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PATENTED FEB. 10, 1903.

A. J. COOVER.

ADJUSTABLE STIRRUP STEP FOR CARS.

APPLICATION FILED MAR. 10, 1902.

NO MODEL.

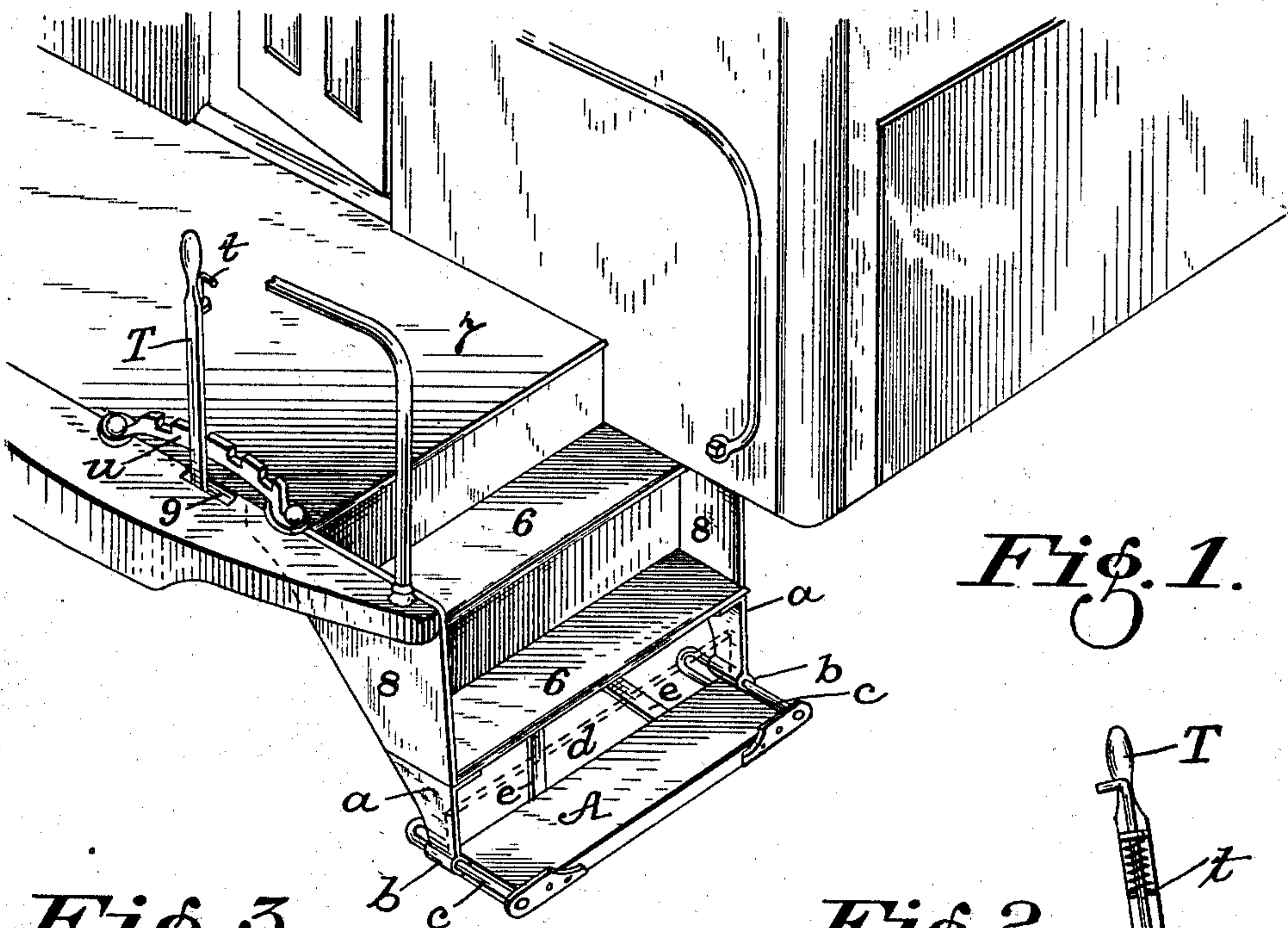


Fig. 1.

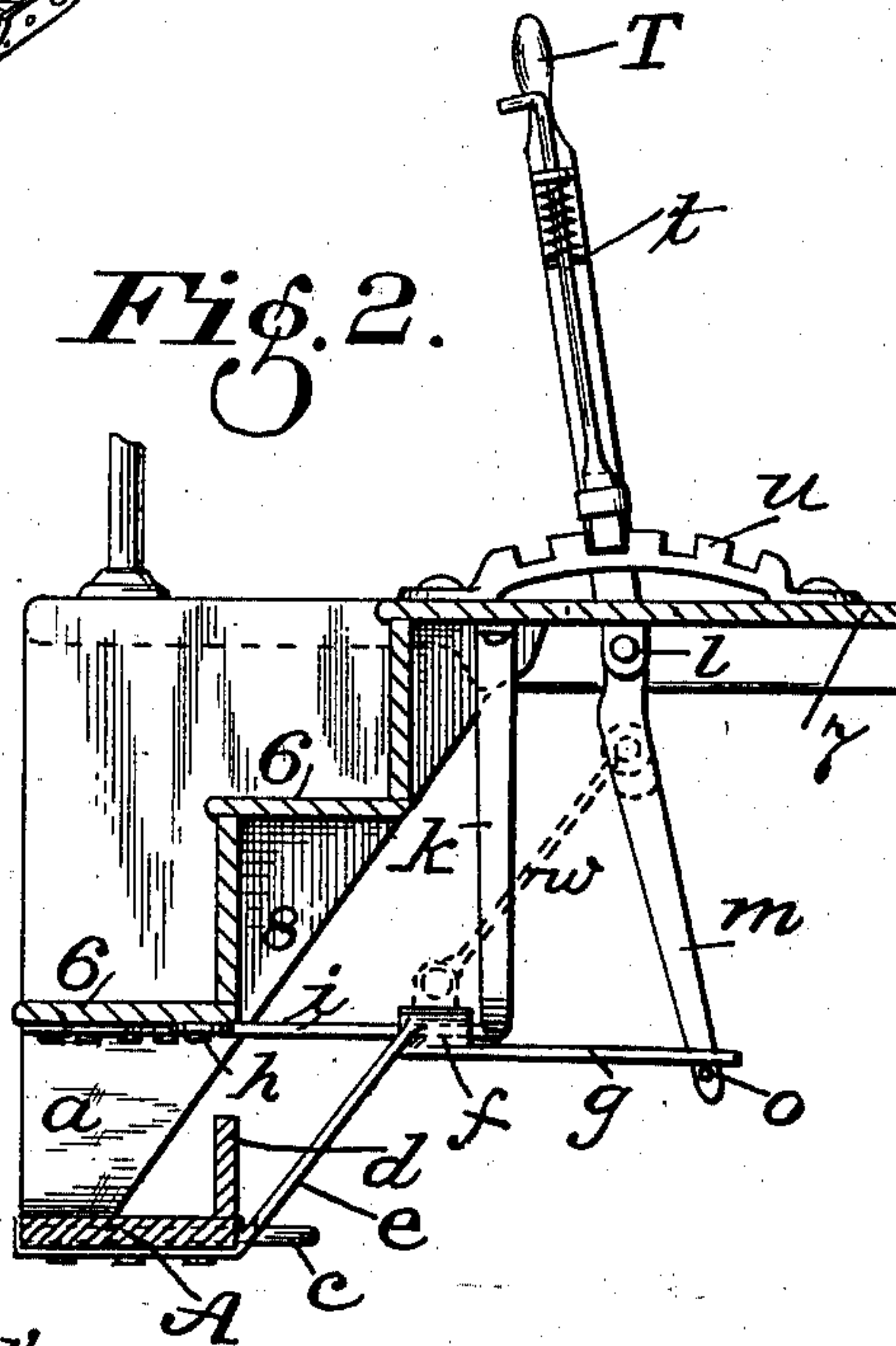
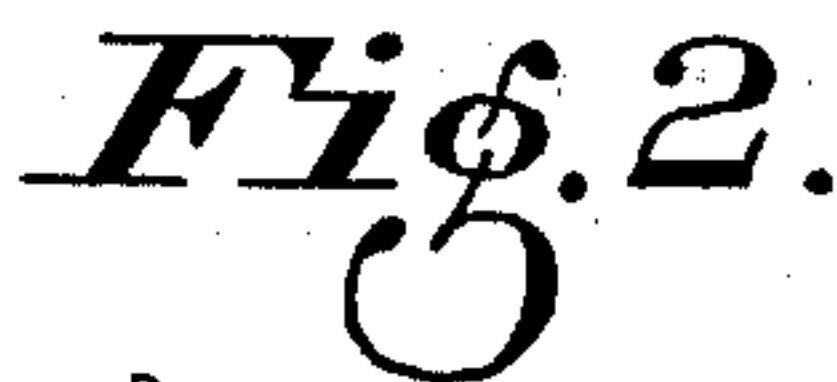
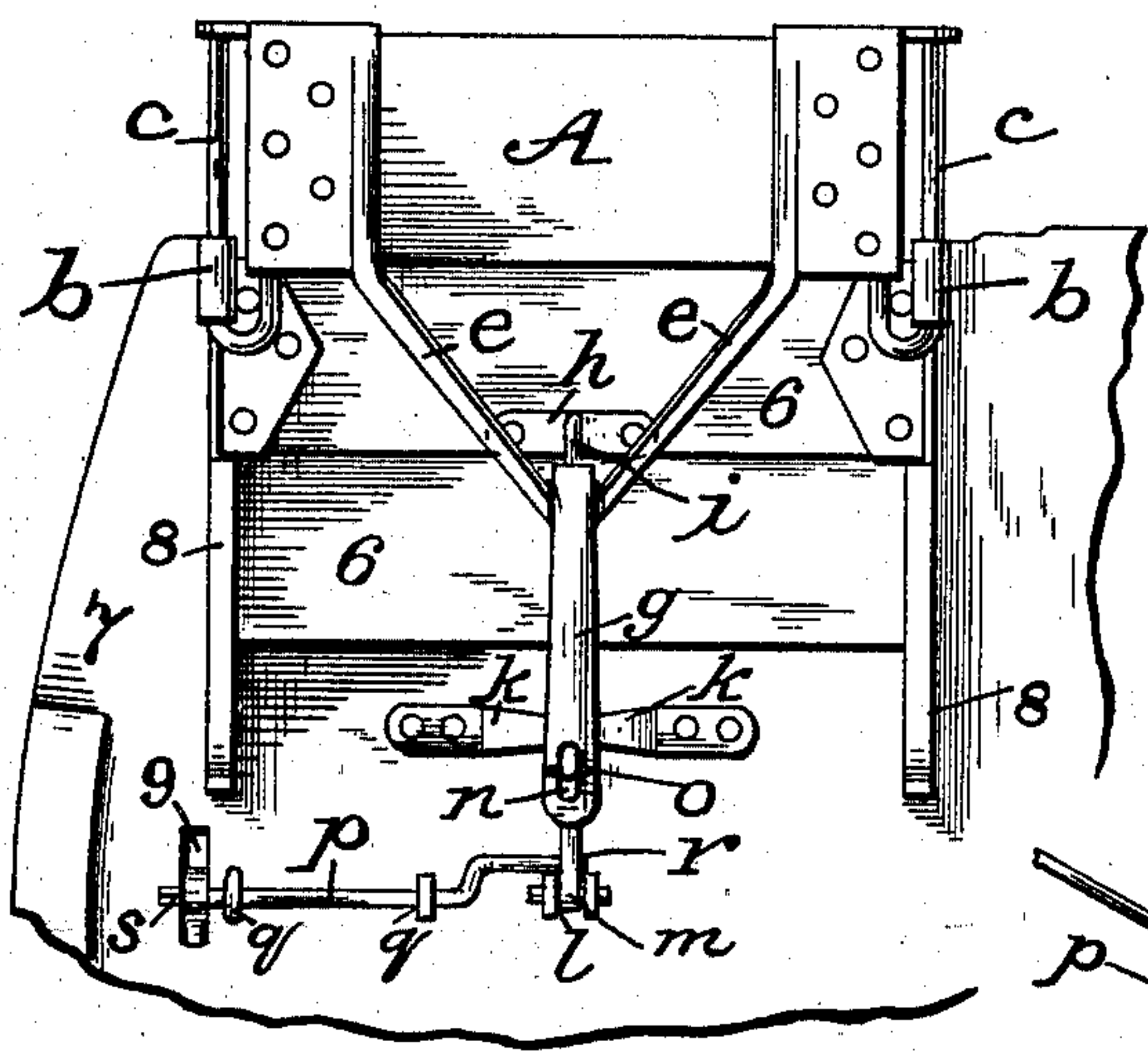
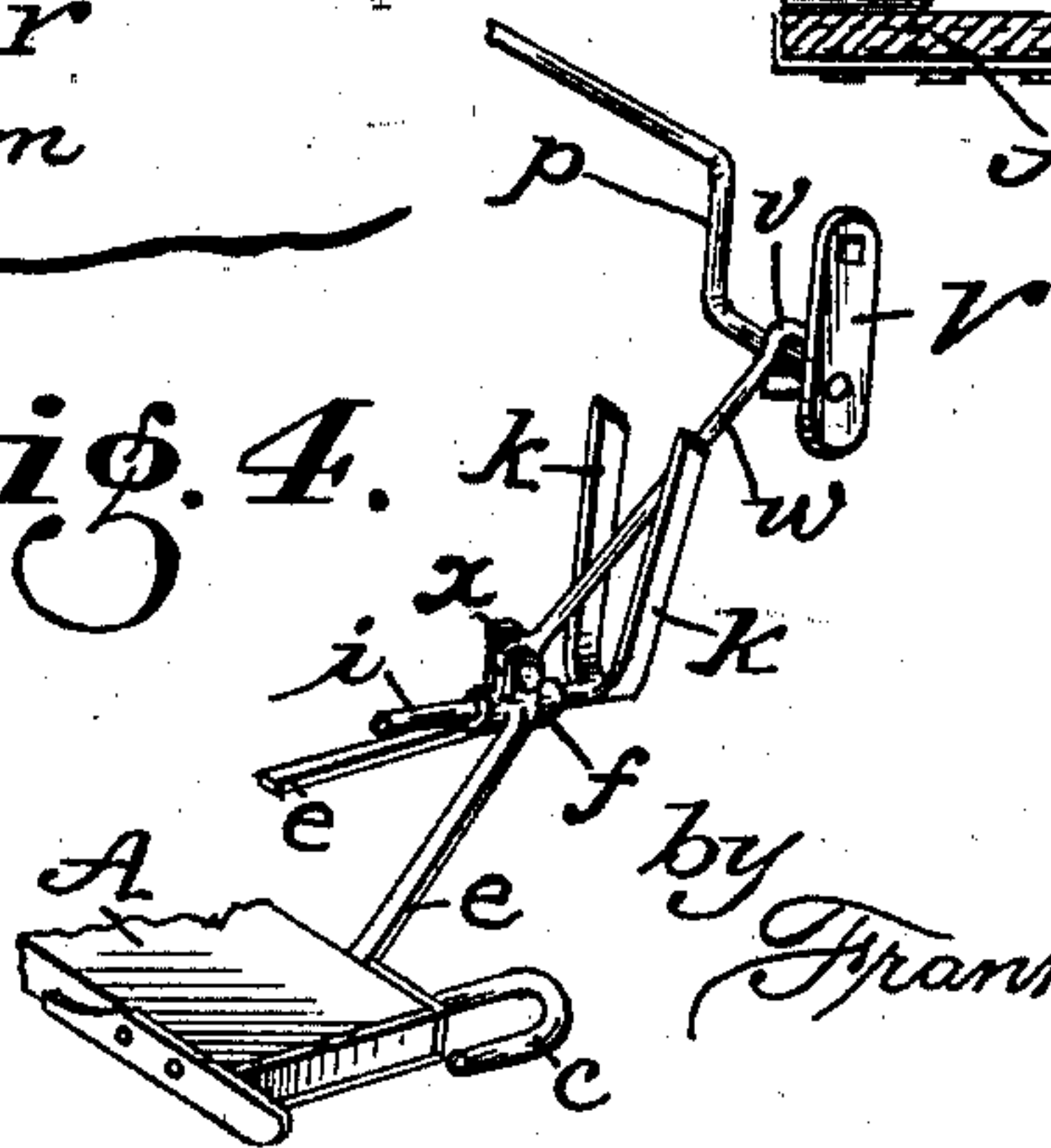


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE STIRRUP-STEP FOR CARS.

SPECIFICATION forming part of Letters Patent No. 720,001, dated February 10, 1903.

Application filed March 10, 1902. Serial No. 97,522. (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
5 invented certain new and useful Improvements in Adjustable Stirrup-Steps for Cars; 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
10 art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

15 My present invention relates to an "adjustable stirrup-step for cars," and although particularly applicable for steam-cars, for which it is more especially designed and intended, it can also be used on a great many electric cars, and may be further employed to
20 great advantage, if so desired, and by making minor changes on vehicles of various kinds, especially omnibuses, coaches, and delivery-wagons.

25 The principal object of my present invention is to increase the number of steps now used on cars by providing an additional or supplemental lower step located nearer to the ground or platform-walk, so that when moved
30 forward it will be easy and ready of access; also, to provide a step which may have an adjustable lateral movement, whereby said step when the cars are within the city or town limits and as required by law may be moved
35 backward out of the way and under the stationary steps of the car and yet be impossible to be moved only sufficiently backward so it will come in the same vertical alinement with
40 the lowest stationary step just above it and remain in the same position as to a horizontal plane as when adjusted outward, so that it may still be used, if desired or found necessary
45 so to do, the same as when thrown outward and yet be of so few parts and so simple in construction as not to interfere with the other parts underneath the car.

Among some of the many advantages of my present invention is that it is expected when
50 employed on cars to prevent the numerous accidents and loss of life which are now constantly occurring by reason of the steps in present use being too high, thus causing per-

sons to miss their footing and be dragged underneath the car while in motion or as it starts; also, its inexpensive cost of manufac- 55
ture and simplicity of construction.

My invention consists, referring in general terms to its construction, of the sliding step, the stirrups, and suitable means or mechanism for moving said step backward or forward as to the same horizontal plane, which
60 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 65
in accordance with the statutes in such cases made and provided therefor.

Referring to the annexed drawings, illustrating my invention, and wherein the same numerals and letters of reference indicate like 70
parts wherever they occur throughout the several views, Figure 1 is a perspective view of a portion of the end of a car, showing my stirrup-step attached thereto in operative position and thrown outward in the position it 75
assumes when the car is at the depot or station. Fig. 2 is a transverse sectional view of the car-steps as shown in Fig. 1 with my movable step thrown backward and under the stationary steps and in an opposite position 80
from what it assumes in Fig. 1 and showing the mechanism for operating the same. Fig. 3 is a plan view of the steps as seen in Fig. 1 and the mechanism for operating the same. Fig. 4 is a detail view in perspective and partially broken away of another form of a portion of the operative mechanism which may 85
be used, if desired.

In describing my said invention in detail and having reference to the different parts 90
or features thereof as illustrated in the various views of the drawings and indicated by means of the numerals and letters of reference, as aforesaid, 6 represents the ordinary stationary steps, which are built or attached 95
immovably to the platform 7 of the car in the usual and well-known manner, and connected to said steps are the stirrups *a*, (which form a continuation of the horses 8,) each provided with a sleeve *b*, which support but yet permit 100
of a forward or backward sliding movement of the sliding bars *c*. The sliding bars *c* are suitably attached, as is more clearly shown in Figs. 1 and 4, to my adjustable supplemen-

tal step A, which may be provided with a riser *d*, if so desired, as shown in dotted lines in Fig. 1 and solid lines in Fig. 2. Said riser may extend entirely or only approximately

5 near to the stationary step above it, as desired. Firmly attached to sliding step A are bifurcated bars *e*, which extend upwardly and as near to the steps as possible, so as not to interfere with any of the parts or construction
10 underneath the car, and terminate in a sleeve *f*, which is provided with a horizontal arm *g*. (See Figs. 2 and 3.) Rigidly connected to the lower stationary step, as at *h*, is a horizontal rod or bar *i*, which connects at its end
15 or terminates integrally at the apex of the bifurcated supporting-arms *k*, which are bolted or otherwise connected to platform 7, and around rod *i* rests and moves sleeve *f* when step A is operated. Pivottally supported, as
20 at *l*, is a lever *m*, the end of which rests loosely in a slotted eye, as at *n*, in arm *g* and is retained therein by a small pin *o*. (See Figs. 2 and 3.) A rock-shaft *p*, suitably supported, as at *q*, is keyed at *r* to lever *m* and at its
25 opposite end at *s* to hand-lever T, which moves or plays in slot 9 in the platform. Said hand-lever is provided with a spring hand-brake *t* of any ordinary and well-known form of construction, both of which are to be operated
30 by the hand, and as the pawl or brake end is raised out of engagement with the teeth of the ratchet-bar or rack *u* the lever may be pulled backward, when it is obvious and can be readily seen and understood without further
35 description that the parts will assume the position shown in Figs. 1 and 3 and step A will be moved outward, and by forcing hand-lever T forward and in an opposite direction sliding sleeve *f*, as well as all the other parts,
40 will assume the position shown in Fig. 2 and step A will be moved horizontally backward as far as possible out of the way and under the stationary steps and on a vertical line with the step just above it.

45 In placing my adjustable sliding step on cars having numerous attachments underneath and where there is limited space, if so desired, lever *m* and horizontal arm *g* may be dispensed with and in their place may be
50 employed short arm V and a link or arm *w*, one end of which is connected by an eye *v* to rock-shaft *p* and the other end hinged, as at *x*, to sleeve *f*, as shown in solid lines in Fig. 4 and dotted lines in Fig. 2.

55 My device is of course susceptible of slight changes without departing from the principle or spirit of the invention. Also, if desired, shaft *p* may extend continuously from the step at one end of the car to the step at the
60 other end, and thus by operating hand-lever T and brake *t* at either end of car step A at each end of same may be operated simultaneously.

I am well aware of folding steps and other forms having complicated mechanism; but 65 am not aware of any step having my peculiar form of construction and one which may be slid or moved on the same horizontal plane forward in proper relation to the stationary steps or only sufficiently and backward in 70 vertical alinement with the stationary step just above it and no farther, so that it may still be used, if so desired, even while moved backward underneath the stationary steps and out of the way. 75

Having now described my adjustable stirrup-step for cars, what I claim as my invention is—

1. In an adjustable stirrup-step for cars, the combination with the stationary steps, of the 80 movable step, the stirrups each provided with a sleeve adapted to support said movable step, the hand lever and brake, the rock-shaft and suitable mechanism whereby said stirrup-step may be moved forward as to a horizon- 85 tal plane so as to rest in the same inclined position with the steps above it, or moved backward on the same horizontal plane, not beyond a point where it will be in the same vertical alinement with the step above it, all 90 substantially as described.

2. In the herein-described invention, the combination with the stationary steps or portion, of an adjustable step provided with sliding bars, stirrups adapted to support said 95 sliding bars, and permit of their free movement, the hand lever and brake of ordinary construction, the rock-shaft, a link or arm connected at one end to said shaft and at its other end to a sleeve movably supported, and 100 other suitable mechanism whereby said adjustable step may be moved forward and backward on the same inclined or vertical alinement with the steps or step above it, substantially as described. 105

3. The combination with the stationary steps or portion; of a supplemental movable step, provided at its ends with sliding bars closed at each end; the stirrups provided with a sleeve through which said sliding bars 110 play or move; bifurcated bars attached to said movable step; the sleeve at top of said bifurcated bars; the horizontal bar upon which said sleeve rides; the bifurcated supporting-arms; the horizontal arm adapted to 115 receive the end of a lever; the said lever adapted to engage said horizontal arm; the rock-shaft; the hand lever and brake; all to operate substantially as and for the purposes described. 120

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

AMOS J. COOVER.

Witnesses:

ELLA RICHARDSON,
S. EMORY LIGHT.