(No Model.)

# C. FREESE.

## CAR STEP.

No. 459,171. Patented Sept. 8, 1891.

Fig. 2.

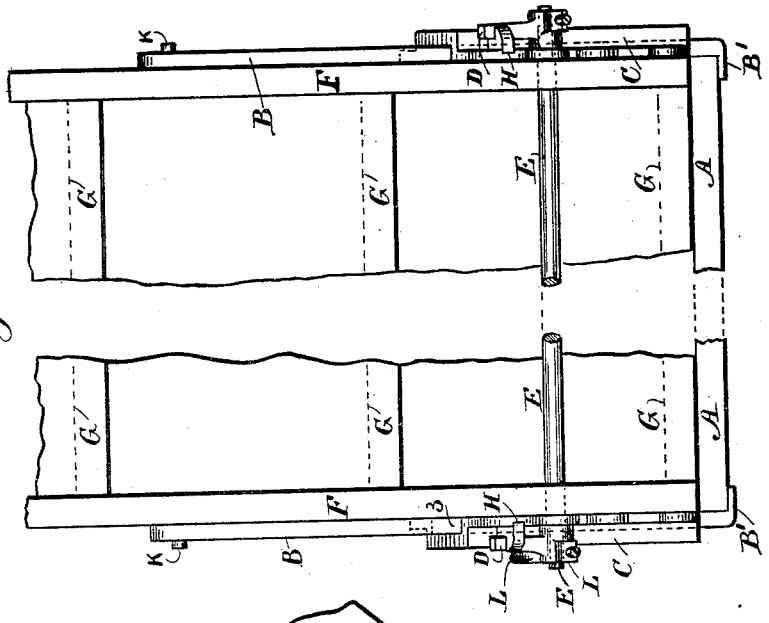
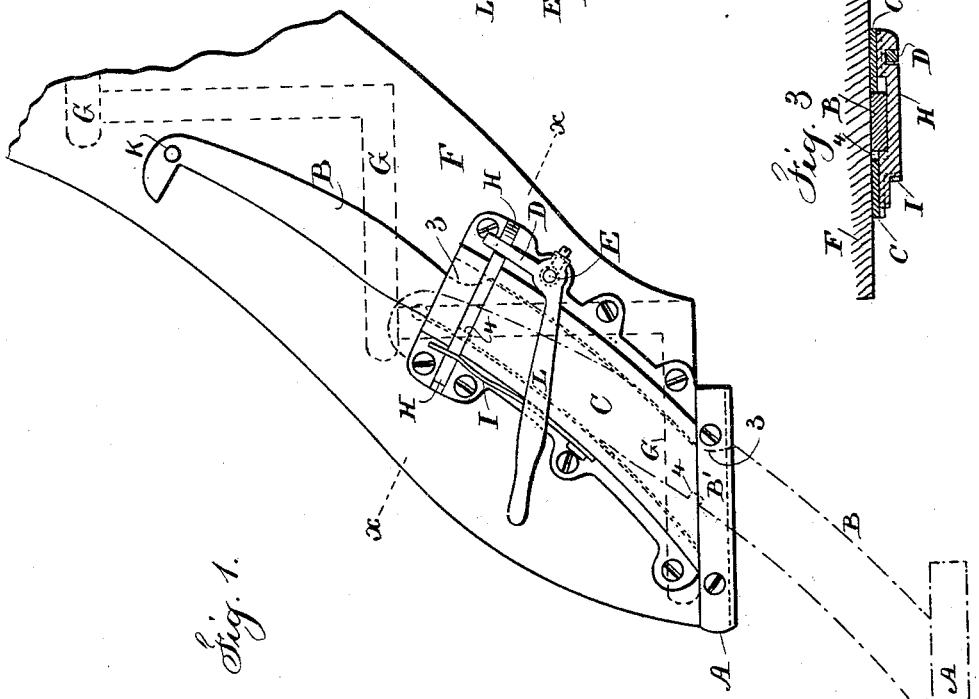



Fig. 3




Fig. 1.




Witnesses

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# UNITED STATES PATENT OFFICE.

CLAUS FREESE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE INTERNATIONAL CAR STEP COMPANY, OF JERSEY CITY, NEW JERSEY.

## CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 459,171, dated September 8, 1891.

Application filed January 8, 1891. Serial No. 377,102. (No model.)

*To all whom it may concern:*

Be it known that I, CLAUS FREESE, a subject of the Emperor of Germany, residing at St. Louis, in the State of Missouri, have invented an Improvement in Car-Steps, of which the following is a specification.

In Letters Patent No. 428,168, geanted to me May 20, 1891, a car-step is represented that is capable of being moved downwardly to divide the distance between the lower fixed step and the ground in an ordinary railway passenger-car, so as to render it easier for ladies and children or infirm persons to enter or leave the car. In this patent the step is mounted upon curved arms passing through stationary guides, and in the modification shown therein the step is moved up and down and held up when closed by hooks. In my present improvements I make use of bars for supporting the step, and such bars pass through guides or supports at the ends of the steps, and the step is raised or lowered bodily together with the side bars, and it is held in its elevated position by latches that are operated simultaneously by a cross-shaft, so that the step may descend by gravity when unlatched and assume the required position for use, or when raised up to the under side of the lowest fixed step said latches act automatically and hold the step in its elevated position.

In the drawings, Figure 1 is an elevation at one side of the steps. Fig. 2 is a rear elevation of the same with the central portion of the steps removed, and Fig. 3 is a section at the line *x x* of Fig. 1.

The ordinary steps are represented at G as supported by the side pieces F, and my movable step A is below the bottom fixed step G, and at the ends of the movable step A are the bearing-pieces B′ at the lower ends of the slide-bars B, which slide-bars and bearing-pieces are formed in one or permanently connected together, and there are stationary guides C fastened upon the outer surfaces of the side pieces F, and through these the slide-bars B pass. The general direction of the slide-bars B is upward and backward, and the stationary guides C correspond to the same, so that when the step A is lowered it is also projected forward beyond the lower stationary step in consequence of the bars B occupying inclined positions, and when the step A is raised it is held in its elevated position by latches, and by the withdrawal of these latches the slide-bars and step are free to descend.

I do not limit myself to the shape of the slide-bars shown, as they might be straight; but I prefer to make the lower portions of the slide-bars curved, as seen in Fig. 1, and to reduce the upper ends of the slide-bars in width and to provide stops at K to rest upon the upper ends of the stationary guides C when the movable step is lowered, and in consequence of the upper portions of the slide-bars B being narrower than the lower portions there is a freedom of movement of the bars in the guides, and the step requires to be drawn forward when it is first lifted, so as to move the curved portions 3 of bars B away from the lower ends of the guide-slides C, and then the step is moved upwardly and backwardly in the line of the curve or incline of the stationary guides C, and the bars B are notched at 4 for the reception of the sustaining-latches H.

It is important that the latches H be disconnected simultaneously, in order that the movable step may be free to descend at both ends at once. To effect this object the rock-shaft E is provided across the back of the stationary steps from one stationary guide C to the other, and this rock-shaft is provided with lever-arms D to act upon the respective latches H to force them back against the springs I, and when the power acting upon the rock-shaft E is removed these springs I cause the latches to hold the bars B when the step is elevated.

The rock-shaft E may be moved by any suitable device. I have represented a handle L at one side of the step upon the rock-shaft.

I have represented the guides C as fastened upon the side pieces F of the steps; but in many cars the steps are made without these side pieces, and the horizontal treads are supported by zigzag iron bars. With this character of step it is preferable to extend the stationary guides C from one step to the other and to provide them with flanges

by which they may be bolted upon the end portions of the steps; but I do not limit myself in this particular, as such stationary guides C may be connected to the steps in any desired manner.

I claim as my invention—

1. The combination, with the stationary car-steps, of the movable step, the slide-bars connected to the ends of the step and inclined backwardly and upwardly, the stationary guides, through which the slide-bars pass, latches for holding up the slide-bars and step, and a rock-shaft for simultaneously disconnecting both the latches to allow the slide-bars and step to descend, substantially as set forth.

2. The combination, with the stationary car-steps, of the movable step, the slide-bars fastened to the ends of the step and inclined backwardly and upwardly, the stationary guides, through which the slide-bars pass, latches for holding up the slide-bars and step, a cross-shaft and lever-arms for acting upon the latches, and a handle for moving the cross-shaft and latches, substantially as set forth.

Signed by me this 19th day of September, A. D. 1890.

CLAUS FREESE.

Witnesses:
SOLON N. SAPP,
J. H. BUCHROEDER.