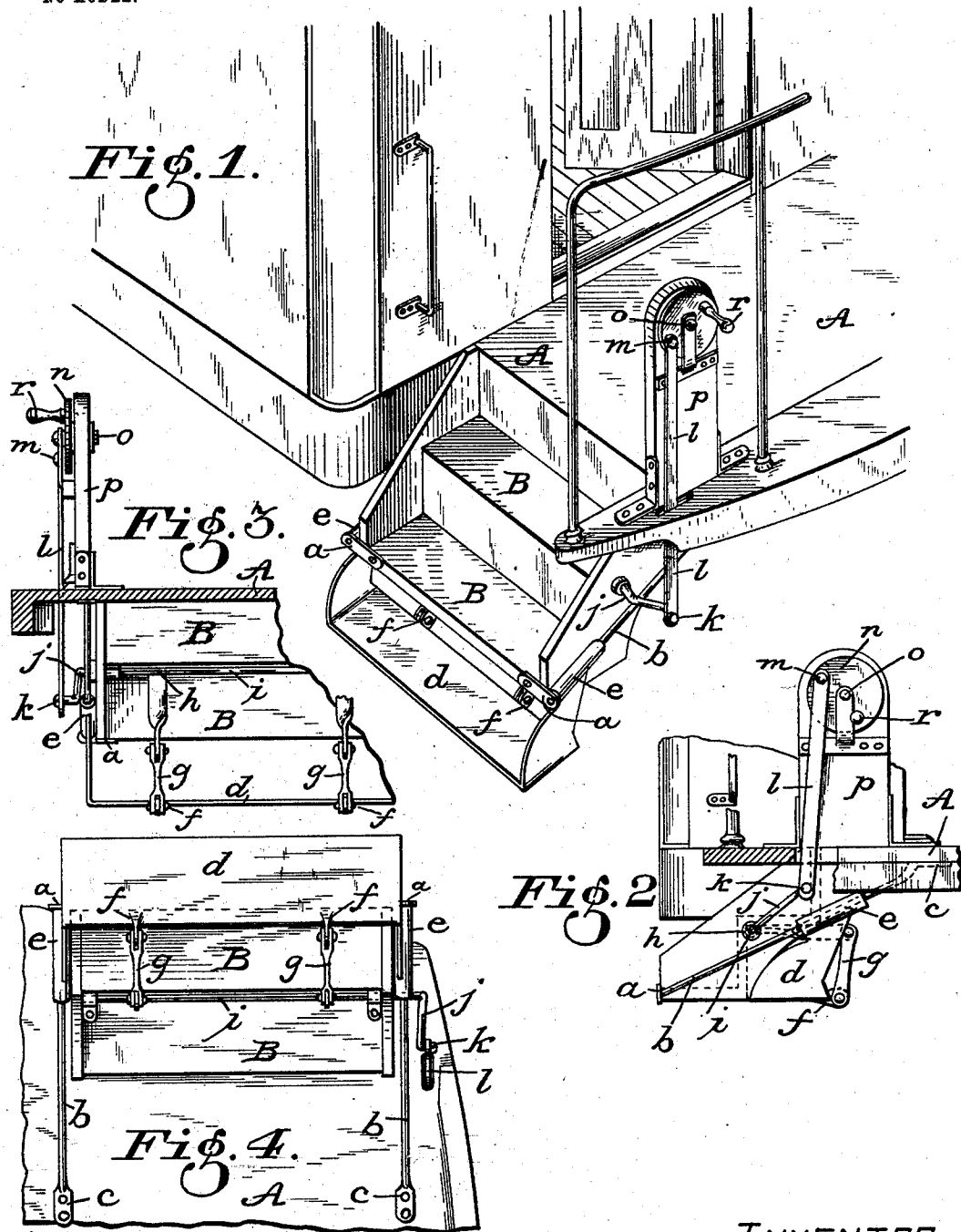


A. J. COOVER.  
ADJUSTABLE CAR STEP.  
APPLICATION FILED APR. 12, 1902.

NO MODEL.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## ADJUSTABLE CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 720,002, dated February 10, 1903.

Application filed April 12, 1902. Serial No. 102,524. (No model.)

*To all whom it may concern:*

Be it known that I, AMOS J. COOVER, a citizen of the United States, residing at Osborn, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Adjustable Car-Steps; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My present invention relates to an improved adjustable car-step and is a separate and distinct invention and sets up improved features of construction vastly different from those heretofore shown, described, and claimed in a previous application filed by me in the United States Patent Office on March 10, 1902, Serial No. 97,522, and entitled "Adjustable stirrup-step for cars," and in which the extra, additional, or supplemental step is provided with suitable means and mechanism by which it is adapted to be moved forward or backward laterally in the same horizontal plane, but can never be moved vertically—*i. e.*, it can never be raised or lowered—thus making it more especially applicable for service on railroad or steam cars or, in fact, any class of cars designed for service outside of the corporate limits of towns, while in my present invention this extra or additional step can be moved vertically, so as to be lowered and thrown out in position, or raised, so as to assume a compact form, taking up or occupying no extra space below the lower stationary step, thus making this step more especially applicable for service on electric cars or those employed within the corporate limits of towns, as I will now proceed to describe.

Some of the principal objects of my present invention are to extend the present steps or stairs now in use on cars, so as to bring them nearer to the ground or walk, thus facilitating the mounting or dismounting on or off the car and doing away with the small bench or foot-rest heretofore used for this purpose, which is quite objectionable, and in accomplishing these objects I have produced an adjustable step or extension which is intended

and designed to be projected or thrown out beyond the width of the car only when in use and not to remain permanently in this position, and thus interfere with the general traffic of the street, and contrary to the law, which requires that there shall be no lateral projections beyond the car while within the corporate limits of any town. I have also produced an adjustable step that, while it may be used on railroad or steam cars or, in fact, any class of cars that travel outside of the town limits and may be further employed to advantage, if so desired and by making minor changes, on vehicles of various kinds—such as omnibuses, coaches, and delivery-wagons—is especially designed and more particularly and directly applicable for service on electric or, in fact, any class of cars that travel solely and only within the corporate limits of cities or towns and where in making curves or turns the overhanging sides of the car must pass over any stone wall or other projecting obstacle, whereby any movable step must be susceptible of being raised when not in use, so as to rest in a compact form and take up no space on a vertical line below the stationary steps of the car, and this I have now accomplished in my present invention.

This invention consists, referring in general terms to its construction, of the movable extension or step proper, the side arms or rods which support said step, and suitable means or mechanism for lowering said step forward when in use or raising said step upward and backward, so as to rest in a compact form and out of the way of all obstacles when not in use, this movement being slightly inclined and vertical and is accomplished by reason of the peculiar arrangement and combination of the various parts, as will be more fully described hereinafter, and referred to in the subjoined claims, in accordance with the statutes in such cases made and provided therefor.

Referring to the annexed drawings, illustrating my invention, and wherein the same letters of reference indicate like parts wherever they occur throughout the several views, Figure I is a perspective view of a portion of the end of a car having my improved adjustable step attached thereto in operative position and thrown or lowered outward when in use, so as to illustrate the practical applica-

tion of the same. Fig. 2 is an end elevation of the same, the end of the car being broken away and showing my step in a raised or elevated position on a level with the lowest stationary step and in a compact form, so as to be out of the way of all obstacles. Fig. 3 is a rear elevation, partially broken away, of the stationary car-steps and my adjustable step and the mechanism for operating the same as shown in Fig. 1, the car being removed and only a portion of the platform which supports the same shown in section; and Fig. 4 is a plan view of the under side or bottom of a portion of the car and the steps in the position seen in Fig. 1.

In describing my said invention in detail and having reference to the different parts thereof, as illustrated in the various views of the drawings and indicated by means of the letters of reference as aforesaid, A refers to the platform of the car; B, the stationary steps, to the lower one of which is firmly connected, as at *a*, the end of supporting-rods *b*, the opposite end of said supporting-rods being attached, as at *c*, to platform A.

Adjustable step or extension *d*, which is intended in practice to be constructed, preferably, of thin metal, is provided at each end with a sleeve *e*, by which it is movably mounted, and encircles and rides upon rods *b*, by which means it is supported.

Hinged, as at *f*, to adjustable step *d* is knee-joint *g*, which is firmly and rigidly connected at *h* to shaft *i*, and as said shaft is operated, by means of its crank *j*, which is connected at *k* to pitman *l*, said pitman being attached at *m* to disk or wheel *n*, said disk being in turn pivotally connected at *o* to standard *p*, and when operated by its handle *r* said adjustable step or extension will rise on a vertical incline from the position shown in Figs. 1, 3, and 4 and all the parts will assume the position shown in Fig. 2 and rest in a compact form out of the way of any motor or necessary running-gear underneath said car, so as to be on a level with the lowest stationary step and out of the way of all ordinary obstructions, such as low walls, high curbing, &c.

Among some of the many advantages of my invention is that it is susceptible of being employed to advantage on cars and vehicles of any description, is of simple construction and inexpensive cost of manufacture, and will prevent the numerous accidents and loss of life now constantly occurring by reason of the steps in present use being too high, thus causing persons to miss their footing and be dragged underneath the car while in motion or in starting.

If so desired, a straight lever may be used instead of disk or wheel and its handle.

It will be obvious that when my step is used on steam-cars it may be operated automatically by connecting with the air-brakes, and on electric cars, if so desired, it may also be operated automatically by an air-motor.

Now, having described my "improved adjustable car-step," what I claim is—

1. In an additional or supplemental step for cars and vehicles, the combination with the stationary steps or portion; of the adjustable step proper; the sleeves attached to the sides of said step; the rods or arms; the knee-joints; the shaft and pitman; the disk and handle; all suitably arranged and adapted to move said adjustable step outward in position ready for use, or backward so as to rest normally in a compact form and on a level with the stationary step above, thus taking up no space whatsoever underneath said stationary step so as to entirely avoid any and all obstructions; all substantially as and for the purposes shown and described.

2. In an adjustable extension or step adapted for service on cars or vehicles as herein referred to, the combination with a permanent or immovable step or portion thereof; of the movable step adapted to be moved backward so as to rest on the precise level with the stationary step above it, and bent or formed into side or end pieces, and provided with sleeves; the rods or arms; the hinges attached to said movable step; the knee or toggle joints connected to said hinges and also connected to the shaft; said shaft provided with a crank; the pitman connected at one end to said crank and adapted at the other end to be connected to suitable hand, steam or electric power for operating the same; all substantially as set forth.

3. The combination with the platform and stationary steps; of the supporting-rods; the adjustable step; the sleeves formed on said adjustable step and movably mounted upon said supporting-rods; the knee-joints; and suitable means or mechanism adapted to throw or move said adjustable step outward on a vertical incline in position ready for use, or to move said adjustable step backward on a vertical incline so as to rest normally in a compact form on a level with the step above it, thus taking up no space underneath the stationary step, which would interfere with obstructions; all substantially as described.

4. The combination with the stationary steps and platform of a car; of an additional step; the sleeves formed on said additional step; the supporting-rods upon which said sleeves are movably mounted; the knee-joints; the shaft; and means or suitable mechanism adapted to operate said shaft, so as to throw or move said additional step forward and outward on a vertical incline, or move said additional step backward and inward on a vertical incline; substantially as and for the purposes described.

In testimony whereof I have affixed my signature in presence of two witnesses.

AMOS J. COOVER.

Witnesses:

CHARLES C. JACKSON,  
ELLA RICHARDSON.