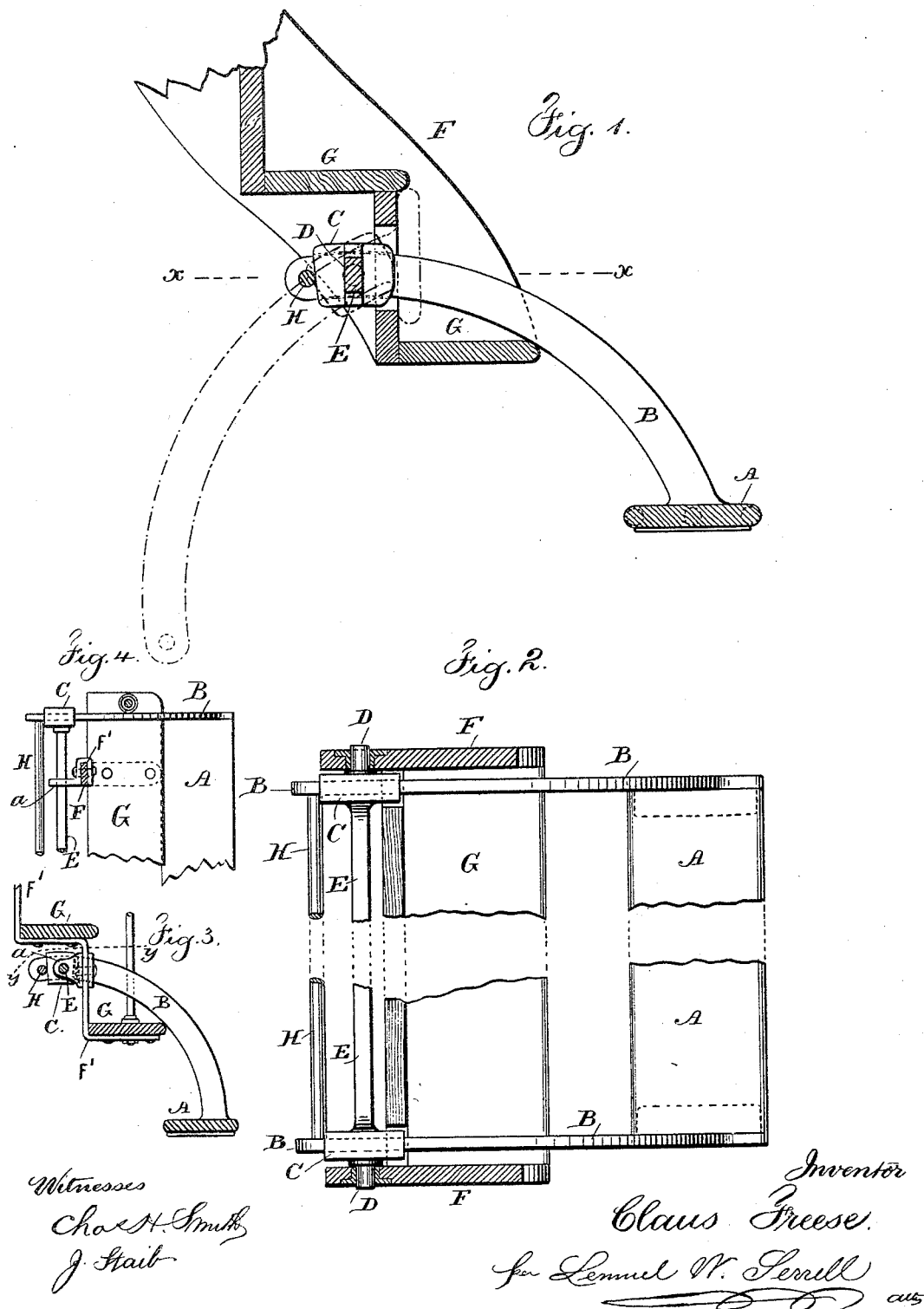


(No Model.)

C. FREESE.
CAR STEP.

No. 459,172.

Patented Sept. 8, 1891.



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. 459,172, dated September 8, 1891.

Application filed January 8, 1891. Serial No. 377,103. (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, granted to me May 20, 1890, a movable step is represented, the same being supported by curved side arms or bars which pass through stationary guides secured to the rigid steps. In this form of movable step there is a risk of the side arms becoming wedged or bound within the stationary guides, especially as the strain from the weight of the passenger rests upon the guides themselves and there is considerable leverage of such weight upon the guides.

My present invention is made with reference to insuring the freedom of movement as the step is raised or lowered and pushed in or pulled out, and these objects are accomplished by the peculiarities of construction and combination of devices hereinafter set and claimed.

In the drawings, Figure 1 is a vertical section showing the lower portion of the stationary steps and the movable step drawn out into position for use. Fig. 2 is a sectional plan at the line *x x*. Fig. 3 is a view similar to Fig. 1, showing my improvement applied to car-steps supported by metal bars and rods; and Fig. 4 is a sectional plan at the line *y y* of Fig. 3.

The car-steps are made in any usual or desired manner. I have represented the steps or treads *G* as between the side pieces *F*, and the movable step or platform *A* is securely connected at its ends to the bars *B* by suitable T-shaped ends with flanges, upon which the step rests, or any other connection of the required strength may be used. These side bars *B* may be either straight or curved. I prefer to form them curved, as represented, and they pass through guides *C*, and the back ends of such side bars *B* are permanently connected together, preferably by a cross-rod *H*. The guides *C* are pivoted upon the stationary car-steps, preferably, by connecting the guides *C* by a cross-bar *E* and forming pivots *D* upon the ends of such cross-bar, so that the cross-bar and the guides can swing or oscillate upon

such pivots *D*. This allows for the step *A* being raised or lowered to any desired extent, and it allows the side bars *B* to rest upon the bottom stationary step *G* at or near the edge thereof, so that the side bars are supported at a distance from the pivots *D* when the step is in use; hence there is but little strain upon said pivots *D*; and the guides *C* are to be of sufficient length to allow the bars *B* to move parallel and at right angles, or nearly so, to the cross-bar *E* without the risk of becoming wedged or bound by carelessness in drawing out or closing up the movable step. Where there is a riser between one step *G* and the other, it is to be mortised for the passage of the side bars *B*, and when the step is drawn down into position for use, as shown by full lines in Fig. 1, it projects in the proper position beyond the lower stationary step, and the length of the side bars *B* should be such as to equally divide, or nearly so, the distance between the lower stationary step *G* and the ground, so as to facilitate leaving or entering the car, especially for ladies and children where there is not an elevated platform at the station. When the movable step *A* is raised and pushed backwardly, the step and the side bars assume the positions shown by dotted lines in Fig. 1, the step *A* setting closely against the riser between the bottom and the second step of the stationary car-steps.

In some car-steps the horizontal treads are supported upon metal bars bent in a zigzag shape and passing beneath such steps at a short distance from the end. With this character of car-steps the bearings will not be at the ends of the bar *E*, but will take the form of journals between the guides *C*, and they will be supported by eyes or bearings *a*, fastened upon the back of the vertical portions of the iron bars *F'* between the first step and the second, as shown in Figs. 3 and 4, and in other respects this improved movable car-step will remain unchanged.

I claim as my invention—

1. The combination, with the stationary car steps or platform, of the movable step *A*, the side bars *B*, connected therewith, and the pivoted guides *C*, through which the side bars *B* pass, substantially as set forth.

2. The combination, with the stationary car

steps or platform, of the movable step A, the side bars B, the guides C, through which the side bars pass, the cross-shaft for connecting the guides together, and the pivots upon
5 which the guides and cross-bar can swing or oscillate, substantially as set forth.

3. The combination, with the stationary car steps or platform, of the movable step A, the side bars B therewith connected, the cross-
10 rod connecting the back ends of the side bars,

the guides through which the side bars pass, the cross-shaft connecting the guides, and the pivots for the same, substantially as set forth.

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

CLAUS FREESE.

Witnesses:

SOLON N. SAPP,
J. H. BUCHROEDER.