No. 836,830. PATENTED NOV. 27, 1906.

R. V. SAGE.

CAR DOOR OPERATING DEVICE.

APPLICATION FILED AUG. 12, 1904.

2 SHEETS—SHEET 1.

Fig. 1

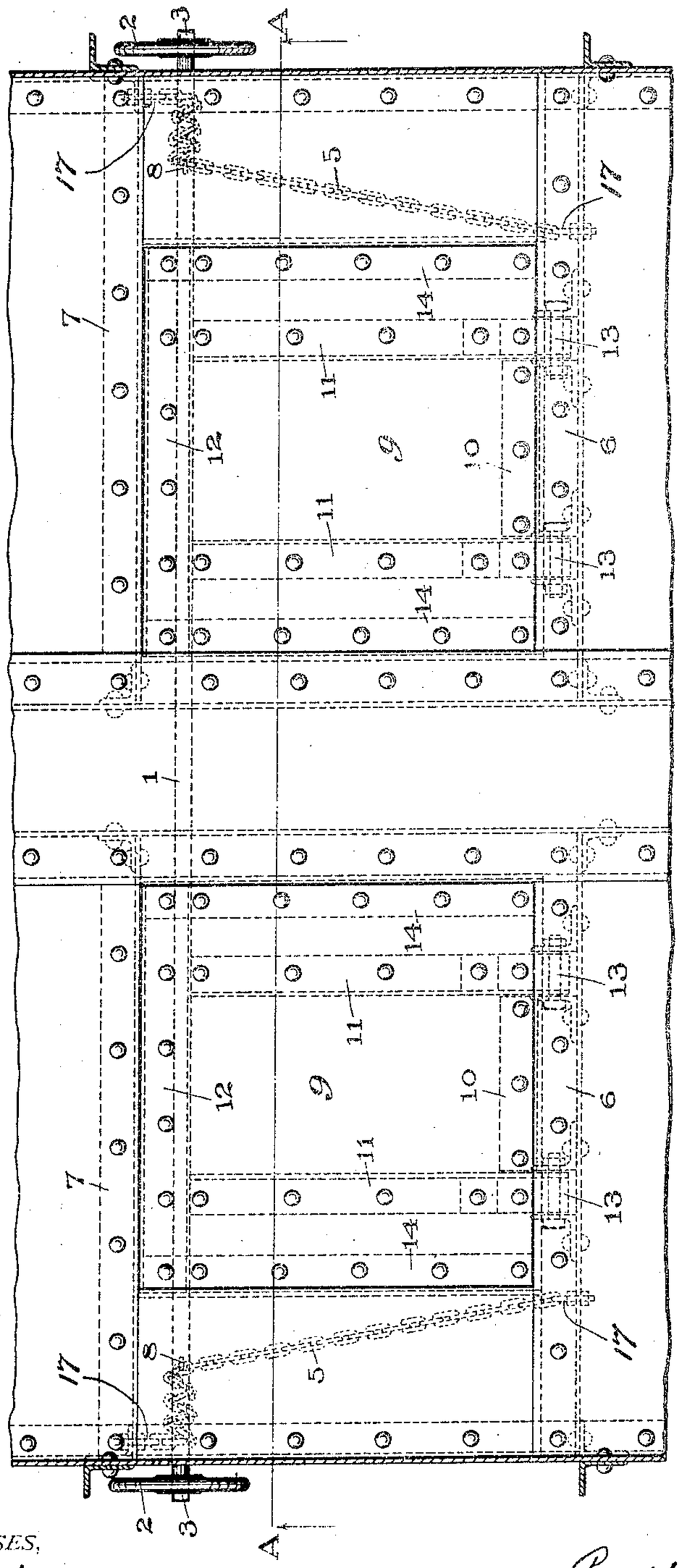
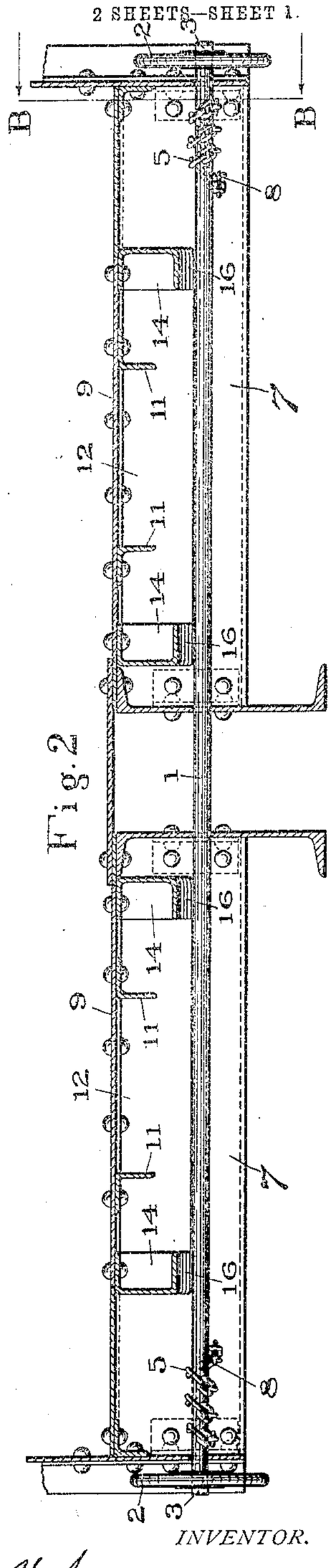


Fig. 2



WITNESSES,

J. R. Wemlinger

Stone Edelen.

INVENTOR.

Ralph V. Sage

by Geo. E. Hackray

his ATTORNEY.

No. 836,830. PATENTED NOV. 27, 1906.

R. V. SAGE.

CAR DOOR OPERATING DEVICE.

APPLICATION FILED AUG. 12, 1904.

2 SHEETS—SHEET 2.

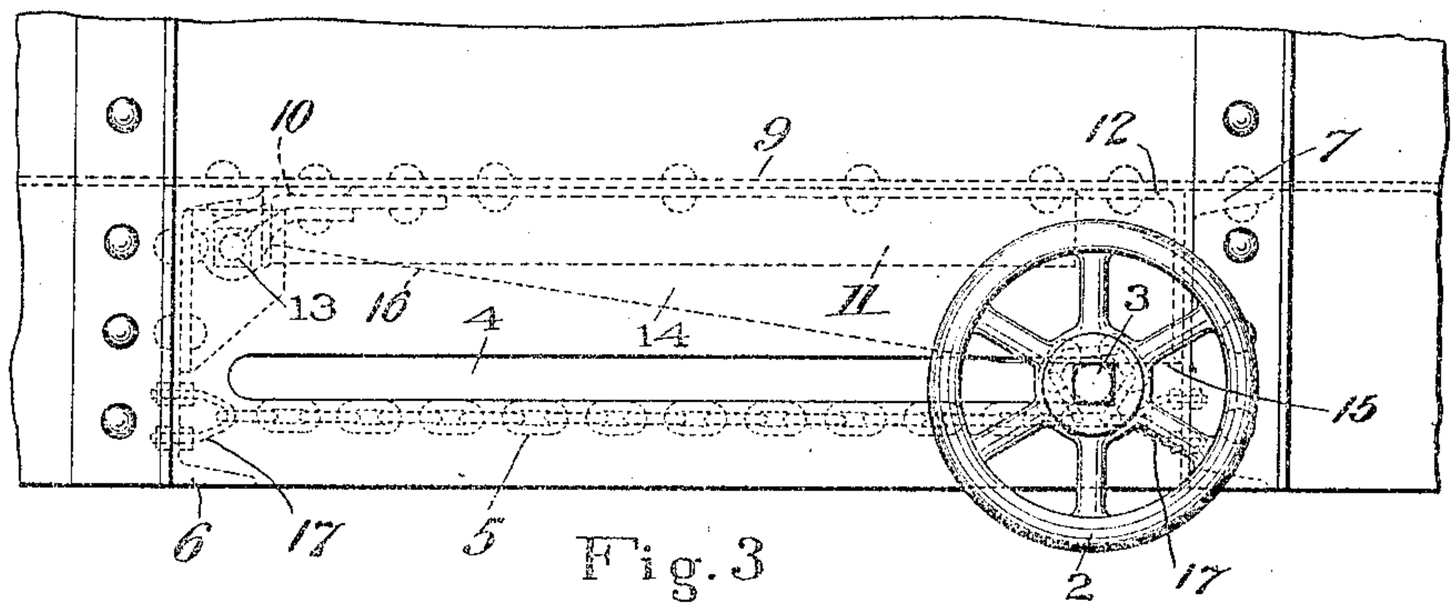


Fig. 3

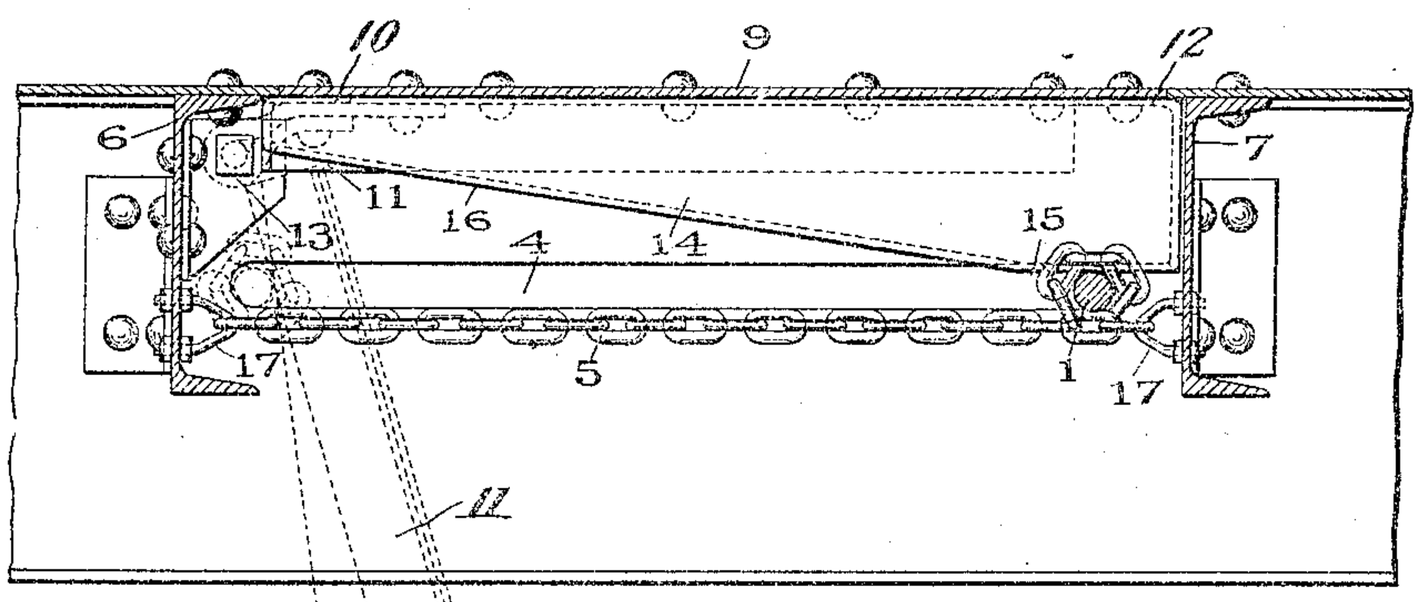
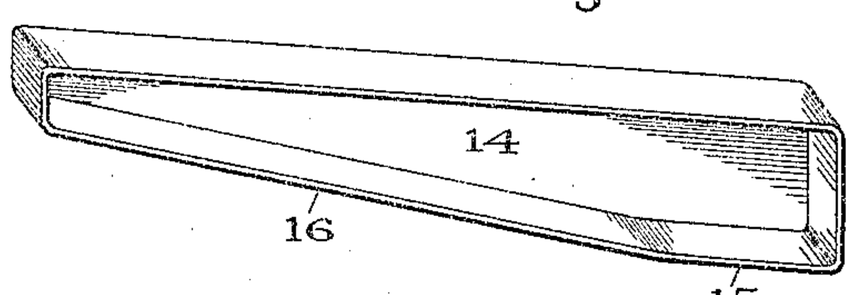


Fig. 4

Fig. 5



WITNESSES,

J. R. Wemlinger

Stone & Edelen

INVENTOR.

Ralph V. Sage

by Geo. E. Thackray

his ATTORNEY.

UNITED STATES PATENT OFFICE.

RALPH V. SAGE, OF WESTMONT, PENNSYLVANIA.

CAR-DOOR-OPERATING DEVICE.

No. 836,880. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed August 12, 1904. Serial No. 220,481.

To all whom it may concern:

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Car-Door-Operating Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists of a novel device for operating car-doors; and its object is to provide an apparatus of the class described which is simple, cheap, convenient of operation, and easily repaired.

Another object is to provide a car-door mechanism which can be operated positively from either side of the car with ease and rapidity.

A further object is to eliminate the use of chains to directly support the doors and the load which comes upon them because of the liability of rupture of said chains which may result from a sudden jolt of the car.

With this end in view I provide a car-door which is operated and held tightly and securely closed by means of the direct pressure of a wedge thereon bearing against a movable support.

Referring to the two sheets of drawings hereto annexed, which form part of this specification, Figure 1 is a plan view of a portion of the bottom of a car provided with my improved door mechanism. Fig. 2 is a vertical sectional elevation on line A A of Fig. 1. Fig. 3 is a side elevation of the portion of the car illustrated in Fig. 1. Fig. 4 is a vertical sectional elevation on line B B of Fig. 2; and Fig. 5 is a perspective view of the pressed-steel wedge or cam, which, in connection with the movable shaft-support, serves to operate the car-door.

For the sake of illustration I have shown my improvement in connection with a flat-bottom or gondola car; but the same can be used with a hopper-car or any other car with slight modifications. Hence I will confine my description as closely as possible to those parts which constitute the substance of my invention.

Referring to the various characters of reference upon the drawings, 1 represents the movable shaft or support whose ends extend slightly beyond the car sides and are fitted each with a hand-wheel 2 and a square end 3, so that a wrench can be applied when for some reason the shaft cannot be moved by means of the hand-wheel alone.

4 represents a slot provided in the car sides and the center sills for the travel of the shaft 1, and 5 denotes a chain or other flexible connection, the ends of which are attached to the cross-sills 6 and 7 and secured thereto by means of U-bolts 17. The chain 5 is also attached to the shaft 1 at a point 8 by means of a screw-eye or some other suitable device and is arranged to make at all times a certain number of turns or windings around said shaft irrespective of its position along the slot 4.

The car-door shown in connection with my improvement is of the simple pattern commonly used, made of a flat plate 9, stiffened and strengthened by angles 10, 11, and 12 and arranged to oscillate about hinges 13, which in this case are shown secured to the cross-sills 6. I provide the said car-door with pressed-steel cams or wedge-shaped pieces 14, the shape and configuration of which is clearly shown in Fig. 5 and which, in connection with the shaft 1, are the principal parts of my improved device. These pieces are secured to the door-plate and increase materially the stiffness thereof. They are easily and cheaply fabricated in a suitable press from a flat blank and being provided with wide flanges afford ample bearing and even distribution of the superincumbent pressure to the shaft. If preferred, a flat wedge-shaped piece of metal or some similar modification can be used instead of the shape illustrated in Fig. 5.

Assuming the doors in closed position, as illustrated in the drawings, and referring particularly to Figs. 3 and 4, the adjacent car-doors are opened by revolving the hand-wheel 2 counter-clockwise. By virtue of its connection with chain 5 the shaft 1 will begin to move to the left along the slots 4 while the said chain winds itself around the shaft. As the latter moves farther it passes the flat portion 15 of the wedge-piece 14, whereupon the door begins to open and drops until fully opened as the said shaft travels along the taper 16 of the said wedge-piece. The door is closed by the reversal of the above operation and locked by the motion of the shaft to its extreme right-hand position, when it bears against the flat portion 15 of the wedge-piece

14, in which position, the pressure being perpendicular to the slot 4, there is no strain on the chain.

It will be noted that in order to obviate any tendency of the chain-windings to overlap the said chain is stretched diagonally from its anchorage to the fixed point on the shaft. Furthermore, it should be noted that although my improvement is shown in connection with adjacent car-doors it can be used with a single door with very slight modifications.

While I have shown my improvements in considerable detail, I do not wish to be limited to the exact arrangement and the construction of the parts shown and described, but may use such substitutions, modifications, or equivalents thereof as are embraced within the scope of my invention and as pointed out in the claims.

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

1. A car-door-operating device comprising wedge-shaped pieces of open-box form secured to the car-door and a shaft or spindle mounted in the underframing in rolling contact with said underframing and said pieces, coöperating to open and close the car-door aforesaid.

2. A car-door-operating device comprising wedge-shaped pieces of open-box form secured to the car-door, a shaft or spindle mounted in the underframing in rolling contact with said underframing and said pieces and means whereby the said shaft or spindle can be moved along the said wedge-shaped pieces, to open or close the car-door aforesaid.

3. A car-door-operating device comprising wedge-shaped pieces secured to the car-door, a shaft or spindle supported on the underframing in rolling contact with said pieces, hand-wheels mounted on the ends of said shaft, flexible connections attached to said shaft whereby the same can be moved along the said wedge-shaped pieces, to open or close the car-door aforesaid.

4. A car-door-operating device comprising wedge-shaped pieces secured to the car-door, a shaft or spindle supported in slots in the underframing in rolling contact with said pieces, a hand-wheel mounted on each end of said shaft, chains attached to said shaft and wound thereon whereby the said shaft or spindle can be moved along the said wedge-shaped pieces by rotating said hand-wheel to open or close the car-door aforesaid.

5. In a car, a door carrying wedge-shaped pieces, a shaft supported on the underframing in rolling contact with said pieces, a hand-wheel mounted on said shaft, chains attached to said shaft and wound thereon whereby the same can be moved along the said wedge-shaped pieces by rotating said hand-wheel in order to open or close the car-door aforesaid.

6. In a car, a door provided with pressed-metal wedge-shaped pieces secured to the lower side thereof, cross-sills located on each side of said door, longitudinal slots in the car sides and the center sills between said cross-sills, a shaft movable within said slots in rolling contact with the said pressed-metal wedge-shaped pieces, hand-wheels mounted on the ends of said shaft, chains secured to said cross-sills attached to the shaft and wound thereon whereby the said shaft can be moved along the said wedge-shaped pieces by rotating either of said hand-wheels to open or close the door aforesaid.

7. A car-door-operating device comprising wedge-shaped pieces of open-box form with flat or parallel ends secured to the car-door, a shaft or spindle mounted in the underframing in rolling contact with said underframing and said pieces and means whereby the said shaft or spindle can be moved along the said wedge-shaped pieces and under said flat or parallel ends, to open, close and lock or support the car-door aforesaid.

8. In a car, a door provided with wedge-shaped stiffeners of open-box form having flat or parallel ends, a movable support in contact with said wedge-shaped pieces, and means for moving the said support along the said wedge-shaped pieces and under the said flat or parallel ends, whereby the said door is closed and locked.

9. In a car, a door provided with wedge-shaped stiffeners composed of a trapezoidal plate having integral side and end flanges.

10. In a car, a door provided with wedge-shaped stiffeners composed of a trapezoidal plate having integral side and end flanges and secured to the door-plate along its longitudinal edges, intermediate stiffening angles and hinges secured to the said door-plate.

11. In a car, adjacent doors provided with wedge-shaped stiffeners each composed of a trapezoidal plate having integral side and end flanges, a shaft supported on the underframing in rolling contact with said wedge-shaped pieces and arranged to travel along the tapered bottom portion thereof, whereby the said doors may be opened or closed simultaneously.

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

RALPH V. SAGE.

Witnesses:
J. R. WEMLINGER,
STONE EDELEN.