H. ALBERT.

Extension-Steps for Railway-Cars.

No. 148,587. Patented March 17, 1874.

Fig. 1.

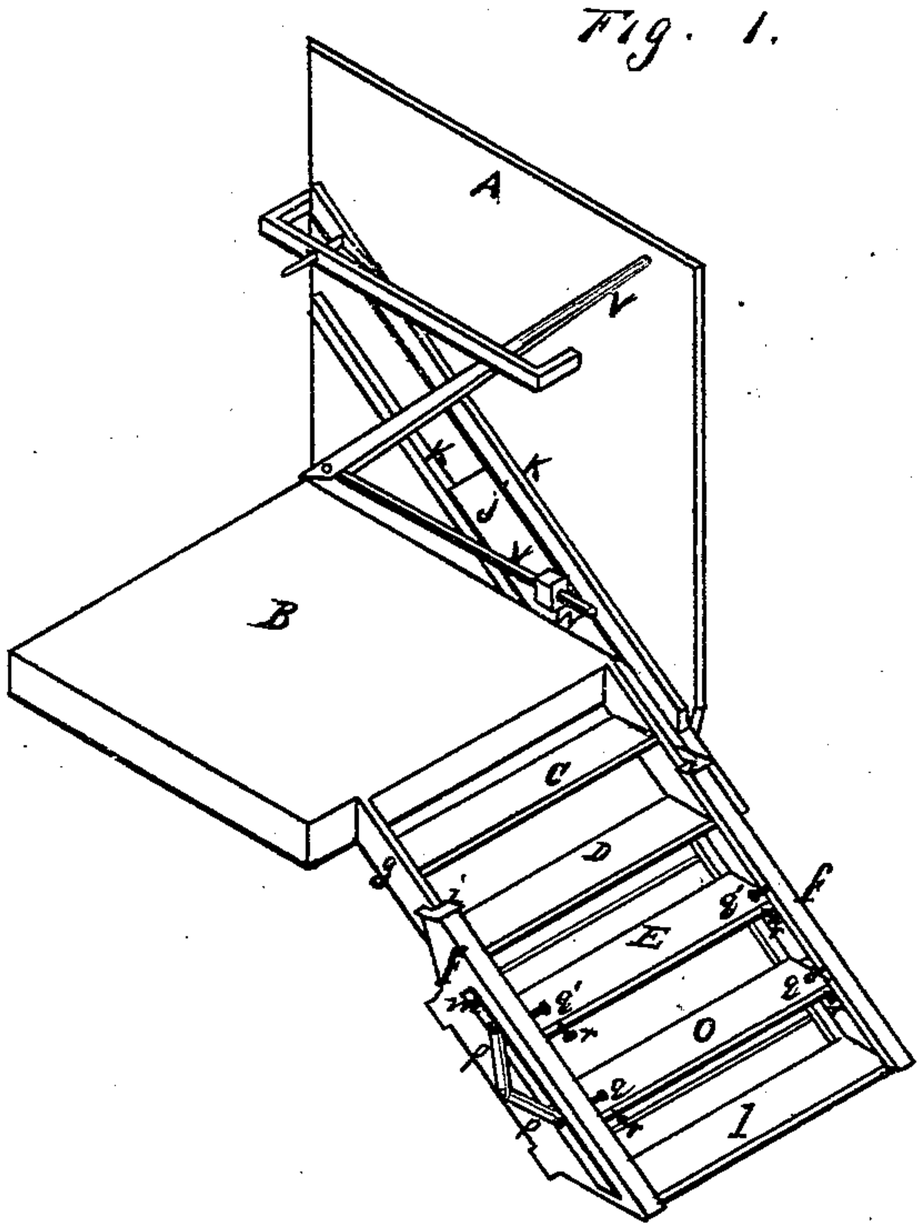


Fig. 2.

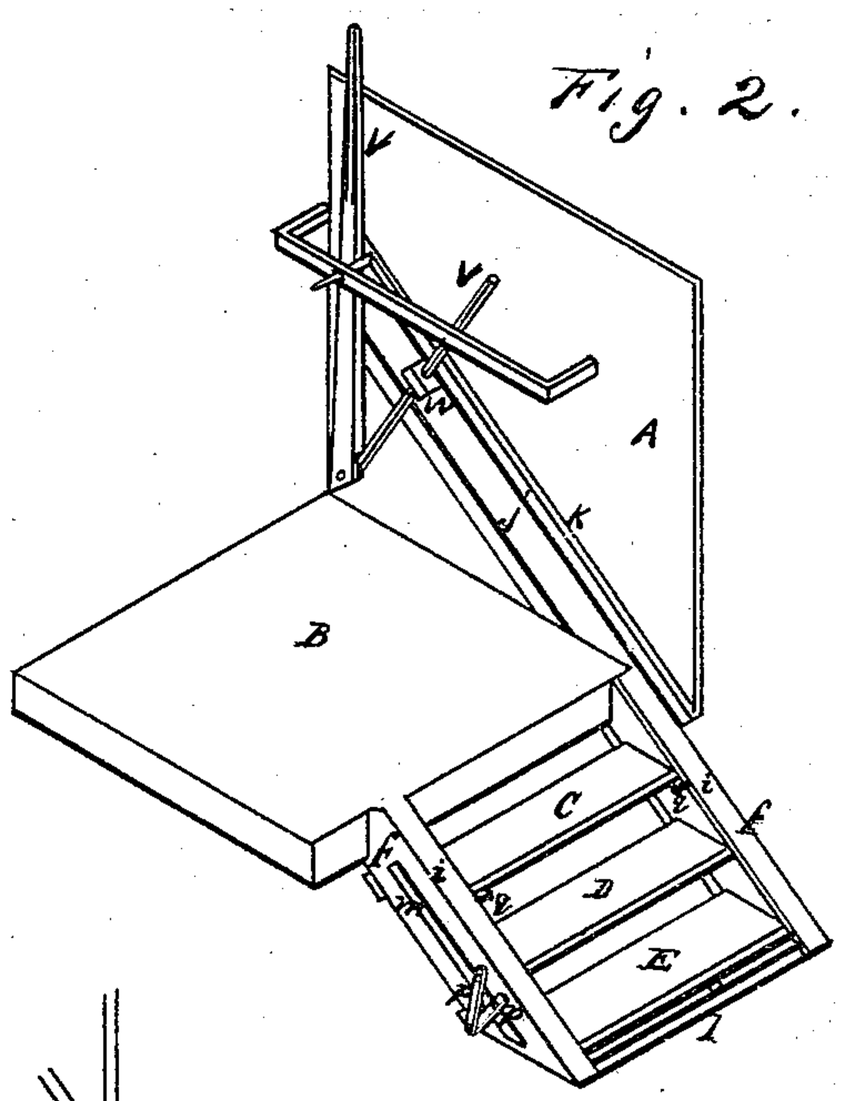
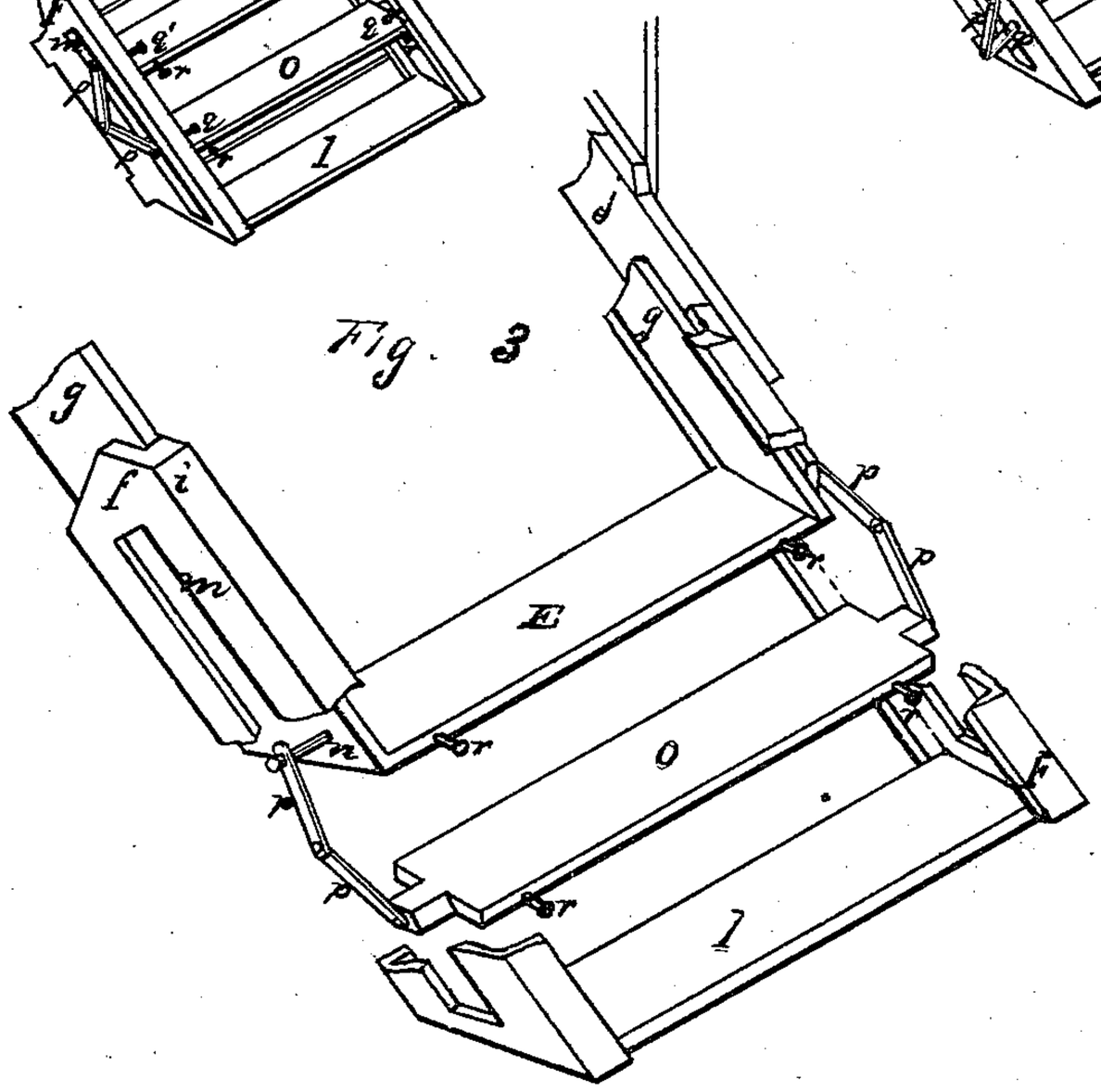


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY ALBERT, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN EXTENSION-STEPS FOR RAILWAY-CARS.

Specification forming part of Letters Patent No. **148,587**, dated March 17, 1874; application filed October 4, 1873.

To all whom it may concern:

Be it known that I, HENRY ALBERT, of San Francisco city and county, State of California, have invented Extension-Steps for Railroad-Cars; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The object of my invention is to so construct the steps which are attached to the platforms of railroad-cars that they may be extended down to or near the ground when the cars stop at a station, in order that the passengers may be enabled to easily mount to the platform; but when the cars are ready to start the steps can be drawn up to the ordinary length, and thus be out of the way of any obstruction along the road.

In order to more fully describe my invention, reference is had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a perspective view of my steps extended. Fig. 2 is a view of the steps closed up. Fig. 3 is an enlarged view, showing the operating mechanism.

Let A represent a section of the end of a railway-car, and B one-half of the platform. C D E are the three steps ordinarily attached in the manner of a short stairs upon each side the platform, to enable passengers to get upon and from the cars. These permanent steps only extend about half-way to the ground, because they would be liable to strike obstructions along the track if they were longer, but their shortness causes much trouble to passengers in getting upon and from the cars, especially at way-stations where no suitable platforms are provided. To remedy this I arrange side boards *f* to slide up and down along the side boards *g* of the permanent steps, suitable guides *i* being provided, either in the manner shown or in some equivalent manner. The sliding side board *f*, which is next to the end of the car, extends upward along the side of the car at the proper angle, as at *j*, and this upward-projecting portion also moves between dovetailed guides *k k* on the side of the car. The lower ends of the sliding side boards *f* are connected by a step, *l*, so that they will move together. Each of the boards *f* are provided with a longitudinal slot, *m*, which is as long as the distance which it is desired to extend the steps, and a pin, *n*, projects from opposite the end of the lower permanent step through the slot. Between the lower permanent step and the connecting-step *l* of the sliding portion is another step, *o*, which has a square tenon on each end. This square tenon is of the proper size to fit snugly in the slot *m* and move up and down along it when required. Two links, *p p*, are jointed together at one end, while one of their opposite ends is attached to the projecting pin *n* of the permanent steps, and the other to a pin projecting from the end of the tenon of the sliding step. These jointed links are just long enough to support the sliding step at the proper distance between the connecting-step *l* and the lower permanent step. On the inner edge of each of the upper guides *i* of the sliding boards, a projecting pin or lug, *q*, is provided at a point which will be opposite the step *o*, and, also, other pins, *q'*, will be opposite the lower permanent step when the sliding portion is extended. Other projections, *r*, are secured to the step *o*, and also to the lower permanent step at right angles to the pins or lugs *q*, so that when the sliding steps are lowered into position, the lower pins *q* will first strike the pins *r* of the step *o* and carry it down to its proper position, or until the hinged links are fully extended. When fully lowered to this point, the upper pins *q* will have come against the pins *r* on the permanent step, so as to aid in supporting the extension. To accomplish this movement properly, the lower projections *q* on the guides are shorter than the upper ones *q'*, so that they will pass the projections *r* on the permanent step without striking; and as a consequence the projections *r* on the step *o* are closer the guides than those on the permanent step, so that the short pin will strike it in order to force it to its proper position. When the steps are extended the step *o* will be held firmly in its position by the square tenons, which fit in the slot at each end. When the steps are drawn up, the lower connecting-step forces the step *o* upward until it strikes the lower permanent step. The steps can be extended or contracted by a lever, V, which fits

closely against the end of the car. This lever can be a simple bar, or of a V shape, as represented in the drawing. In the latter case one arm of the V-lever will be secured in a swivel-block, W, which is attached to the sliding extension *j* of the side board, so that the brakesman or other person can, as soon as the cars cease moving, lower the steps.

By this arrangement I provide extension or telescopic steps, which can be either lowered or elevated as necessary, thereby avoiding much trouble and annoyance to passengers in getting on board or leaving a railroad-car.

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

1. The permanent steps C D E, of a railway-car, in combination with extension-steps *l o*, toggle-joints *p p*, and lever V, substantially as described, and for the purpose specified.

2. The sliding side boards *f*, having the connecting-step *l*, in combination with the adjustable step *o* and permanent steps C D E, substantially as and for the purpose above described.

3. The sliding side boards *f*, with their longitudinal slot *m*, in combination with the adjustable step *o* with its square tenons and the hinged links *p p*, substantially as and for the purpose above described.

4. The sliding side boards *f f*, with guiding boards *i i* having the projections *q*, in combination with the lower permanent step E and adjustable step *o* with projections *r*, substantially as and for the purpose described.

5. The sliding side board *f*, with extension *j*, in combination with the lever V and swivel-block W, substantially as specified, and for the purpose described.

In witness whereof I hereunto set my hand and seal.

HENRY ALBERT. [L. S.]

Witnesses:
JOHN L. BOONE,
C. M. RICHARDSON.