

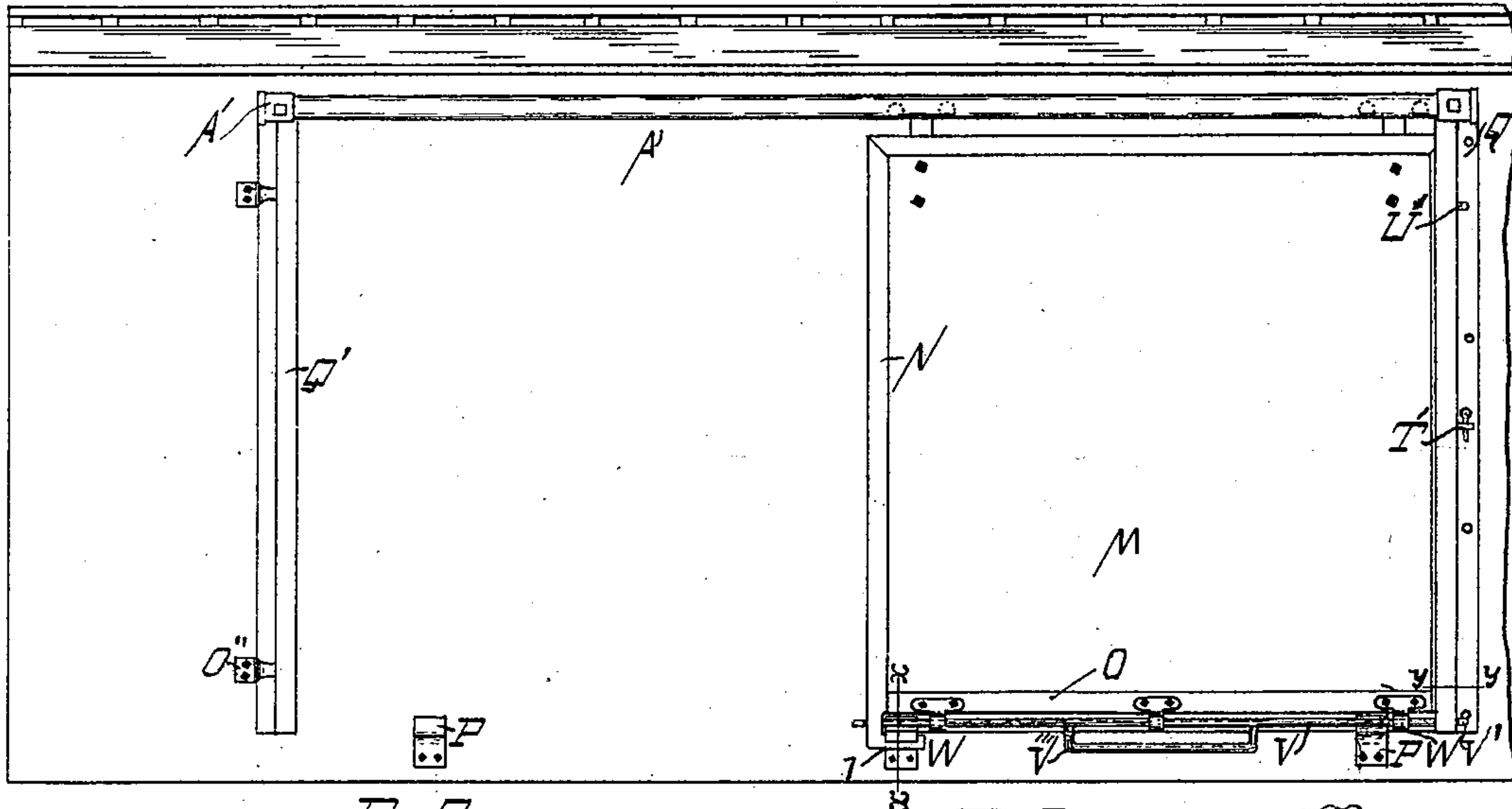
(No Model.)

A. G. BIERBACH.  
CAR DOOR.

No. 558,474.

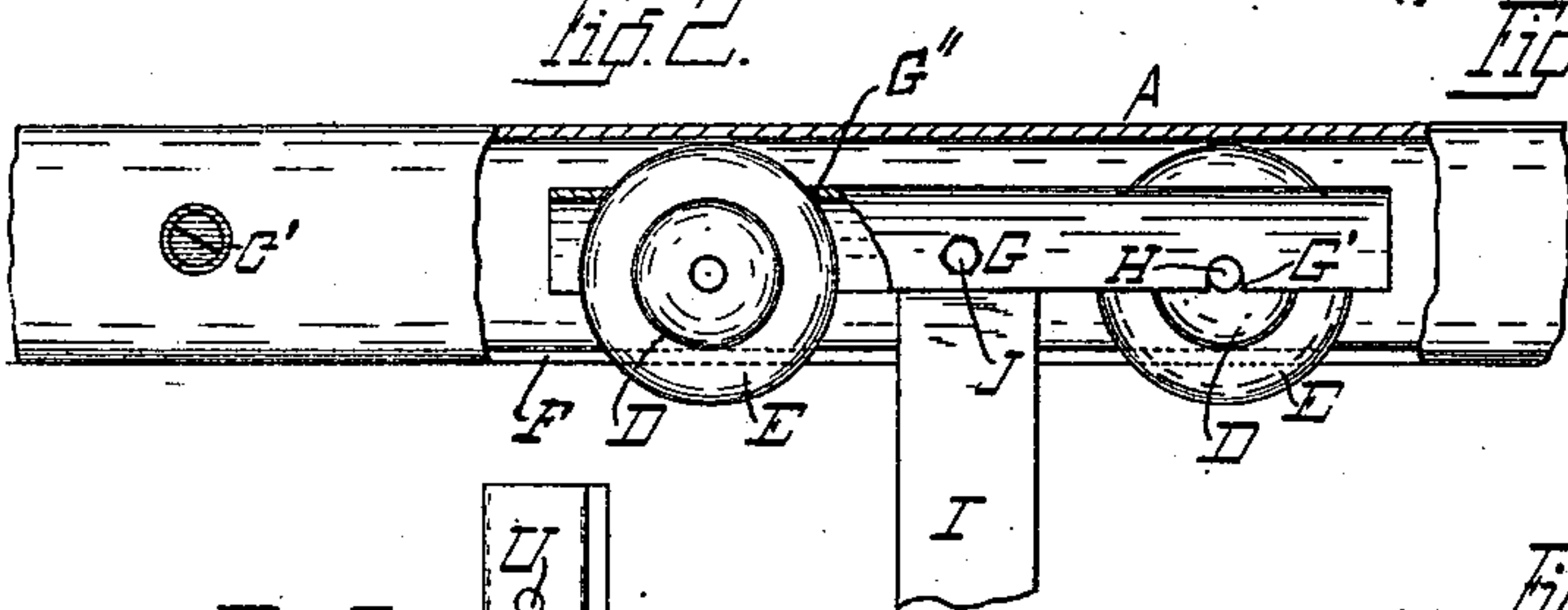
Patented Apr. 21, 1896.

*Fig. 1.*



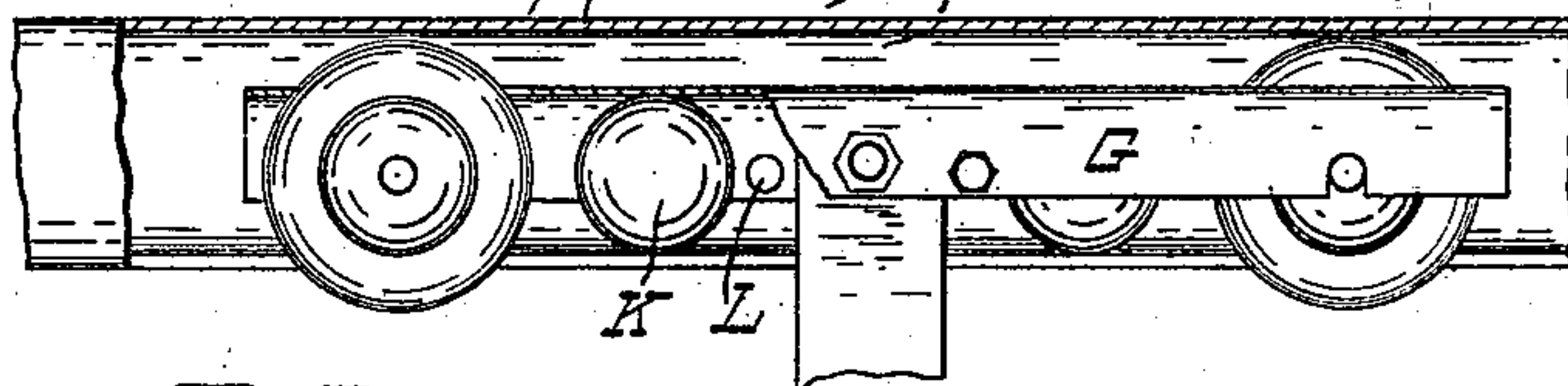
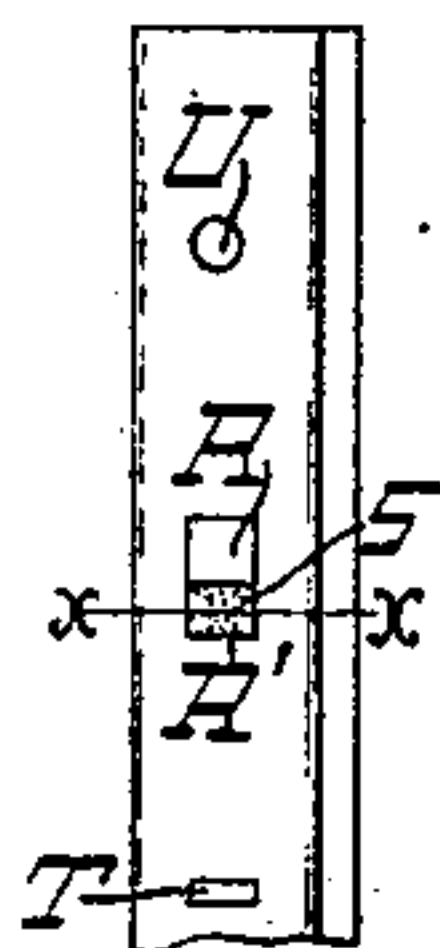
*Fig. 2.*

*Fig. 3.*



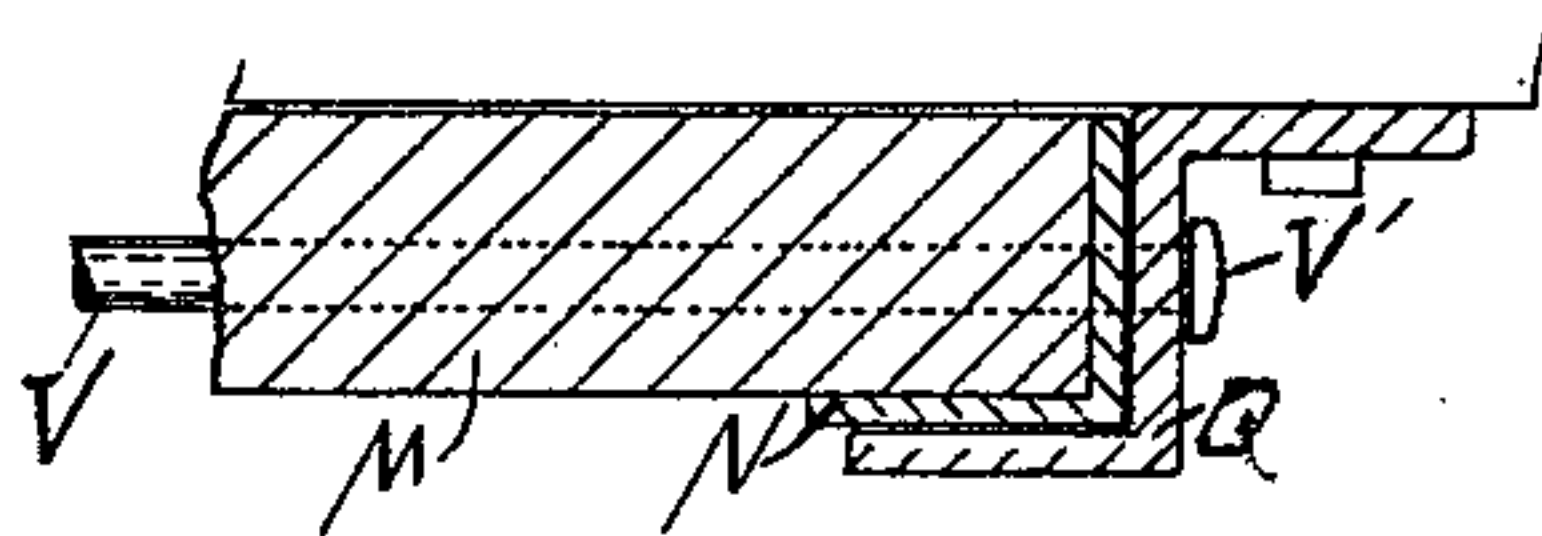
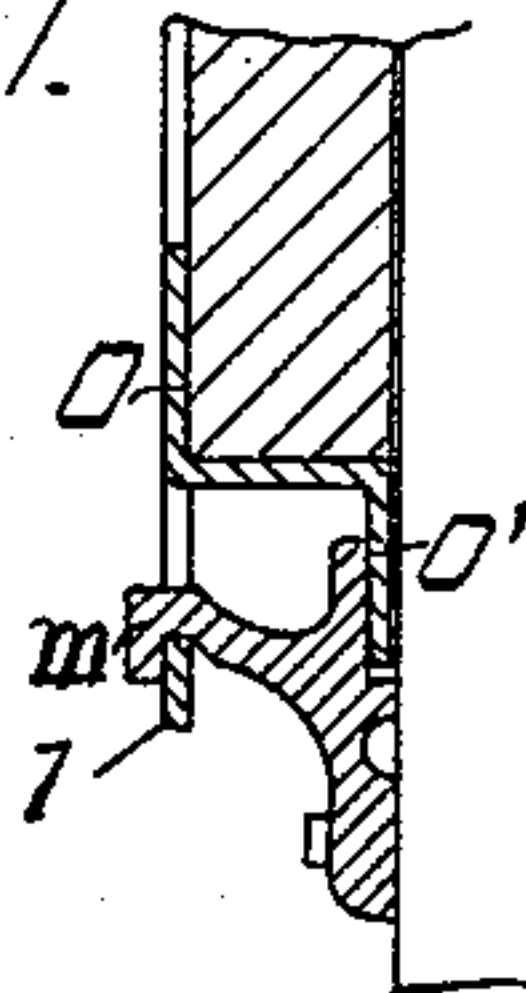
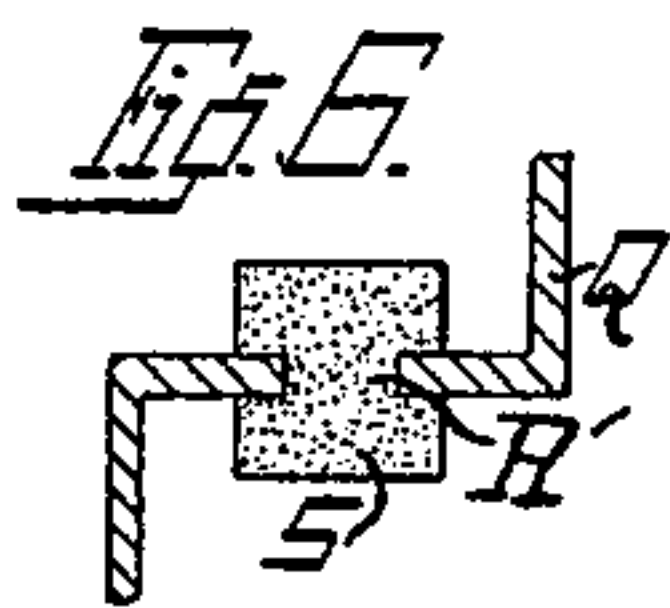
*Fig. 5.*

*Fig. 4.*



*Fig. 7.*

*Fig. 8.*



Witnesses:

Ferd. H. Otto

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# UNITED STATES PATENT OFFICE.

ALBERT G. BIERBACH, OF MILWAUKEE, WISCONSIN.

## CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 558,474, dated April 21, 1896.

Application filed August 26, 1895. Serial No. 560,536. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT G. BIERBACH, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Car-Doors, of which the following is a specification.

My invention relates to improvements in car-doors, and is designed especially for use on freight-cars. It is well known that these doors have heretofore been quickly destroyed, owing to the jerk and jar incident to the movement of the car, or, more especially, due to the sudden starts and stops, the cars being often brought into contact with great force.

The object of my invention is to provide a car-door which will be held rigidly to the car in either the open or closed position, and in order to accomplish this result it has been found necessary or expedient to remodel the construction of the door and the door-supporting track, hangers, and locking devices, as will be hereinafter fully set forth, in order to guard against working or twisting in any of the parts.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a car, showing my door in its closed position. Fig. 2 is a side view of the slotted tube or curved way in which the door-supporting trucks are located, with a portion of one side of the tube removed to show one of the trucks. Fig. 3 is a cross-section view of the tube, also showing the door-supporting truck located within. Fig. 4 is a side view of a portion of the tube with one side removed to show a modified form of the door-supporting truck. Fig. 5 is a view of the front edge of the door in elevation. Fig. 6 is a cross-section view drawn on the line X X of Fig. 5. Fig. 7 is a view of the holding bracket and flange for holding the rear lower corner of the door, drawn on the section-line X X of Fig. 1. Fig. 8 is a cross-section view drawn on the line Y Y of Fig. 1, showing the front edge of the door when engaged by the vertically-supported Z-bar on the side of the car.

Reference-letters are used consistently throughout the several views.

Owing to the nice adjustment of the parts hereinafter described, it becomes essential that the overhead track should be held rigidly to the car at all points, without sagging or

working. I have therefore dispensed with the brackets heretofore used for supporting the overhead tracks and have bolted the slotted tubular way A directly to the side of the car, the bolts B passing through the bolt-holes C in the inner side of the tube. To facilitate the insertion of the bolts, I have provided holes C' in the outer side of the tube, which are made large enough to permit the head of the bolt to pass through them and become engaged in the smaller holes C, as best shown in Fig. 3. The tube can thus be secured at very short intervals with little expense, and sagging is rendered impossible.

A' are steel collars adapted to strengthen the sides of the tube.

In the interior of the tube I have located a two-wheeled door-supporting truck, the wheels D being spherical, with annular flanges E, adapted to fit into the slot F in the tube.

G is a U-shaped bar provided with bearings G' in its edges, in which the axles H of the wheels are adapted to fit, the upper portion of the wheels being adapted to revolve within the channel of the bar G, with the flanges E projecting through slots G'' in its upper surface.

The hanger I, from which the door is suspended, is a flat plate projecting through the slot and connected with the center of the truck by means of a bolt J, inserted through the U-shaped bar G. If desired, the trucks may be lengthened to secure a more steady movement, the space between the wheels D being filled with the loose balls K, with pins L inserted through the bar G to keep the balls from binding against the hanger, as shown in Fig. 4.

To prevent the door M from warping, and also to protect the edges from being jammed or splintered, I have covered the edges at the top and sides with strips of angle-iron N, located to cover the edge and to lap over upon the front of the door, as shown in cross-section in Fig. 8. The bottom edge of the door is provided with a Z-bar Q, covering the edge and lapping on the front of the door, with the flange O' projecting downwardly and adapted to engage behind bracket-flanges P, attached to the side of the car, as shown in Figs. 1 and 7. The angle-irons N and Z-bar Q are thus seen to form a tire completely inclosing the door and holding it rigidly against any tendency to warp or jerk out of shape.



The movement of the door in either direction is limited by the vertically-disposed **Z**-bars Q and Q', the bar Q being located adjacent to the right-hand side of the doorway 5 and the bar Q' at the left-hand side and at a sufficient distance from the doorway to permit the door to open before coming in contact with it. The bars Q and Q' are each attached to the car in such a manner that the 10 free flange will project over the edge of the door when the latter is closed against it, as indicated in the cross-section view shown in Fig. 8, and the upper ends of these bars support the tube A. The bars Q and Q' are supported against the violent movement of the 15 door by the brackets O". Openings R are formed in the outward-projecting portions of these bars, with a contracted downward extension R'. Rubber blocks S, with contracted 20 sides, are pushed into these openings and crowded downward into the contracted portion R', as shown in cross-section in Fig. 5, the rubber being thus held securely in place to form a cushion or buffer against which the 25 door strikes on engagement with the bar. The bar Q is also provided with the openings T and U, through which the padlock-staple T' and pin U', carried by the front edge of the door, are adapted to project, the pin U' being 30 made to closely fit into its respective opening U and to prevent the so-called "pounding" of the door—that is, the vertical jar incident to the rapid and continued movement of the car.

35 V is a rod supported in bearing-brackets W from the under side of the door. The ends of the rod project beyond the edges of the door and are provided with hooks V', adapted to engage in the horizontally-elongated openings 40 V'' in the lower ends of the bars Q and Q'. The rod V is provided with a handle V''', by which the door is opened and closed, the hooks V' being held in a horizontal position when moving the door and turned vertically to en- 45 gage the sides of one of the openings V' when the door is left in either its open or closed position. When the door is closed, the rear lower corner is held by the L-shaped bracket l, attached to the corner of the door and adapted 50 to engage underneath the flange m, attached to the door-sill, thus cooperating with the pin U' to prevent pounding.

It will be noted that while it is possible to use the door, with its attachments, as herein 55 described, in connection with any form of overhead supporting-track and trucks, yet it is highly expedient, owing to the nice adjustment of the door attachments, that the truck and tube herein described should be used in 60 combination therewith, as open tracks will accumulate snow and ice, which will disturb the alinement of the parts, and if the track is permitted to sag at any point the same result will follow. The peculiar style of truck 65 used is also important, in that no lateral movement of the wheels within the tube is possible.

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

1. A car-door consisting in the combination 70 with the side of the car, of the slotted tubular track provided with the holes C and C' whereby the tube may be bolted to the side of the car, the door provided with an inclosing iron tire adapted to prevent the same from warp- 75 ing, and supported by hangers from a truck within said tube, one or more vertically-disposed **Z**-bars located in the path of said door and adapted to support the ends of said tube, together with suitable locking devices adapt- 80 ed to hold said door in engagement with said **Z**-bars, substantially as described.
2. A car-door, consisting in the combination with the side of the car, of the door and its supporting slotted tubular track, the **Z**-bars 85 vertically disposed in the path of said door and supporting the ends of said track, the pin located on the front edge of said door and adapted to project through an opening in the forward **Z**-bars, the L-shaped flange located 90 at the rear lower corner of the door, and the bracket attached to the side of the car and adapted to be engaged by said flange, together with suitable locking devices adapted to hold 95 said door in engagement with said **Z**-bar and bracket, substantially as described.
3. A car-door, consisting in the combination with the car, of the door and its locking de- 100 vices, the slotted tubular track, the trucks located therein, and having the flanged wheels D, connected by the U-bars and loose balls or rollers between said flanged wheels, to- 105 gether with the hangers connected with the U-bars of the trucks and adapted to support said door, substantially as described.
4. A car-door, consisting in the combination with the car, of the sliding door, the **Z**-bars 110 vertically disposed on the sides of the car and adapted to limit the movement of said door, the rubber buffers inserted and held in open- ings through said **Z**-bars and adapted to limit the movement of said door, together with the locking devices adapted to hold said door in 115 engagement with the buffers, substantially as described.
5. A car-door consisting in the combination with the car, of the sliding door, the **Z**-bars 120 vertically disposed on the sides of the car and adapted to limit the movement of said door, the rod supported in bracket-bearings from the lower edge of said door, the hooks located 125 on the ends of said rod and adapted to project through horizontally-elongated openings in said **Z**-bars, and the overhead track supported by the upper ends of said **Z**-bars, substan- tially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ALBERT G. BIERBACH.

Witnesses:

LEVERE H. C. WHEELER,  
E. J. PATTERSON.