

T. G. RUFFHEAD.
CAR DOOR.

No. 382,243.

Patented May 1, 1888.

Fig. 1.

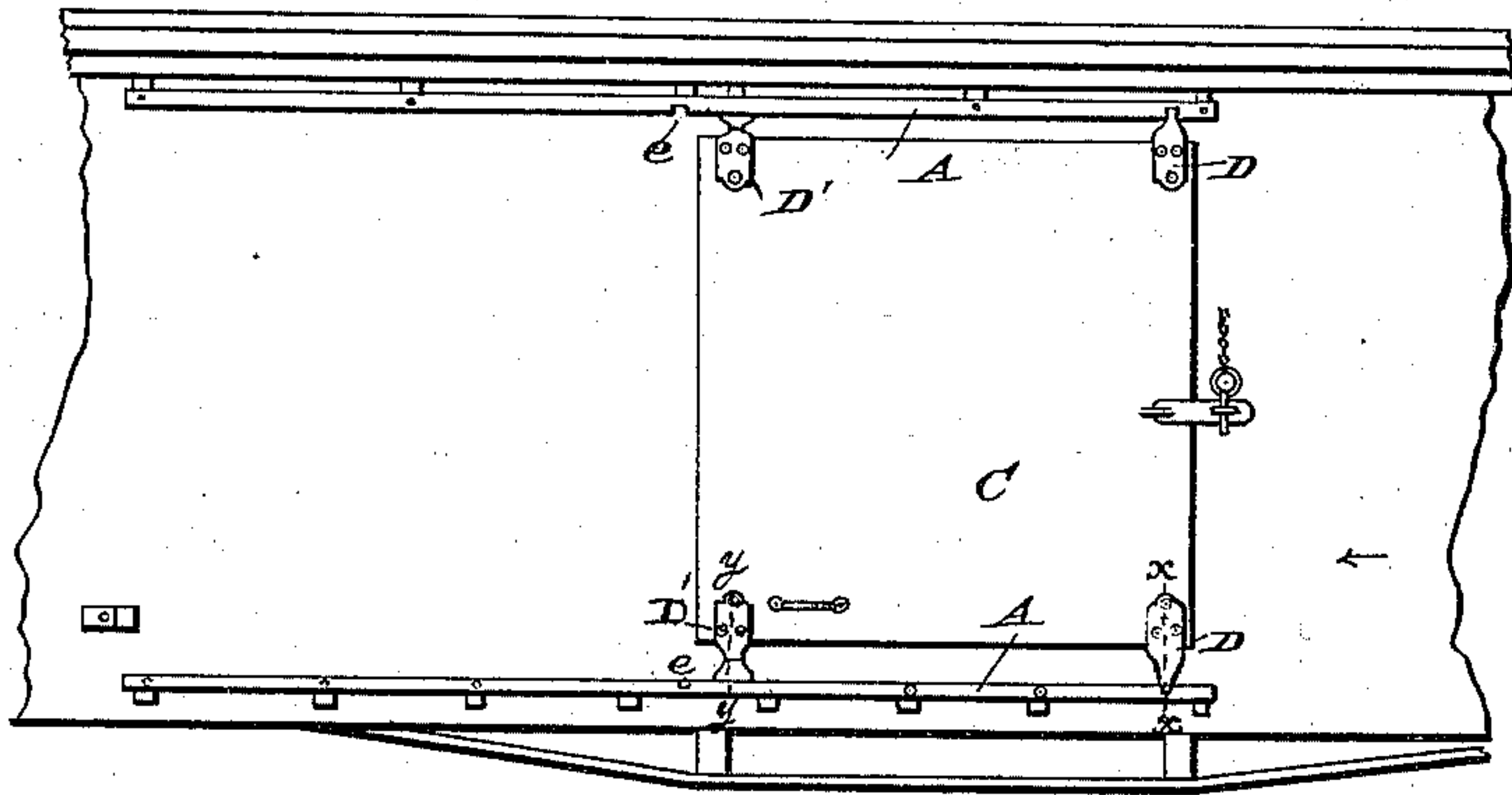


Fig. 3.

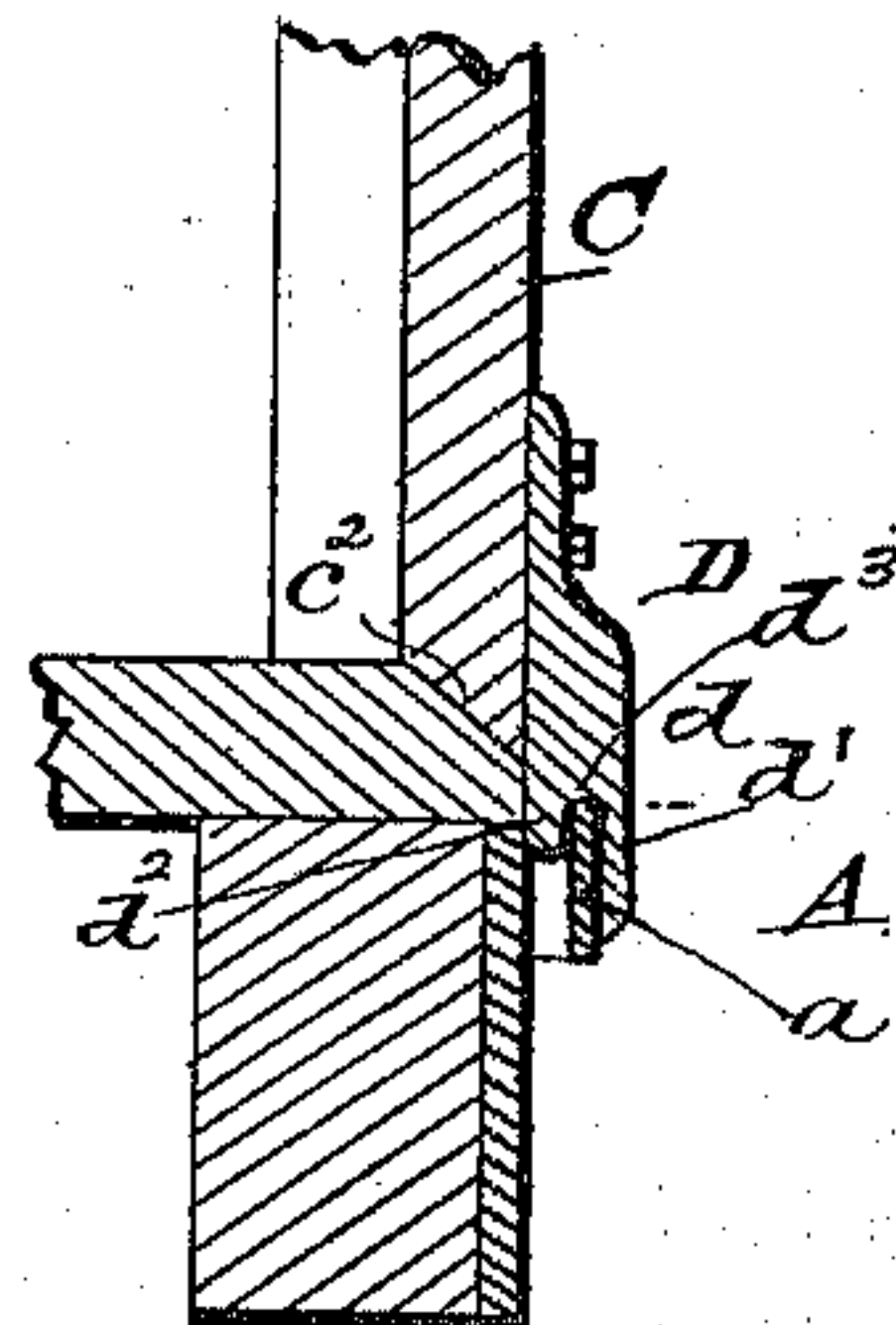


Fig. 2.

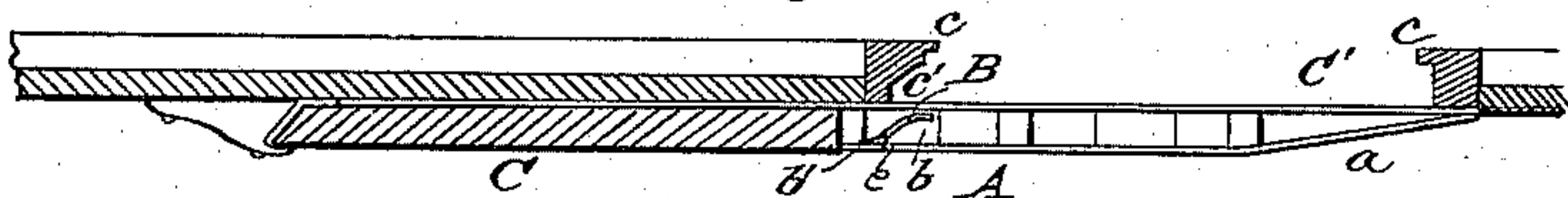


Fig. 7.

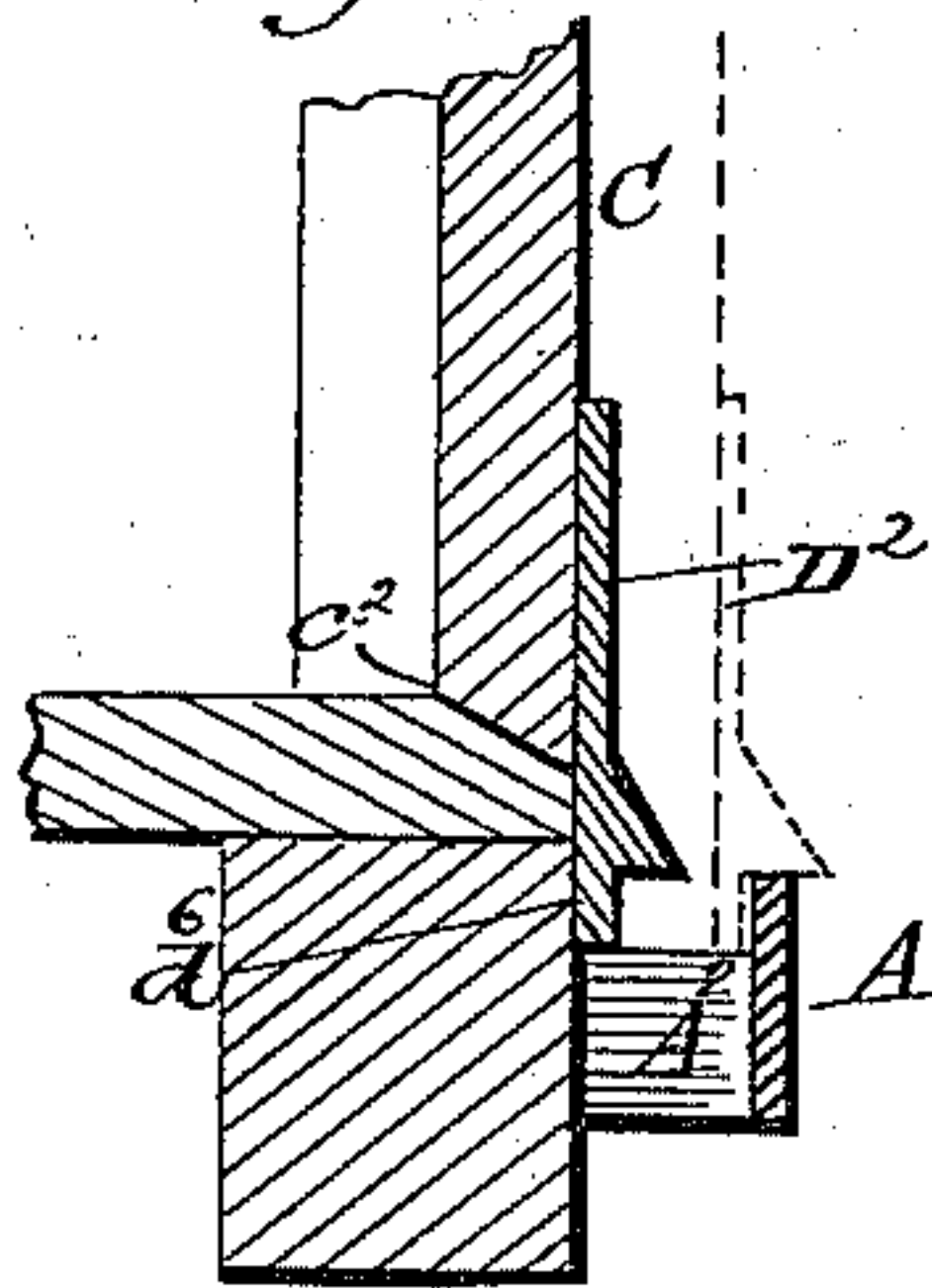


Fig. 6.

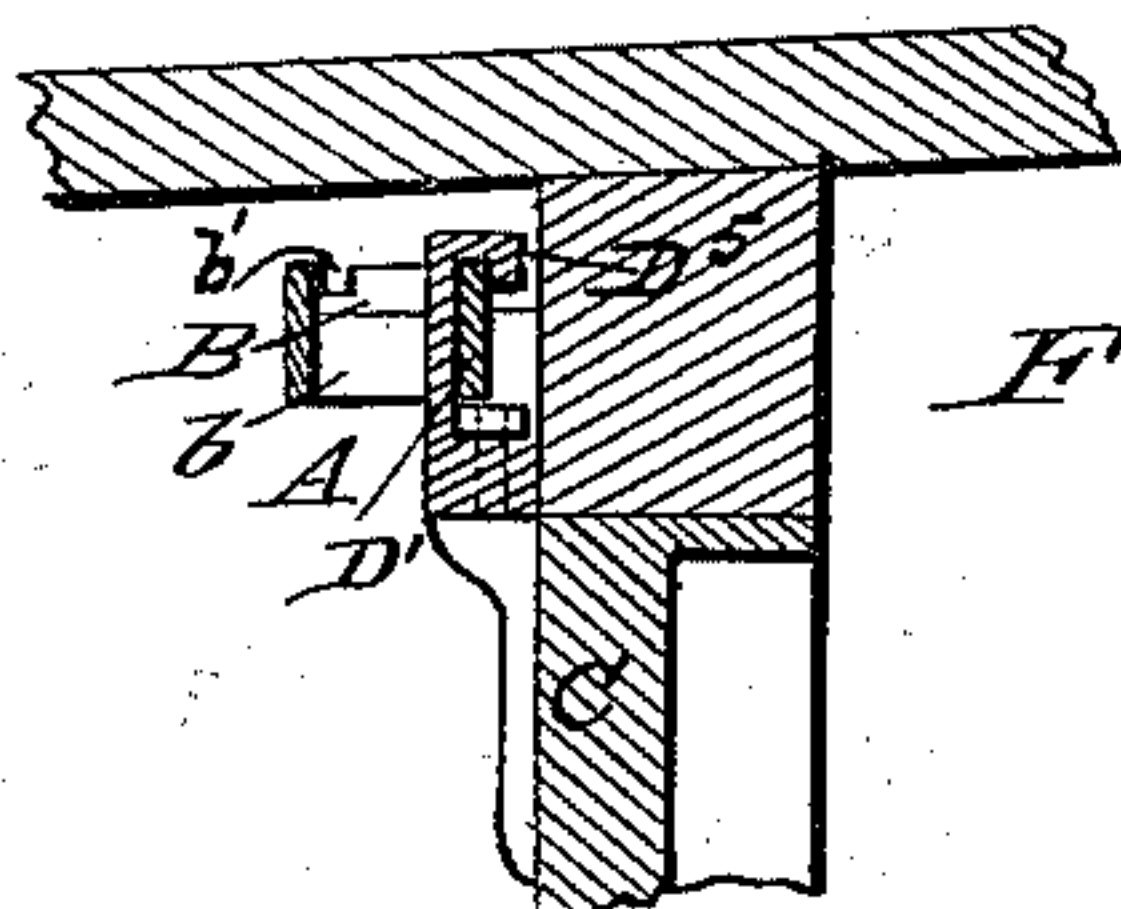


Fig. 3.^a

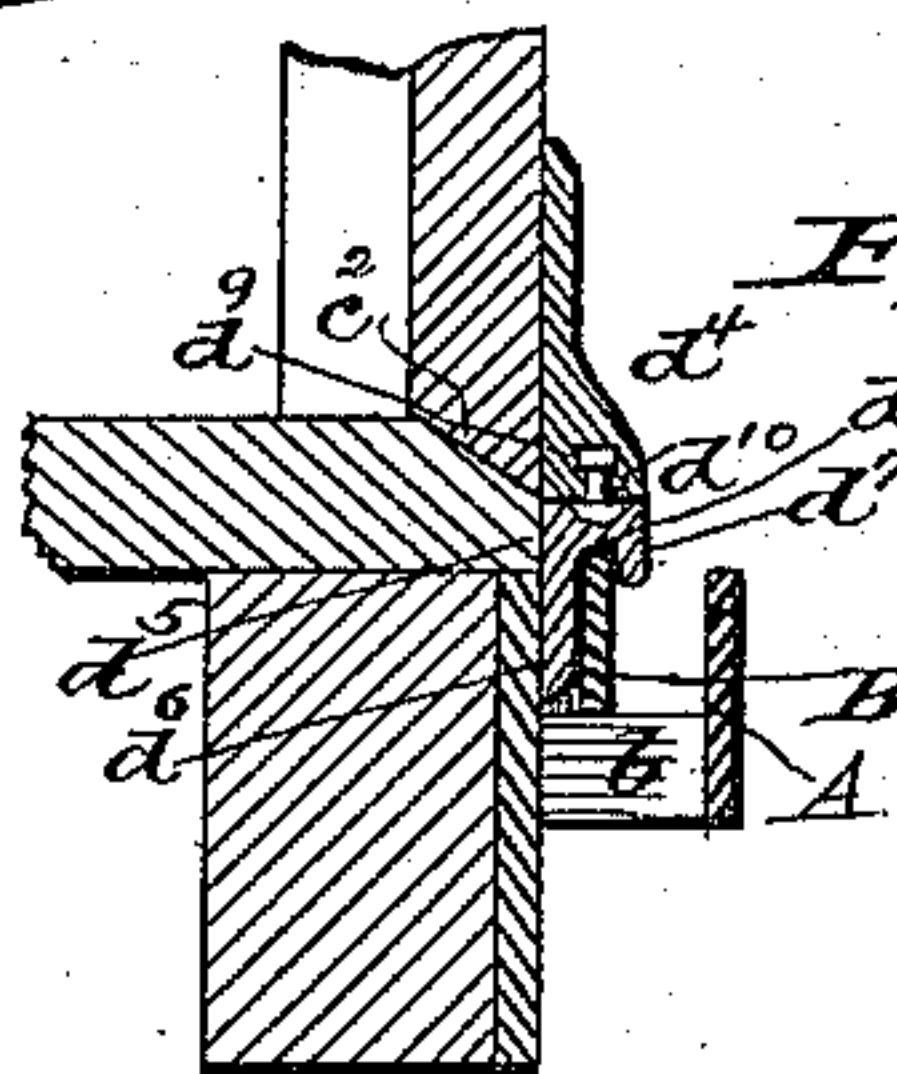


Fig. 9

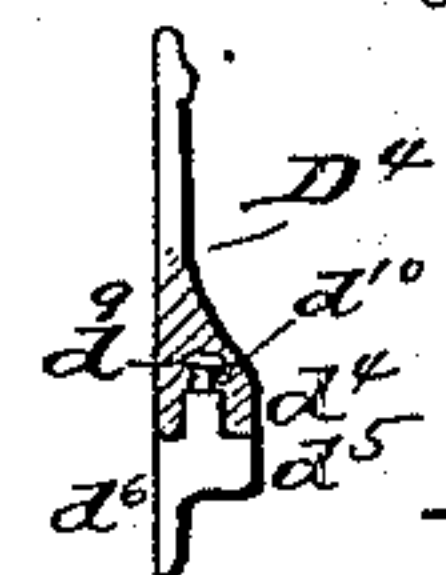


Fig. 5.

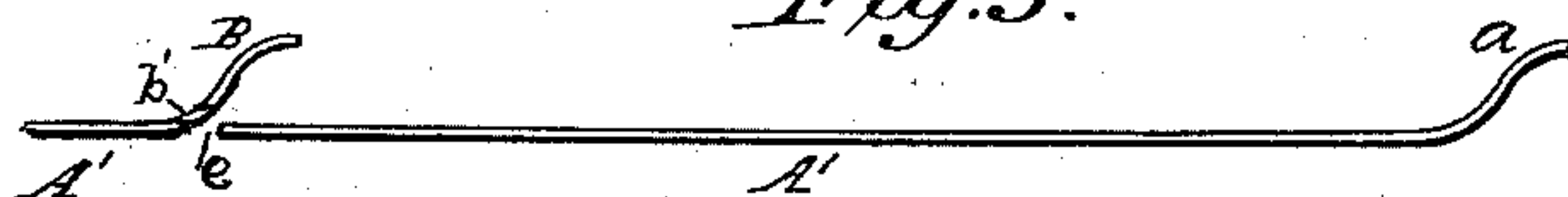


Fig. 4.

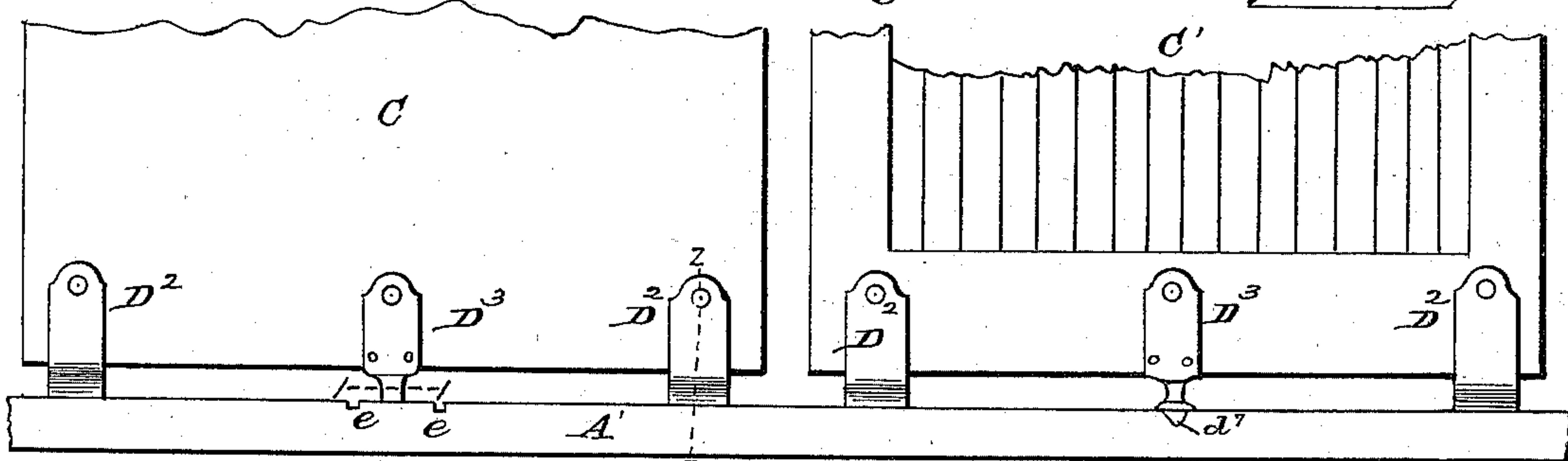
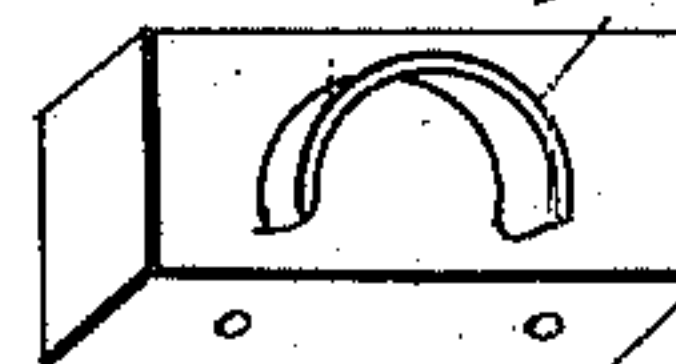


Fig. 8

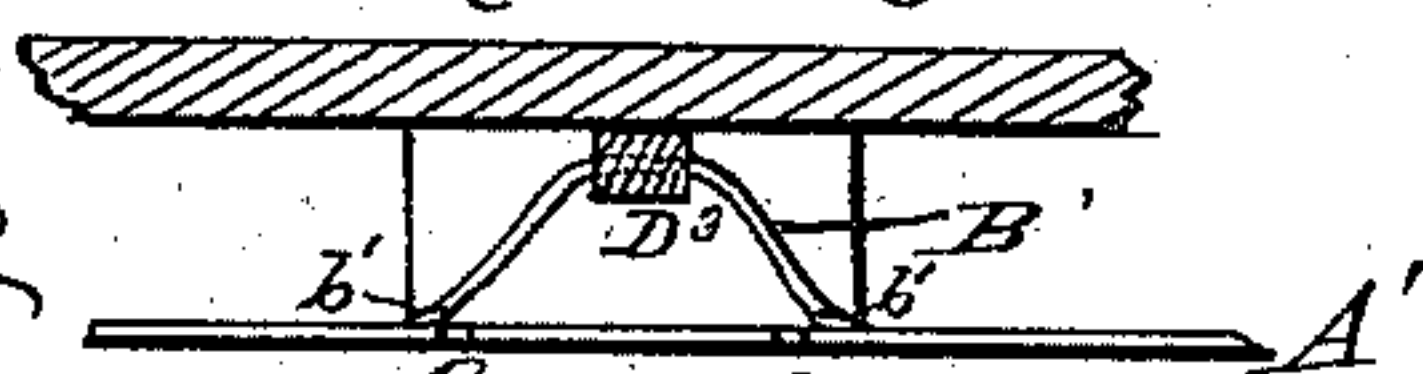


Fig. 11



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UNITED STATES PATENT OFFICE.

THOMAS G. RUFFHEAD, OF RENOVO, PENNSYLVANIA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 382,243, dated May 1, 1888.

Application filed August 24, 1887. Serial No. 247,780. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. RUFFHEAD, of Renovo, in the county of Clinton and State of Pennsylvania, have invented certain new and useful Improvements in Car-Doors; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention pertains to certain improvements in car-doors, having reference more especially to mounting or hanging the same; and it consists of means whereby the door is adapted to be held, when closed, against displacement by the pressure from within of the load, as also to prevent the entrance to the car of moisture from weather and sparks from the engine, and to maintain a close joint between the door and car, however much the latter may be warped or sprung out of shape, substantially as hereinafter more fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a freight-car, partly broken away, embodying my invention in its preferred form. Fig. 2 is a horizontal longitudinal section thereof, with the door in its open position. Fig. 3 is a detail sectional view taken through the line *xx*, Fig. 1. Fig. 3^a is a similar view taken on the line *yy* of the same figure. Fig. 4 is a front view of a modification of my invention as applied for the employment of two doors on the same side of the car. Fig. 5 is a plan view of a modification showing a different construction of rail. Fig. 6 is another modification of my invention, showing it as applied in suspending the door from an upper single rail. Fig. 7 is a detail sectional view taken on the line *zz* of Fig. 4. Fig. 8 is a horizontal section taken on the line *ll* of the same figure. Figs. 9 and 10 are detail views of modifications of the central bearing or shoe and switch as employed in Fig. 4. Fig. 11 is a detail plan view with parts broken away, showing more especially the feature of the diagonally-disposed blocks of the modification embodied in Fig. 4.

In the embodiment of my invention I apply to the car-body rails *A A*, disposed one a short distance below and the other a short distance above the doorway or opening. These rails have one end connected to the side of the car-

body, about at the front edge of the doorway or jamb, while their opposite ends are connected to the car-body sufficiently distant from the rear edge or jamb of the said doorway to permit of the sliding of the door wholly to one side of the doorway, as usually practiced in opening the same. The rails *A*, which are disposed, as usual, a distance from the car-body about equal to the thickness of the door, for the purpose as aforesaid, the greater portion of their lengths, are, however, inclined, as at *a*, from a point about opposite the middle of the doorway inwardly toward the front or forward edge or jamb of the latter, the purpose of which will presently appear.

B is a switch, of which two are employed, one for each rail. The switch is formed upon a block or casting, *b*, bolted to the car-body at a point about opposite the rear jamb or edge of the doorway. The switch *B* is curved, as shown, one end at its upper edge being disposed close to and ranging parallel with the inner side of the rail *A*, while the lower portion of said end is tapered or converged toward and joins the rail, in order to serve as a shoe for the transference or switching of the rear bearings or hangers of the door, as will more fully hereinafter be described, to said switch.

The inner end of each switch *B* stands about opposite the rear edge or jamb of the doorway or opening and about in alignment with a plane touching the outer side of the car-body, which, together with the inclined portion *a* of the rail *A*, permits of the shutting or closing of the door, so as to cause its outer surface to stand about flush with that of the car-body. The switch *B* is provided with a notch or recess, *b'*, immediately adjacent to the rail *A*, the purpose of which will appear farther on.

C is the door, and *C'* is its opening or the doorway, which is rabbeted, as at *c*, along both of its jambs and beveled, as at *c'*, along one jamb—its rear one—and along its bottom or lower edge, as at *c''*. The door *C* is correspondingly beveled, enabling it to readily enter and fit into said opening or doorway, as above stated. This also prevents the entrance to the car of moisture from snow and rain and sparks from the engine, while a close joint, as is obvious, is maintained between the door and car, however much the car may be sprung

or get out of shape. The door is provided with bearings or shoes D D'—one applied to each corner—by means of which it is supported in position upon the rails A. The bearings or shoes D D at the front or forward corners of the door are both of like construction, the same consisting each of a plate, d , bolted to the door and formed or forked at the outer end into two prongs or arms, d' d'' , with an intermediate or spacing groove, d^3 , between them, the inner prong or arm, d'' , being shorter than its fellow arm or prong, to enable it to pass through the notch or recess b' in the switch B, and thus clear the same, while, however, both ride at the sides of the rail A, which is received into the groove d^3 , holding the door thereon at the front or forward edge. The bearings or shoes D' D' at the rear corners of the door are both alike, but of a dissimilar construction to that of the bearings or shoes D D, each consisting of a plate, d^4 , bolted to the door and a second plate, d^5 , pivoted or swiveled to the plate d^4 , and having at its outer end two prongs or arms, d^6 d^7 , with an intermediate or spacing groove, d^8 , between them, the outer one in this case being the shorter. The purpose of this is to permit the arm or prong d^7 , as force or pressure is applied to the door, to move it forward to pass through a notch or recess, e , in the rail just forward of and immediately adjoining the outer end of the switch B. The longer prong or arm, d^6 , engages with and travels along the switch, carrying that end of the door inwardly toward its jamb, while at the same time the inclined portions a of the rails A carry the opposite end of the door also inwardly toward its jamb, thus effecting the closing of the door. It will be noticed that by the formation of the bearings or shoes D' D' into two parts pivotally connected together the outer or bifurcated part is allowed to be controlled in its movement by the switch, and be finally carried, as the door is being closed, to a point where it will be about parallel with the inner portion of the switch, which will have the effect to lock or wedge the bearings; and consequently the door, when closed in place against displacement by the pressure from within of the load. The pivotal connection between the two parts of each of the said bearings or shoes is preferably formed by providing the upper end of the outer part, d^5 , with a spindle or pivot, d^9 , having a groove therein and entering a socket in the lower end of the upper part, d^4 , a pin, d^{10} , being inserted into the latter, so as to engage with or rest in the groove of said spindle or pivot.

The door may be fastened at its forward edge by a hasp and staple in the usual way or otherwise, the same being closed by pulling upon a hand-hold or knob at the rear edge of the door, and readily opened by first pushing rearward and then pulling it outward to and sliding it along the rails.

In the modification shown in Fig. 4, where by two doors are used, one, C, of the usual

solid construction, and one, C', of the usual slatted construction, as is frequently required, I substitute, in lieu of the above-described form of rail, rails A', straight throughout their entire lengths. In that case I arrange at each corner of the doorway or opening a diagonally disposed or inclined block, A², located between the rails and the car-body, and dispose about centrally of the doorway or opening semicircular switches B'; also in that case the corner bearings or shoes, D², of which there are four and which are in one piece, have only inner arms or prongs, d^6 , the same traveling upon the blocks A² A², while the central shoe or bearing, D³, is in two pivoted-together parts and travels on the switches B'. In the center of the rail are two notches or recesses, e e , one accommodating the passage to the switch B' of the shorter arm or prong of the central bearing or shoe, D³, when, for instance, the door C at the left is used, while the other recess or notch e accommodates the passage to said switch B' of the shorter arm or prong of the shoe or bearing D³ of the door C' at the right when that is brought into requisition. In lieu of the central bearing or shoe, D³, and switch B', may be used the bearing or shoe D⁴, having but one arm or prong, and the switch B², respectively, as shown in Figs. 9 and 10; or the bearings or shoes D², which, as before stated, are each in one piece, may be replaced by the same type of bearing or shoe as D³, additional switches being accordingly provided, one opposite each corner of the doorway or opening; or, instead of the rail being a continuous piece, it may be in two or more pieces, with their forward ends bent so as to form the switches, as shown in Fig. 5; also, where two doors are used the forward, as well as the rear, edge of the doorway or jamb is also beveled to permit of the ready entrance to the said doorway of either the right-hand or the left-hand door.

In the modification embraced in Fig. 6 my invention is shown as applied for suspending the door from an upper single rail, suitable brackets being used for holding the lower and side edges of the door from displacement and to receive part of the weight of the door. In that case the only other principal departure from the preferred form of carrying out my invention consists in the use of shoes or bearings D⁵, the outer ends of which are hooked over the rail.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the car-door-supporting rail adapted to permit the forward edge of the door to pass to its place, of the switch having its one end at the upper edge standing out of contact with the door-supporting rail, while its inner end or portion is about in alignment with a plane touching the outside of the car-body, and the door shoes or bearings, of which a number travel upon the rails and their inclined portions, carrying the

forward edge of the door to its place, while a number travel upon the switches, carrying the rear edge of the door to its place, substantially as set forth.

5 2. The combination, with the car door rails having their forward ends inclined or deflected toward the forward edge of the doorway or opening, of the switches, each having a portion of its surface disposed about in alignment
10 with a plane touching the outside of the car-body and about opposite the rear door-jamb, while its outer end is provided in its upper edge with a notch arranged close to the rail, and the door shoes or bearings, of which two
15 travel upon the rails and their inclined portions carrying the forward edge of the door to its place, while the other two travel upon and are deflected inwardly, carrying the rear edge of the door to its place, substantially as
20 set forth.

3. The combination, with the car-door-supporting rails having inclined portions extending to the forward or front edge of the doorway or jamb, of the switches, each having one
25 end disposed about opposite the rear door-jamb and its outer end at the upper edge standing close to and parallel with the rails, while the lower portion of said end is tapered or converged toward and joins the rails, and
30 the door bearings or shoes, each of which is provided with two spaced-apart arms or prongs, the inner prongs or arms of two of which are shorter than the outer prongs, while the inner prongs or arms of the other two
35 bearings or shoes are longer than the outer ones, said switches and rails having each a notch or recess in its upper edge, substantially as set forth.

4. The combination, with the car-door-supporting rails and means adapted to deflect or
40 carry the forward or front end of the door inwardly to its closed position, of the switches applied about opposite the rear door-jamb and provided at their outer ends in the upper edges with notches, and the door shoes or bear-
45 ings, two of which comprise outer pivoted or swiveled portions having spaced-apart arms or prongs, said switches being adapted to permit the front or forward shoes or bearings to pass them and to deflect the rear shoes or bear-
50 ings toward the doorway or opening, while the door-rails are provided with notches arranged contiguously to and just forward of the said switches, substantially as set forth.

5. The combination, with the car-door-sup-
55 porting rails and means adapted to deflect or carry the forward or front end of the door inwardly to its closed position, of the switches applied about opposite the rear door-jamb and the door shoes or bearings, two of which
60 comprise outer pivoted or swiveled portions having spaced-apart arms or prongs, of which the inner ones are longer than the outer ones, while the inner arms or prongs of the other shoes or bearings are shorter than the outer
65 ones, said switches and rails having each a notch or recess in its upper edge, substantially as set forth.

In witness whereof I have hereunto set my hand, at Renovo, State of Pennsylvania, this 70
15th day of August, 1887.

THOMAS G. RUFFHEAD.

Witnesses:

GEO. B. COLESTOCK,
JOHN B. SMYTH.