

(No Model.)

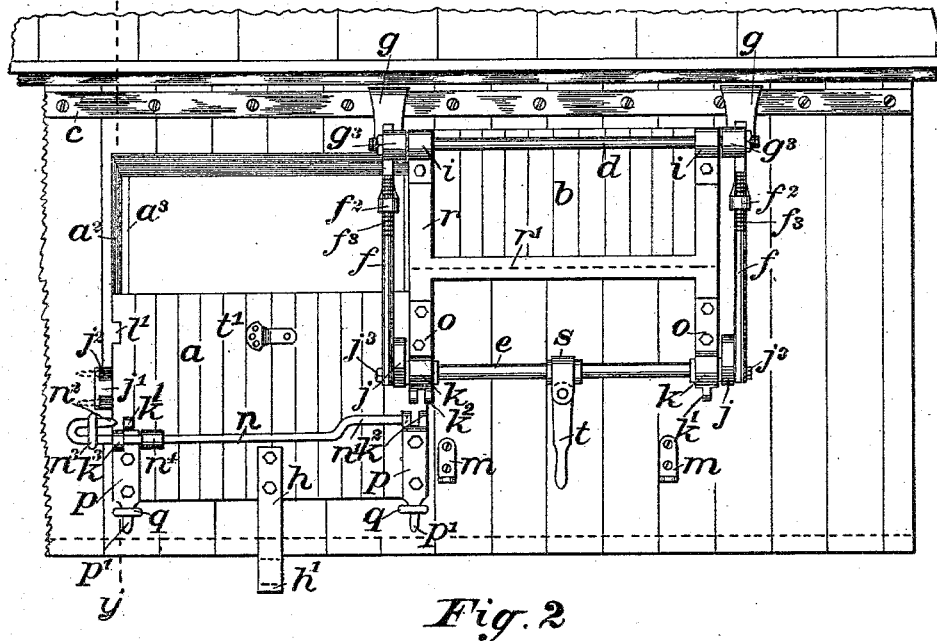
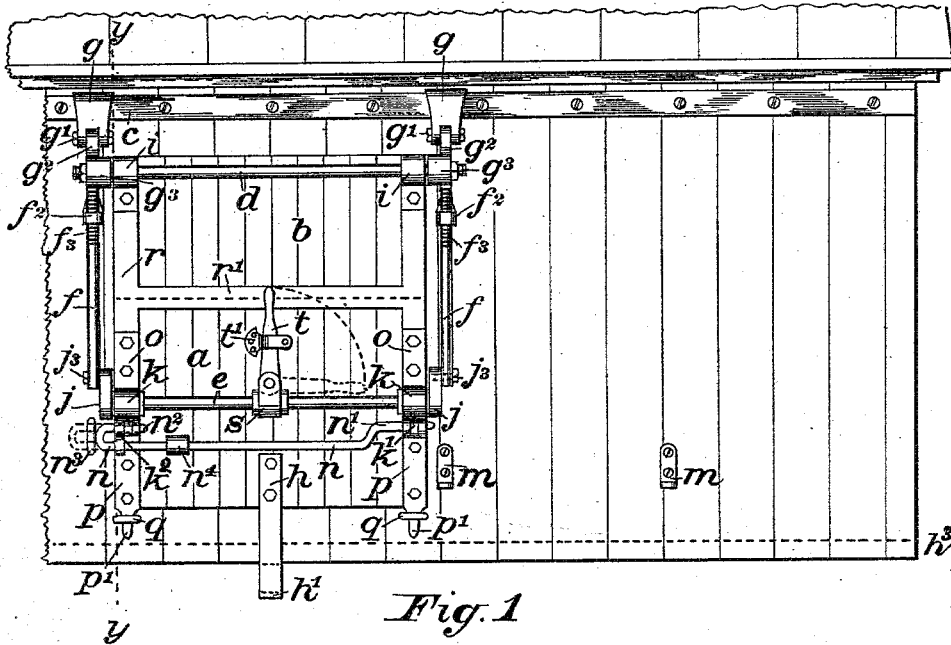
2 Sheets—Sheet 1.

A. W. ZIMMERMAN.

CAR DOOR.

No. 303,100.

Patented Aug. 5, 1884.



Witnesses;
J. D. Clark
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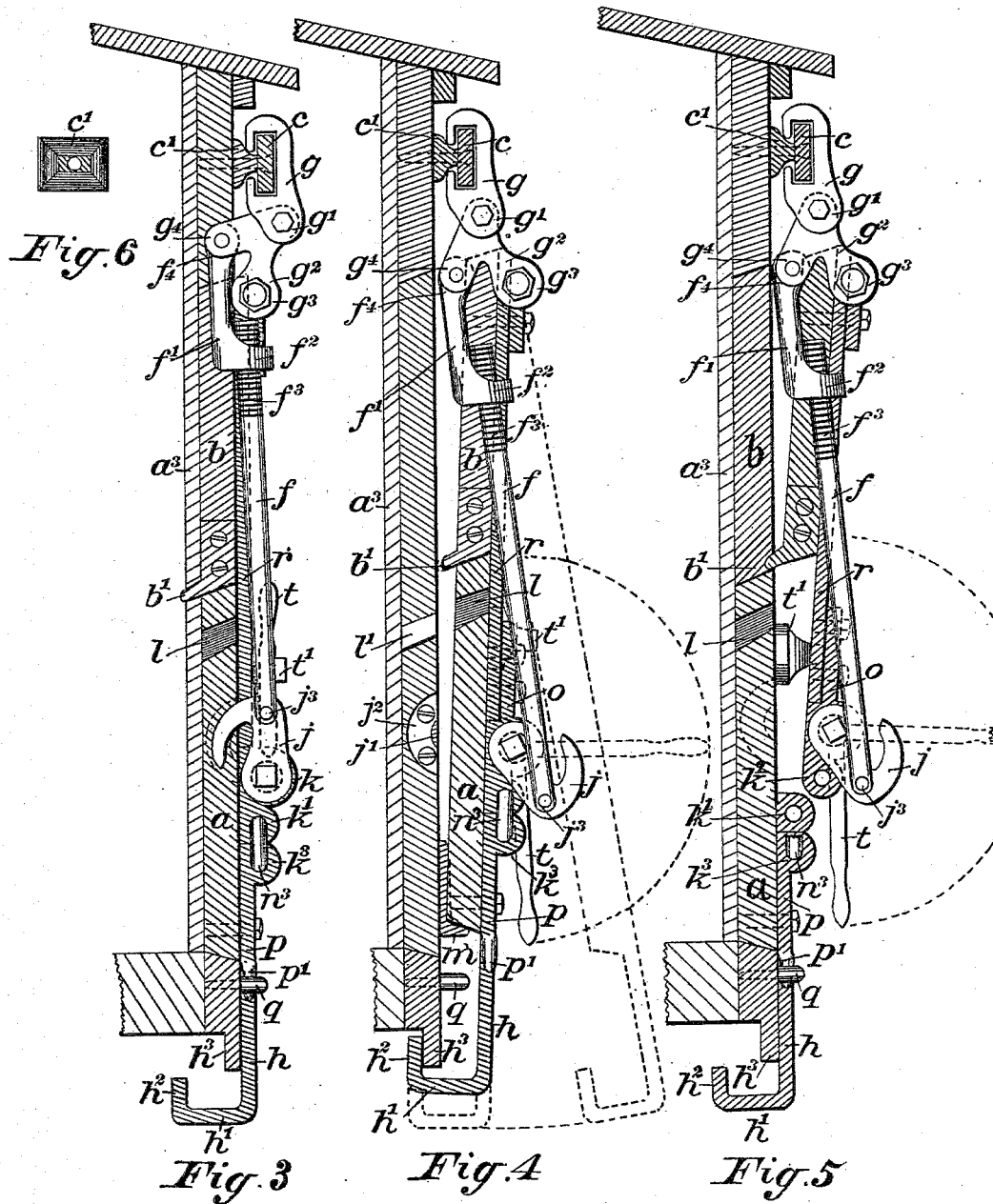
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UNITED STATES PATENT OFFICE.

ARNOLD W. ZIMMERMAN, OF CHICAGO, ILLINOIS.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 303,100, dated August 5, 1884.

Application filed March 7, 1884. (No model.)

To all whom it may concern:

Beit known that I, ARNOLD W. ZIMMERMAN, 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, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a side elevation of a car with the door in place and locked. Fig. 2 shows the same parts as Fig. 1, with only the lower door closed and the upper one opened. Fig. 3 shows an end elevation of the door on a plane, Y Y, which cuts the car only on the joint of the door, and shows the lock and door in place, as shown in Fig. 1. Fig. 4 is a cross-section of the car on the plane Y Y, which cuts the car only and shows the entire door open and all its parts in their relative position in end elevation. Fig. 5 shows a cross-section of the car on the plane Y Y, with the door and its parts in end elevation, of which the lower part is closed and the upper one open, as shown in Fig. 2. Fig. 6 is a plan view of one of the studs *c'*.

Like letters of reference indicate like parts.

The object of my invention is to improve the construction patented to me July 10, 1883, and numbered 281,170; and it consists in the better and simpler fastening devices for the lower door, and mechanism to hold it in its place, so that it cannot be removed when the upper part of the door is open, and in an attachment whereby the lower part of the door may be prevented from swinging outward, or may be made to do so, all as hereinafter more fully specified.

In the drawings, *a* represents the lower and *b* the upper parts of my door, (shown attached to my improved car-door lock, which is the subject of another application pending, filed of even date with this, No. 123,320.)

I make no claims in this application to the car-door lock mechanism herein shown, as it forms the subject of claims in said other application, and it and said lock are both improvements on Patents Nos. 281,170 and 282,589, granted July 10 and August 7, respectively.

a' is the frame of the door, of which the sides are shown slightly beveled.

a'' are inside stops overlapping the joints of

the door and frame, and *l'* are blocks attached to the sides of the door-frame, cut on such an upward bevel as to allow the slot or notch *l*, cut in the vertical edges of the door *a* to pass over it freely.

b' is a spur upon the upper door projecting inward beyond the inside of the door. Said spur rests upon the lower door and holds it from being lifted out when the upper door is open. The lower edge of the door *a* is held in its place by the eyebolt *q*, through which passes the pin *p'*, which forms a part of the wing *p* of a hinge, of which the straps *r* form the other part, said parts *p* being bolted to the lower and *r* to the upper part of the door *a b*. The part *a* may also be held in its place by a cleat fastened to the side of the car, and projecting up so as to cover the lower end of the door *a*, or upward-pointing hooks or other like devices may be used. The upper part of the door *a* is held in place by the beveled or upwardly and outwardly inclined and parallel-sided blocks *l'*, which fit into corresponding notches, *l*, cut out of the edges of said door. Said blocks and notches, it will be observed, prevent the door from moving in either an inward or outward direction, unless the door is lifted upward at the same time, and then it can move outward only.

The upper edge of the lower door is beveled inward and downward from the outside, upon which the lower edge of the upper door fits. This construction prevents the lower part of the upper door from swinging outward, and the stops *a''* prevent it from going inward, as also do the straps *r*, which overlap the lower door, and also work to the best advantage with my improved door-lock. To the center of the lower door is bolted a hook, *h*, of which the horizontal part *h'* passes beyond the thickness of the edge *h''*, forming a part of the car, far enough to permit the door to swing out far enough so that when the point *h''* strikes against the inside of *h''*, as shown in Fig. 4, the door may slide freely past the side of the car. Said hook *h* prevents the lower end of the door from swinging out when released from the stops *q*, and thus discharging too large a part of the load from the car without control of such materials as would run out. The straps *r* overlap the door *a* until they meet the straps *p*, where they are formed into the male part

5 k' and female part k^2 of a hinge, which are united by the pintles $n' n^2$. Said pintles form the parts of a rod, n , of which one part is bent into the form of a hook, of which the part
 10 forming the rod n passes through a lug, k^3 , which holds the point n^2 of said hook, so that it may slide in and out of its place in the hinge. The end, n' , rests in the inside part of the hinge k^2 . On the rod n is also a knob,
 15 n^4 , fixed to the rod n , so placed that when the pintles $n^2 n'$ are withdrawn from the hinge it will strike against the side of the strap p and prevent the pin n' from coming out of its place. Said knob n^4 also serves as a handle
 20 by which to push the rod back and forth. When the parts r and p are separated the part of the rod n^2 slides into a staple, n^3 , and thus prevents the door from being lifted out of its place. The eyes i are placed near the
 25 upper corners of the door b , and through them passes a rod, d , which forms the pintle of a hinge, g^2 , in the lower end of the bell-crank or hook g^1 . The upper end of said hook forms a hinge-joint, g' , with the hook g , which slides
 30 upon the bar c . Said bar c is fastened under the eaves of the car by screws or bolts, countersunk, or flush with its outer face, and which is secured to posts c' , through which pass screws securing said parts to the car. The
 35 flat bar c is preferable to a round rod, as it can be stayed at any desired points by posts c' , which permit the hook g to slide freely, which cannot be done by a round rod, as it can only be supported at its ends, and is therefore weaker even with much heavier material.
 40 The parts $g^4 f^4$ form a hinge-joint with the parts $f' g^2$ and the lower end of f' is provided with a thread, into which screws the thread f^3 of the rod f , and the lower end of said rod
 45 is formed into an eye, which works upon the crank-pin j^3 in the hook j . By this construction the rod f is adjusted to its proper length. The hook j is fixed to the shaft e , and turns with it in the boxes k , which may form a part
 50 of the strap r , or be part of a separate piece, o , which is riveted to the straps r , and has upon its lower end the parts $k' k^2$.

Upon the center of the rod e is fixed a lever, t , which is hinged near the shaft e , so that it
 55 may move freely in a plane passing through it and the axis of the shaft e . The strap r may be united by a strap, r' , which covers the joint between the two doors, or the strap r' may be a separate piece attached to the upper door to
 60 prevent water from entering at the joint. To the door a is attached a hook, t' , under which the lever t passes when the doors are closed, and where it may be secured by a lock, or otherwise fastened. To the side of the car are
 65 attached one or more step-plates, m , upon which the lower section of the door rests when open, and which prevent its being lowered out of its place, but keeps it ready to be shoved into its place to close the car. The hook j works into an annular socket, j^2 , upon a pin, j' , which together form one piece, which is set

into the door-frame; but the hook j may really be dispensed with and only the pin j^3 used, this part thus forming merely a crank from which the hooks g^2 are operated, and then the
 70 door is held in its place only by the dovetail fastenings $l' l'$ at its upper end.

To open the door, bring the lever t out from under the hook t' , and down to the position shown in Fig. 2, pull the lower end of the door
 75 outward, so that the parts $k^2 k^3$ come into contact, then slide it back from the opening.

To spring the entire door outward from the cars, as shown in the dotted outlines of Fig. 4, bring the lever t back toward its original
 80 position. This motion will pass k^2 below k^3 .

To open the upper door only, first shove the rod n into n^3 . This will separate the hinges. Then operate the lever t , as before, and shove the door b back. The part f' projects into the
 85 wall of the car when the door is closed, as shown in Fig. 3, and for that purpose a place is dug out for it.

What I claim is—

1. The door a , provided with fastening mechanism at its lower end, and notches l near its upper end, and blocks l' , formed with edges cut on a bevel, substantially as specified.

2. In combination with the door a , provided with fastening mechanism for its lower end, and notches l , and blocks l' near its upper end, the door b , and mechanism to operate said doors, substantially as specified.

3. In combination with the door a , provided with fastening devices for its lower and upper end and hook h , the guide h^3 , and mechanism for lifting and sliding the door, substantially as specified.

4. The door a , provided with fastening devices for its lower and upper end, in combination with the door b , provided with spur b' , and mechanism whereby one or both of said doors may be lifted and slide from and to their places, substantially as specified.

5. In combination with the lifting, sliding, and separable doors $a b$, the separable joints uniting both doors by pins $n' n^2$, substantially as specified.

6. A car-door fastener consisting of mechanism to hold the lower end in its place, and inclined blocks l' , attached to the sides of the frame, and fitting into corresponding notches cut in the sides of the door, near its upper end, and rod n and staple n^3 , substantially as specified.

7. In a sliding car-door, mechanism to hold its lower end from pushing out, and upward and outward inclined blocks l' , attached to the frame of the door, and corresponding notches in the sides of the door, near its top, to fit over said blocks l' , in combination with mechanism to lift said door upward and outward, substantially as specified.

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Witnesses:

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