

B. F. FORBES.

CAR DOOR.

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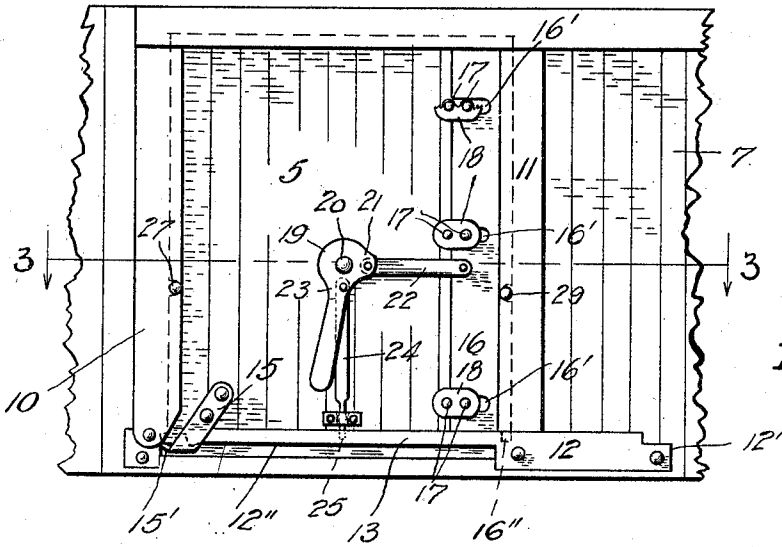


Fig. 1

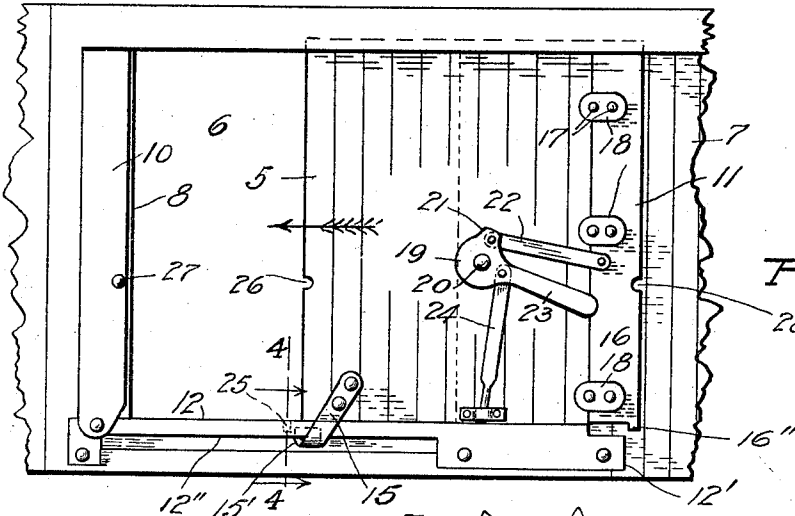


Fig. 2

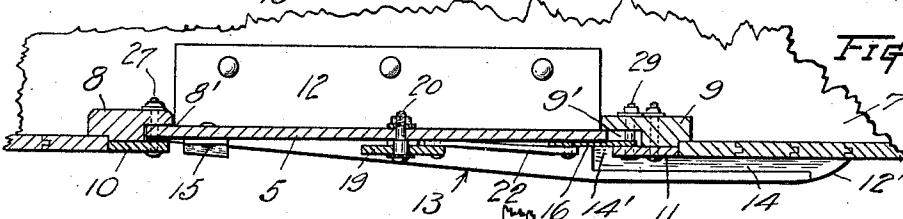


Fig. 3

WITNESSES:

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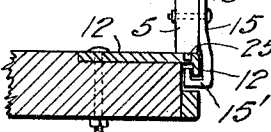


Fig. 4

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CAR-DOOR.

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To all whom it may concern:

Be it known that I, BUFORD F. FORBES, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification.

This invention relates to car-doors such as are employed on freight cars; and its object is the provision of improved mechanism to facilitate operating the doors when opening or closing the same, together with devices for automatically securing the doors in position when closed so that there will be no likelihood of the door being broken either accidentally or otherwise.

The invention consists in the novel construction and adaptation of parts, as will be hereinafter particularly described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a car-door constructed in accordance with this invention and shown as applied to a car and in closed position. Fig. 2 is a like view with the door shown partly open. Fig. 3 is a horizontal section on line 3—3 of Fig. 1. Fig. 4 is a vertical section through 4—4 of Fig. 2.

The reference numeral 5 designates a car-door which affords the closure for an opening 6 in the side of a car-body 7. At the forward and rear sides of said opening the frame members 8 and 9 are provided with rabbets 8' and 9' and to the outside of such frame members are secured plates 10 and 11 of widths to extend over the respective rabbets.

Fixedly secured to the frame of the car floor, and set into the latter so as to have its top surface in the plane with the floor surface, is a door sill 12 which extends from the outside face of the frame member 8 to a distance beyond the other member 9 upon the outside of the car. As shown in Fig. 3, the outer surface 13 of said sill is inclined outwardly from the member 8 to within proximity of the other member 9 and therebeyond the referred to sill-surface is continued parallel, or nearly so, to the adjacent wall of the car-body. Provided in the top of said sill is a guideway 14 extending from the rear end 12' of the sill and next to the car wall to a short distance beyond the plate 11 where a side opening 14' is provided which communicates with the recess or rabbet 9' of the frame member 9. Along the front of the

sill for a length approximating the width of the door-opening 6, the sill is provided with a depending flange 12'', see Fig. 4.

Near the front end of the door is secured a strap 15 having a hooked lower end 15' which engages about the sill flange 12'' and coacts therewith to direct that end of the door into the rabbet 8' when the door is being closed.

Attached to the rear end of the door is an upright member 16, or door-leaf as it will be called, which is connected to the door by the provision of horizontal slots 16' through which pass bolts 17 fixedly secured to the door and carrying at their outer ends guide plates 18. At its lower end said door-leaf is provided with a downwardly extending lug 16'' which is adapted to travel in the guideway 14 when the door is being shifted.

A bell crank lever 19 is secured to the door by a pivotal pin 20. One arm 21 of said lever is connected by a rod 22 with the door-leaf 16 and the other arm 23 is pivotally connected to a locking bolt 24 which is engageable in a socket 25 provided in the sill 12 when the door is closed.

One of the lever arms, as 23, is desirably made sufficiently long to afford a handle whereby the lever may be manipulated in actuating the door-leaf and the locking-bolt.

In the forward edge of the door is a notch 26 to engage over a bolt 27 extending across the recess 8' for the purpose of preventing the uplifting of that edge of the door when the latter is closed. Similarly, there is provided a notch 28 in the front edge of the door-leaf 16 to coact with a bolt 29 to prevent the front edge of the door being raised. To facilitate the moving of the door-hangers carrying-rollers to track upon a rail above the door may be employed.

The operation of the invention is as follows: In closing the door, it is moved forwardly or in the direction indicated by feathered arrow in Fig. 2, and in such movement the strap hook 15' engaging with the flange 12'' of the sill guides the advance end of the door to enter the recess 8' of the frame member 8. Simultaneously, the lug 16'' of the door-leaf 16 moving in the way 14 of the sill is ultimately brought opposite the opening 14', whereupon the rear end of the door is shoved inwardly to present the leaf 16 in front of the recess 9' of the frame member 9. The lever 19 is then ac-

uated through the agency of the handle arm 23 thereof to turn the same from the position in which it is represented in Fig. 2 to that shown in Fig. 1 resulting in the bolt 24 being shot downwardly into its receptacle 25 to lock the door and likewise imparting, through the medium of the rod 22, rearward movement to the leaf 16 whereby the latter is pushed into the recess 9'. The door is thus secured against outward movement by the door proper and the leaf 16 engaging in the respective recesses and supplementary to the offices performed by the strap 15 and the lock-bolt 24. Furthermore, the strap 15 serves with the bolts 27 and 29 to obviate any uplifting of the door when in its closed position. To open the door, the leaf 16 and the bolt 24 are first retracted by means of the lever 19, the rear end of the door is then pulled outwardly to bring the stud 16' of the leaf 16 into the way 14, and finally the door is shifted rearwardly away from the door opening as will be understood.

Among the advantages afforded by the present invention are, first, the easy and effective manner in which the door may be opened or closed, and in the securing of the door when closed; and secondly, in the safeguarding of the door against being knocked off by encountering an object by reason of the outer edge of the sill being disposed outside of the door surface and also in the covering of the opposite edges of the door by the plates 10 and 11.

What I claim, is—

1. The combination with a car body having a door opening provided with recessed frame members at its opposite sides, and a sill member provided with a downwardly-extending flange at the outside and a guideway in its upper surface, of a door, a leaf slidably-connected to one side of the door

and having its lower end adapted to operate in said guide-way, a strap secured to the door adjacent its other side and engaging the aforesaid sill flange, and means for operating the leaf to force same into the recess of one of said frame members and to also push the opposite side edge of the door into the recess of the other frame member.

2. The combination with a car-body having a door-opening provided with recessed frame members at its opposite sides, and a sill member provided with a downwardly extending flange at the outside and a guideway in its top surface, of a door, a leaf slidably connected to one side of the door and having a depending lug adapted to operate in said guideway, a strap secured to the door adjacent its other side and engaging the aforesaid sill flange, and means whereby said leaf may be moved with respect to the door, substantially as and for the purposes described.

3. The combination with a car-body having a door-opening provided with recessed frame members at its opposite sides, and a sill member provided with a downwardly extending flange at the outside and a guideway in its top surface, of a door, a leaf slidably connected to one side of the door and having a depending lug adapted to operate in said guideway, a strap secured to the door adjacent its other side and engaging the aforesaid sill flange, a bell-crank lever pivotally connected to the door, a rod connecting an arm of said lever with the door-leaf, and a locking bolt secured to the other arm of said lever, substantially as and for the purposes described.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."