(No Model.) 2 Sheets—Sheet 1.

T. EUBANK.

CAR DOOR.

No. 553,281. Patented Jan. 21, 1896.

FIG. 1.

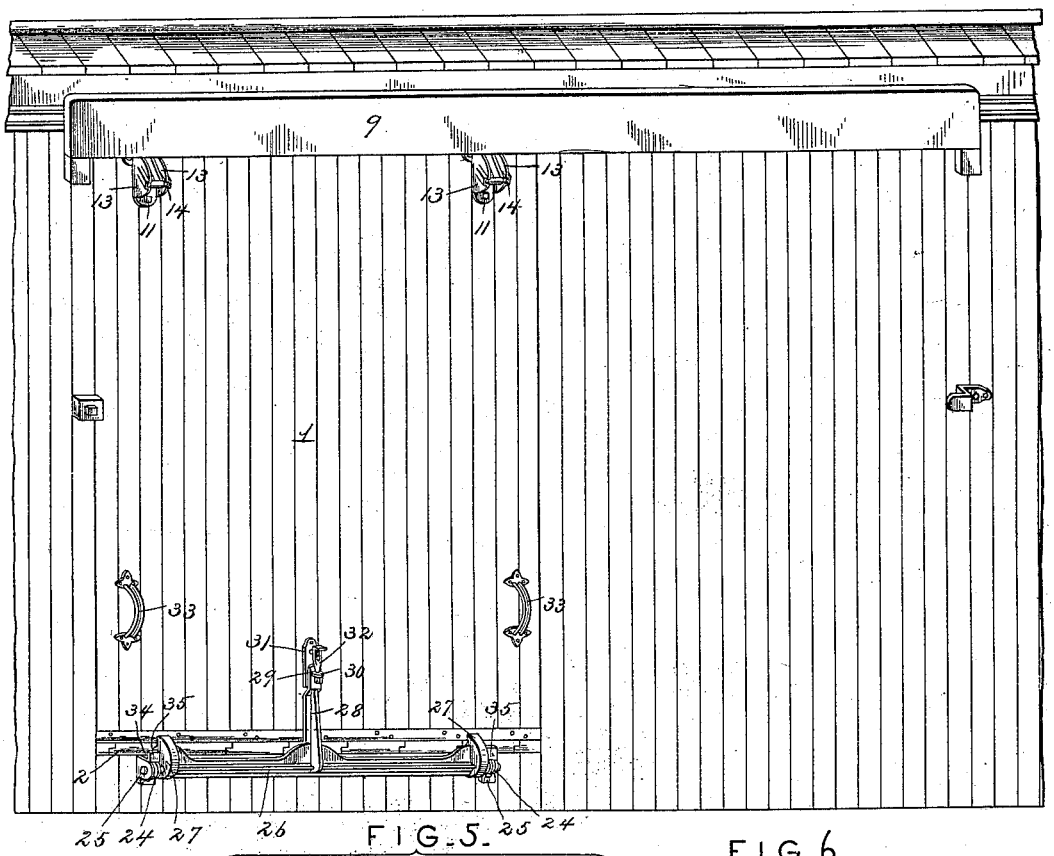


FIG. 5.

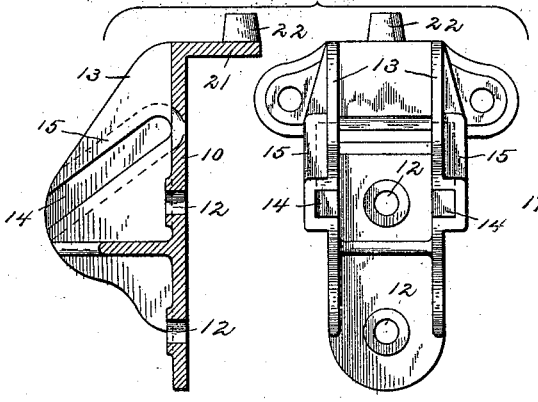
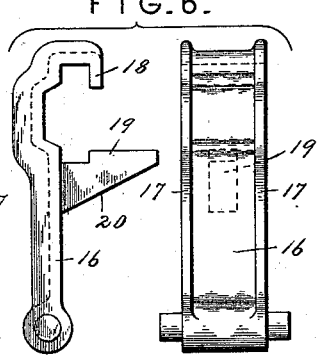


FIG. 6.



Inventor

Thomas Eubank.

Witnesses

Harry L. Amer.

By his Attorneys,

C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

T. EUBANK.

CAR DOOR.

No. 553,281. Patented Jan. 21, 1896.

FIG. 2.

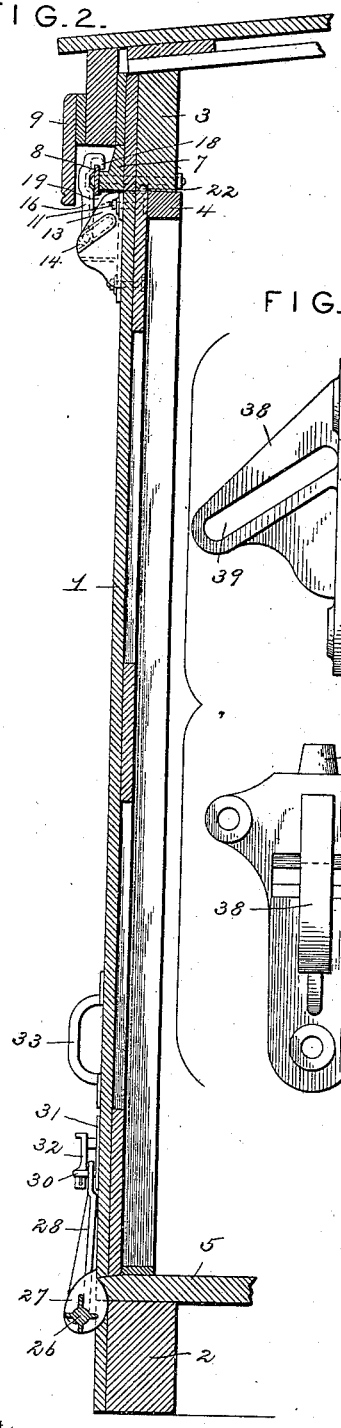


FIG. 3.

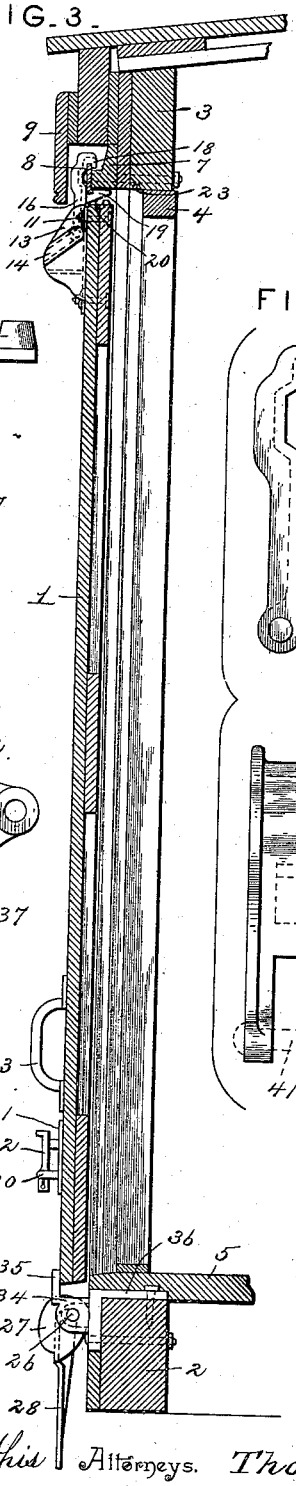


FIG. 4.

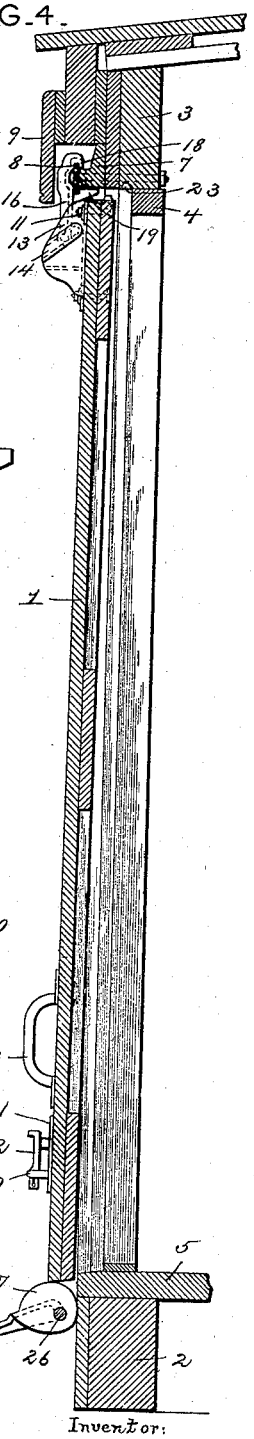


FIG. 7.

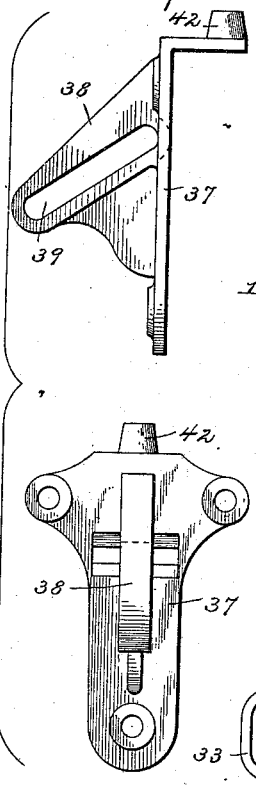
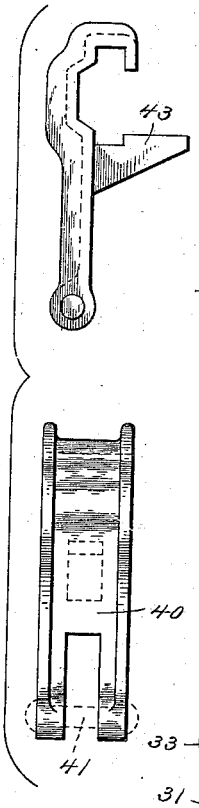


FIG. 8.



Witnesses

Harry L. Amer.

By his Attorneys. Thomas Eubank.

Inventor:

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

THOMAS EUBANK, OF LITTLE ROCK, ARKANSAS.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 553,281, dated January 21, 1896.

Application filed March 28, 1895. Serial No. 543,519. (No model.)

To all whom it may concern:

Be it known that I, THOMAS EUBANK, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented a new and useful Car-Door, of which the following is a specification.

My invention relates to car-doors designed especially for use in connection with freight-cars, the objects in view being to provide means for supporting and guiding a door whereby when closed it occupies a position flush with the side of the car or with the outer surfaces of the battens secured to the side of the car, to provide means for securing a door in the door-opening whereby approximately air-tight joints are formed, and to provide means whereby the dismounting of the door when closed is prevented.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a car-door constructed in accordance with my invention applied in the operative position to a car, said door being shown in its closed position. Fig. 2 is a vertical section of the same, showing the door in its closed position. Fig. 3 is a similar view showing the door in its open position. Fig. 4 is a similar view showing the positions of the parts at an intermediate point in the operation of closing the door. Fig. 5 is a detail view of one member of the hanger. Fig. 6 is a similar view of the other member of the hanger. Fig. 7 is a similar view of a slightly-modified form of the hanger, the parts thereof being detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a door, which is adapted to be arranged in an opening in a car flush with the outer surfaces of the sill 2 and the plate 3 and bearing against a stop-bead 4, which extends entirely around the opening, the upper edge of the door, as shown in Fig. 2, being in contact with the lower edge of the plate 3 and its lower edge resting upon the flooring 5, which is secured to the sill 2. Secured to the outer side of the plate 3 and beneath the frame-bars 6 is a fillet 7, which supports a track 8, whereby said track is arranged outside of the plane of the door when the latter is in its closed position, as shown in Fig. 2, and approximately flush with the outer surface of the door when the latter is in the open position shown in Fig. 3. A drip-board 9 depends from the frame under which the track is arranged, and thereby conceals the track and protects the same from drippings.

The hangers which I employ for supporting the door upon the track consist of a member secured to the door and a second member slidably mounted upon the first member and adapted to traverse the track, the sliding connection between said members being arranged upon an inclination upward and inward, or toward the interior of the car, whereby as the door is elevated it is carried inward until stopped by the bead 4. The door member of the hanger, as shown in Figs. 1 to 6, inclusive, comprises a plate 10, adapted to be secured to the outer surface of the door by means of bolts 11, engaging openings 12, and parallel ears 13, projecting outwardly from the plane of the plate and provided in their inner sides with outwardly and downwardly inclined guide-grooves 14, said ears contiguous to the grooves being thickened or enlarged upon their outer surfaces, as shown at 15. The upper members of the hangers have body portions 16, provided with lateral stiffening-webs 17, hooks 18 for engaging the upper edge of the track, and notched guide 19 for engaging the lower edge of the track. This guide 19, which is preferably formed integral with the upper member of each hanger, is provided with an upwardly and inwardly inclined lower face 20 to guide the upper end of the main plate of the lower member as the door is elevated by means hereinafter described, said lower member being provided at its upper edge with a horizontal flange 21, to bear upon the upper edge of the door and terminating in a tongue 22, designed to engage a suitable depression, groove, or socket 23 in the frame of the door-opening.

Mounted in bearings 24, formed in brackets 25, secured to the outer surface of the car below the door-opening, is a rock-shaft 26, provided near its extremities with cams 27 and

at an intermediate point with a lever 28, this lever being provided near its free end with an opening 29 to receive a staple 30, secured by means of a plate 31 to the door, a suitable locking pin or bolt 32 being mounted to slide upon said plate and fit in the staple to secure the lever in the position shown in Figs. 1 and 2. By means of this combination of parts, including the rock-shaft, cams, and lever, the door may be elevated from the position shown in Fig. 3 and moved into the door-opening to occupy the position shown in Figs. 1 and 2, after which the door is locked in its closed position by securing the upper end of the lever.

The door is free to slide laterally or moved to expose the door-opening when lowered to the position shown in Fig. 3, such movement being accomplished by means of suitable handles 33, with which I preferably provide the door near its edges, and the outward swinging movement of the door when in its lowered position is prevented by guides 34, arranged below the plane of the lower edge of the door and having upstanding ears 35, which are arranged outside of the plane of the outer surface of the door when the latter is in its lowered position. The brackets 25, to prevent their detachment with burglarious intent, are provided at their upper edges with horizontal flanges 36, which are arranged between the sill 2 and the flooring 5, whereby when the door is in its closed position, with its lower edge in contact with and its weight supported by the flooring, the removal of the brackets is impossible.

From the above description it will be seen that when the door is in its closed and locked position even the removal of the hangers will not release the door and allow its removal, owing to the engagement of the tongues at the upper edge of the door with the depressions or sockets in the frame of the door-opening, and it is obvious also that when the lever 28 is swung from the position shown in Fig. 3 to the position shown in Fig. 4 the door is elevated and the sliding connection between the lower and upper members of the hangers causes the upper edge of the door to be swung inward toward the plane of the stop-beads. This brings the lower edge of the door approximately in the plane of the upper surface of the flooring, and hence a further movement of the operating-lever to the position shown in Fig. 2 moves the lower edge of the door inward over the flooring and forces the tongues at the upper edge of the door into the depressions or sockets in the frame.

When the parts are in the positions shown in Fig. 3, the door is free to move laterally in a manner similar to other forms of car-doors to expose the door-opening, but when the parts are adjusted and locked in place, as above described, an approximately air-tight joint is formed between the door and the frame, and the displacement of the parts without breaking the seal, which in practice will be used in connection with the locking pin or bolt 32, is impossible.

In Fig. 7 I have shown a slightly-modified form of hanger in which the lower member 37, instead of being provided with duplicate parallel ears, as in the form shown in the other figures of the drawings, is provided with a single ear 38, having a slot 39, which is inclined upward toward its inner end, as described in connection with the grooves in the other form of the hanger, and the upper member of said modified form of hanger is provided with a bifurcated lower end adapted to straddle said ear 38, a transverse pin 41 being arranged in the bifurcated end to engage and slide in the slot 39. The operation of this form of hanger is substantially the same as that described above, and it is preferably provided with the other features, as set forth—as, for instance, the tongue 42 on the lower member and the guide 43 on the upper member.

From the above description it will be seen that each of the hangers above described comprises a door member and a track member having an inclined sliding connection, whereby upward movement or elevation of the door causes inward movement of the upper edge thereof, whereas downward movement of the door causes outward movement of said upper edge, and, furthermore, that this inclined sliding connection is formed by means of a pin on one of the members operating in an inclined guide or slot in the other member.

In order to form a positive lock for the lower edge of the door when seated and at the same time facilitate the elevation and movement of the door into its seat, I preferably employ smooth-faced cams having shoulders adapted to bear against the outer face of the door when the latter reaches its closed position, with its outer surface flush with the corresponding surface of the door-frame. Hence by locking the cams in the positions which they occupy when the door reaches its closed position it is obvious that I provide a positive lock to secure the door in place without the use of auxiliary devices.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. The combination with a sliding door, and a track for supporting the same, of hangers each having relatively movable members respectively mounted upon the track and secured to the door, said members having a sliding connection formed by a pin on one member operating in an inclined guide on the other, and means for holding the lower edge of the door in the opening, substantially as specified.

2. A flush car-door, adapted to fit within a door opening with its outer surface flush with that of the door frame, in combination with

a track, hangers having relatively slidable members to allow the door when removed from the opening to drop with its lower edge below the plane of the bottom of the opening, and means for elevating the door and moving it into the opening, substantially as specified.

3. The combination with a car-door, and a track for supporting the same, of hangers each comprising loosely connected door and track-members, respectively secured to the door and traversing the track, said members having an inclined sliding connection, whereby the door is adapted for downward and outward movement to remove it from the door-opening and upward and inward movement to return it to the door-opening, substantially as specified.

4. The combination with a car-door, and a track for supporting the same, of hangers each comprising loosely connected door and track-members, respectively secured to the door and traversing the track, one member having a fixed pin mounted in a downwardly and outwardly inclined slot in the other member, whereby the door is adapted for downward and outward movement to remove it from the door-opening and upward and inward movement to return it to the door-opening, substantially as specified.

5. The combination with a car-door, and a track for supporting the same, of hangers each comprising relatively slidable track and door-members respectively mounted upon the track and secured to the door, the sliding connection being secured by means of a pin on one member operating in a slot in the other member of each hanger, and a guide extending inwardly from the track-member contiguous to and under the lower edge of the track to prevent dismounting of said member and having an upwardly and inwardly inclined lower edge for contact with a fixed part of the door-member, when the door is elevated, to guide the upper edge of the door inwardly, substantially as specified.

6. The combination with a car-door, a horizontal track, and hangers having relatively slidable track and door-members respectively mounted upon the track and secured to the door and adapted for relative movement, whereby the lower edge of the door is dropped below the plane of the sill of the door-opening when unseated, of cams arranged upon the door frame below the plane of the lower edge of the door and adapted when turned to elevate the latter to bring its lower edge in the plane of the sill of the door-opening, shoulders on the cams to bear against the face of the door when seated, and means for securing said cams from movement with said shoulders in contact with the door, substantially as specified.

7. The combination with a car-door, a track, and hangers having slidably connected track and door-members respectively mounted upon the track and secured to the door, of a rock-shaft arranged in a horizontal position below the plane of the lower edge of the door, cams fixed to said rock-shaft and having shoulders to engage the face of the door and force it inwardly to its seat, an operating lever, and a locking device to secure the operating lever in place when the door is closed, with the shoulders of the cams in contact with its surface, substantially as specified.

8. A door hanger comprising a track-member constructed at its upper end to fit over and traverse the upper edge of a track and provided at its lower end with a transverse pin, a guide extending perpendicularly inward from the body portion of said track-member to extend under the track, notched at its upper edge to engage and slide upon the lower edge of the track and having an upwardly and inwardly inclined lower edge, and a door-member having inclined guides or slots to receive said transverse pin on the track-member, a horizontal flange adapted to extend over and bear upon the upper edge of a door to engage the inclined lower edge of the inwardly extending guide on the track-member, and a tongue rising from said flange, substantially as specified.

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

THOS. EUBANK.

Witnesses:
FRANK L. BRUNER,
W. K. PATTERSON.