

R. B. FRIEND & C. LIVERMAN.
CAR DOOR.

APPLICATION FILED DEC. 17, 1909.

990,537.

Patented Apr. 25, 1911.

2 SHEETS—SHEET 1.

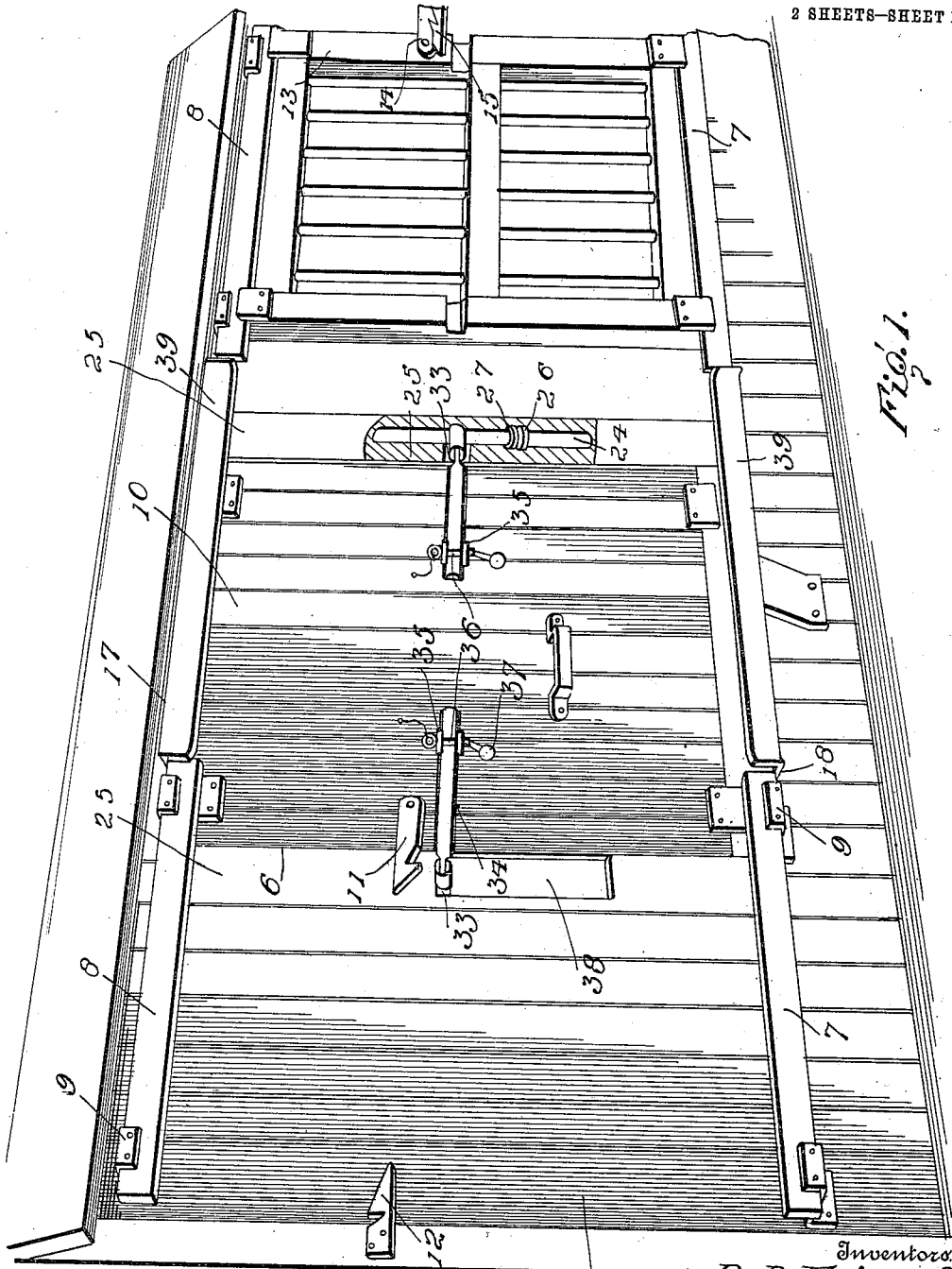


Fig. 1.

Witnesses

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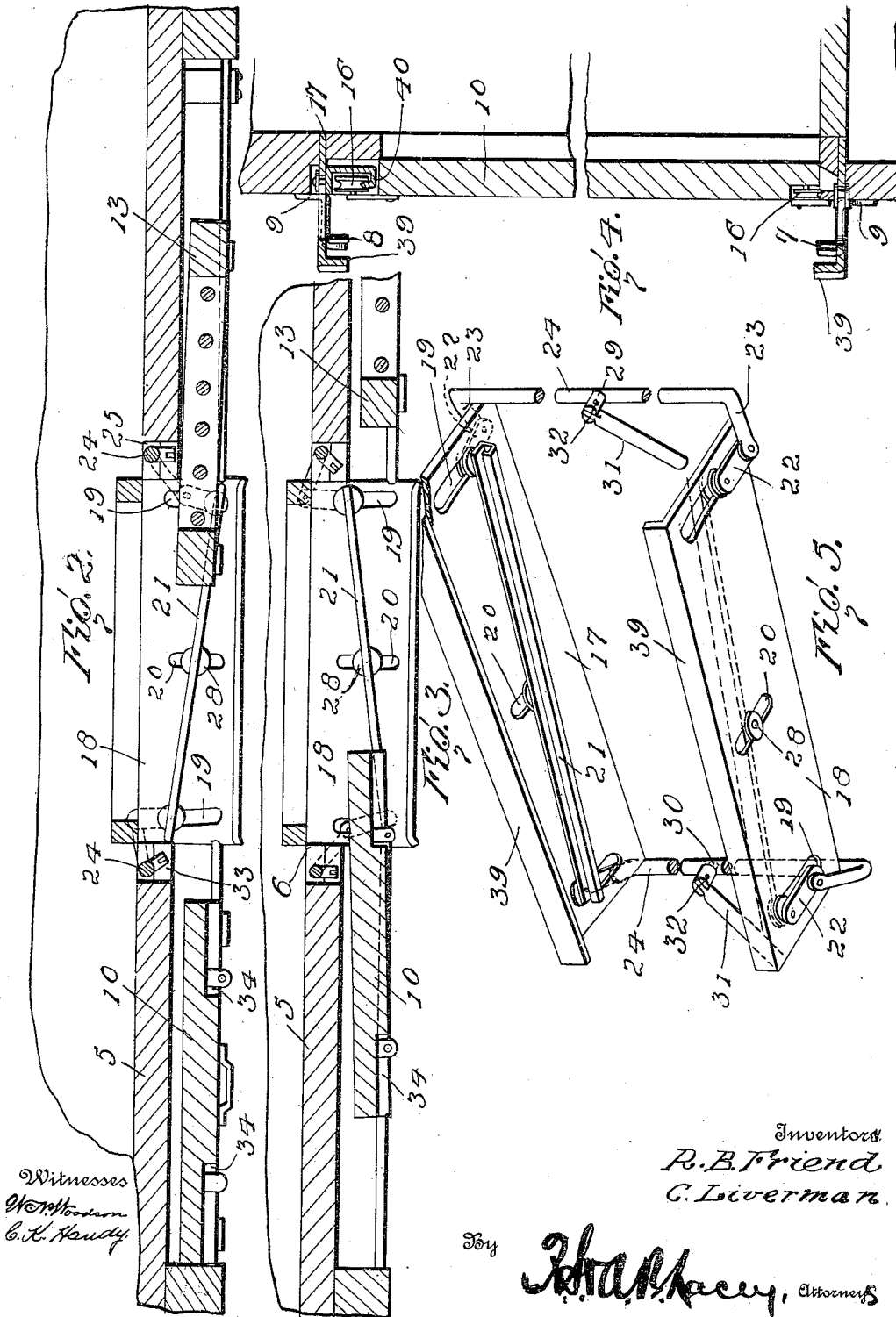
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UNITED STATES PATENT OFFICE.

REUBEN B. FRIEND AND CINCIE LIVERMAN, OF PETERSBURG, VIRGINIA.

CAR-DOOR.

990,537.

Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed December 17, 1909. Serial No. 533,655.

To all whom it may concern:

Be it known that we, REUBEN B. FRIEND and CINCIE LIVERMAN, citizens of the United States, both residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented certain new and useful Improvements in Car-Doors, of which the following is a specification.

This invention relates to railway cars and more particularly to a combination door or closure especially designed for use on freight cars.

The object of the invention is to provide a car having a plurality of sliding doors, either of which is movable to operative position at the door receiving opening, one of said doors being solid and the other slatted so as to permit ventilation of the car when necessary.

A further object is to provide the door receiving opening with upper and lower supporting plates or platforms having movable tracks pivotally mounted thereon for directing either door to operative position within said door receiving opening.

A further object is to provide means operatively connected with the pivoted tracks for moving either end of said tracks toward or away from the car.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a portion of a car provided with a combination door constructed in accordance with our invention; Fig. 2 is a transverse sectional view of Fig. 1 showing the movable track in position to guide the ventilating door to operative position within the door receiving opening; Fig. 3 is a similar view showing the movable track in position to guide the solid door to said door receiving open-

ing; Fig. 4 is a vertical sectional view; Fig. 5 is a detail perspective view of the upper and lower supporting plates or platforms detached, showing the manner of connecting the rock shafts with the adjacent movable tracks.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The combination door forming the subject matter of the present invention is principally designed for use in connection with freight cars and by way of illustration is shown applied to an ordinary freight car, in which 5 designates the body of the car, and 6 the door receiving opening.

Disposed on opposite sides of the door receiving opening 6, are stationary tracks 7 and 8, the latter being supported in spaced relation to the exterior face of the car by suitable brackets or hangers 9.

Slidably mounted between the tracks on one side of the opening 6, is a solid door 10 having a catch 11 pivotally mounted thereon and adapted to engage a keeper 12 secured to the adjacent face of the car, thus to lock the door 10 in inoperative position.

Slidably mounted on the stationary tracks at the other side of the door receiving opening 6, is a ventilating door 13, also provided with a catch 14 arranged to engage a keeper 15 rigidly secured to the adjacent face of the car.

The doors 10 and 13 are preferably provided with rollers 16 which bear against the adjacent stationary tracks and serve to reduce friction between the parts when moving said doors to operative and inoperative positions.

Fastened in any suitable manner to the upper and lower walls of the door receiving openings 6 are flat horizontally disposed supporting plates or platforms 17 and 18, each provided with oppositely disposed arcuate slots 19 and a single centrally disposed straight slot 20. Slidably mounted on the supporting plates or platforms 18 are movable tracks 21 having their opposite ends pivotally connected through the medium of suitable links 22 with the adjacent crank arms 23 of vertically disposed rock shafts 24. The rock shafts 24 are housed within the door posts 25 and are journaled in suitable bearings 26 seated in the sockets of

the door posts, as shown, there being collars 27 rigidly secured to the rock shafts 24 and engaging the bearings 26 for retaining said rock shafts in proper position.

- 5 Each movable track 21 is provided with a depending guiding pin or stud 28, which latter projects through the slot 20 of the adjacent supporting plate or platform and forms in effect a pivotal connection between said movable track and platform.

- 10 Extending laterally from the intermediate portion of each rock shaft 24, is a stud 29 having a reduced portion 30 mounted for rotation in the rock shaft and having its outer 15 or free end bifurcated to permit the insertion of the reduced end of an operating lever 31, the operating lever being pivotally connected with the stud 29, as indicated at 32 so that each operating lever 31 is in effect 20 a universal connection with the adjacent rock shaft 24.

- The studs 29 project through suitable slots 33 formed in the door posts 25 so as to permit the operator to readily grasp the levers 31 when operating the rock shafts to 25 shift the movable tracks 21. Thus it will be seen that by grasping the operating lever 31 on the left hand side of the door receiving opening and moving said lever in the direction of the solid door, the adjacent rock shaft 24 may be rotated in its bearings and through the medium of the crank arms 23 30 and links 22, move the upper and lower tracks 21 to the position shown in Fig. 3 of the drawings, that is to say, with one end of each movable track 21 registering with the adjacent stationary tracks 7 and 8 so that the solid door 10 may be guided on the movable tracks 21 to operative position at the 40 door receiving opening.

- By moving the handle or lever 31 back to normal position, the movable tracks 21 carrying the solid door 10 will be moved inwardly and thus position said solid door 45 in the door receiving opening. It is obvious that by moving the operating handle or lever 31 on the right hand side of the car, the tracks 21 may be shifted laterally so as to register with the stationary tracks 7 and 8 50 on the right hand side of the door receiving opening so as to permit the ventilating door 13 to be moved to operative position at the door receiving opening.

- It will of course be understood that when 55 one of the doors forms a closure for the door receiving opening 6, the catch on the other door will engage its keeper and vice versa.

- Both doors are preferably provided with 60 transversely disposed seating grooves 34 adapted to receive the adjacent operating handles or levers 31 when the doors are fitted to the door receiving opening 6, there being spaced perforated ears 35 formed on the 65 outer face of the solid door and adapted to

embrace the handles or levers 31, as best shown in Fig. 1 of the drawings. When the the handles or levers 31 are positioned between the spaced ears 35, a locking pin 36 is passed through the perforations in the ears 35 for the purpose of locking the door 70 against accidental displacement. A seal 37 may also be threaded through an aperture in the lower end of each pin 36 to prevent an unauthorized person from surreptitiously 75 opening the door.

Suitable depressions 38 are preferably formed in the outer face of each door post 25 to accommodate the handles or levers 31 80 when the latter are not used for locking the doors in operative position, the levers 31 being housed within the recesses 38 so as to permit free movement of either door.

The outer or free end of each supporting plate or platform 18 is provided with a terminal guard flange 39 preferably extending 85 slightly beyond the adjacent stationary tracks so as to prevent the doors from being displaced when the tracks 21 are shifted.

The upper movable track 21 is preferably 90 provided with an upstanding lip 40 which engages the adjacent rollers 16 and thus prevents the door from dropping to the ground should the lower supporting plate or platform 18 become broken or detached from 95 the car.

It will here be noted that by having the studs 29 mounted for rotation in the adjacent rock shafts 24, said studs, together with the levers 31 may be rotated so as to cause the levers to register with either the seating recesses 34 or the depressions 38, and when in registration with the depressions 38, the pivotal connections 32 will permit the levers 31 105 to drop by gravity within the seating recesses 38 so as to prevent the door from striking against said levers when being moved to open and closed position, as before stated.

While it is preferred to shift or tilt the ends of the movable tracks 21 so as to form 110 an inclined guide for the doors when the latter are moved to operative position within the door receiving opening, it is obvious that by operating the levers 31 on both sides of the door receiving opening simultaneously, 115 the tracks 21 may be moved to a position parallel with the face of the car and in alignment with the adjacent stationary tracks so as to permit either door to be shifted onto the movable tracks, and in which position 120 the door may be moved within the door receiving opening by turning the levers 31 in the opposite direction, as will be readily understood.

Having thus described the invention, what 125 is claimed as new is:

1. The combination with a car having a door receiving opening, of tracks secured to the car on opposite sides of the door opening, doors slidably mounted on said tracks, flat 130

horizontally disposed supporting plates extending the entire width of the door opening at the top and bottom thereof and projecting laterally beyond the outer face of the car, and movable tracks pivotally mounted on the inner flat faces of the supporting plates, and adapted to register with the first mentioned tracks and to direct either door into the door receiving opening.

2. The combination with a car having a door receiving opening, of stationary tracks secured to the car on opposite sides of the door receiving opening, a door slidably mounted on one of the tracks, a second door slidably mounted on the other track, supporting plates extending the entire width of the door receiving opening at the top and bottom thereof and projecting laterally beyond the outer face of the car, and movable tracks pivotally mounted on the supporting plates and adapted to register with the stationary tracks and to direct either door into the door receiving opening.

3. The combination with a car having a door receiving opening, of stationary tracks secured to the car on opposite sides of the door receiving opening, a door slidably mounted on one of the tracks, a second door slidably mounted on the other track, supporting plates secured to the top and bottom walls of the door opening and extending the entire width thereof, movable tracks pivotally mounted on the supporting plates and adapted to register with the stationary tracks, and to direct either door into the door receiving opening, rock shafts connected with the movable tracks, and a lever for rotating each rock shaft.

4. The combination with a car having a door receiving opening, of stationary tracks secured to the car on opposite sides of the door receiving opening, a solid door slidably mounted on one of the tracks, a ventilating door slidably mounted on the other track, supporting plates extending the entire width of the door receiving opening and having their outer longitudinal edges projecting laterally beyond the outer face of the car and provided with vertical guard flanges, movable tracks pivotally mounted on the supporting plates and adapted to register with the stationary tracks and to direct either door into the door receiving opening, rock shafts operatively connected with the movable tracks, studs mounted for rotation in the rock shafts, and levers pivotally connected with the studs.

5. The combination with a car having a door receiving opening, of stationary tracks secured to the car on opposite sides of the door receiving opening, a solid door slidably mounted on one of the tracks, a ventilating door slidably mounted on the other track, horizontally disposed supporting plates extending the entire width of the door

receiving opening at the top and bottom thereof and having slots formed therein, movable tracks having their intermediate portions pivotally mounted on the supporting plates and provided with pins extending through the adjacent slots, said movable tracks being adapted to register with the stationary tracks and to direct either door into the door receiving opening rock shafts journaled on the car and provided with crank arms, and links forming a pivotal connection between the crank arms and the pins of the adjacent movable tracks.

6. The combination with a car having a door receiving opening, of stationary tracks secured to the car on opposite sides of the door receiving opening, a door slidably mounted on one of the tracks, a second door slidably mounted on the other track, supporting plates extending the entire width of the door receiving opening at the top and bottom thereof and each provided with oppositely disposed arcuate slots and a centrally disposed slot, movable tracks pivotally mounted on the supporting plates adapted to register with the stationary tracks and to direct either door into the door receiving opening, a pin connected with each movable track and extending through the central slot of the adjacent supporting plate, pins secured to the opposite ends of each movable track and projecting through the arcuate slots, a rock shaft having crank arms, links forming a connection between the crank arms and adjacent pins of the movable track, and levers carried by the rock shafts.

7. The combination with a car having a door receiving opening of stationary tracks secured to the car on opposite sides of the door receiving opening, a door slidably mounted on one of the tracks, a second door slidably mounted on the other track, parallel supporting plates disposed at the opposite ends of the door receiving opening and provided with terminal guard flanges, movable tracks pivotally mounted on the supporting plates, and adapted to register with the stationary tracks and to direct either door into the door receiving opening, one of said movable tracks being provided with a guard lip, rock shafts operatively connected with the movable tracks of both supporting plates, levers for operating the rock shafts, and a universal connection between each lever and the adjacent rock shaft.

8. The combination with a car having a door receiving opening, of stationary tracks secured to the car on opposite sides of the door receiving opening, a door slidably mounted on one of the tracks, a second door slidably mounted on the other track, supporting plates disposed at the door receiving opening, movable tracks slidably mounted on said plates and adapted to register with the stationary tracks and to direct

either door into said door receiving opening, rock shafts operatively connected with the movable tracks, a lever for operating each rock shaft, a universal connection between each lever, and rock shaft, there being depressions formed in each door to receive the adjacent lever when the door is in operative position, and depressions formed in the door posts and adapted to receive said

levers when the doors are in inoperative position. 10

In testimony whereof we affix our signatures in presence of two witnesses.

REUBEN B. FRIEND. [L. S.]

CINCE LIVERMAN. [L. S.]

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."
