaced-upwardly projecting abutments adapted to be engaged by said bolt to limit the sliding movement of said door.

2. In a car construction, the combination of a track, a door slidably mounted thereon, and a vertically movable bolt slidably carried by said door, said track being provided in the path of travel of said bolt with a plurality of upwardly extending projections, against which said bolt is adapted to abut to limit the movement of said door and between said projections, with a recess into which said bolt is adapted to drop to lock said door against sliding movement in either direction.

3. In a car construction, the combination of a track, a door slidably mounted thereon, a vertically movable bolt carried by said door and projecting downwardly therefrom, front and rear stops mounted in the path of movement of said bolt, each being inclined in one direction to permit passage of the bolt thereover, and an intermediate stop against which said bolt is adapted to abut to limit the sliding movement of said door, said track being provided between said stops with a recess adapted to receive said bolt whereby the door may be locked against sliding movement in either direction.

FRANK JAGER.