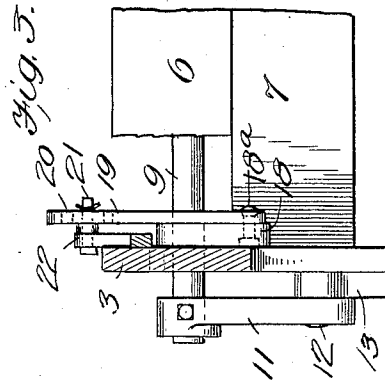
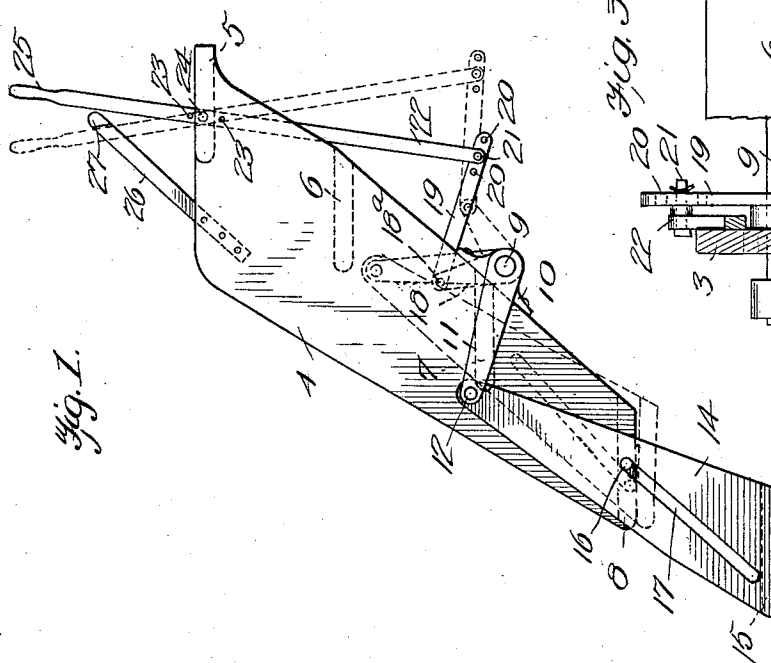
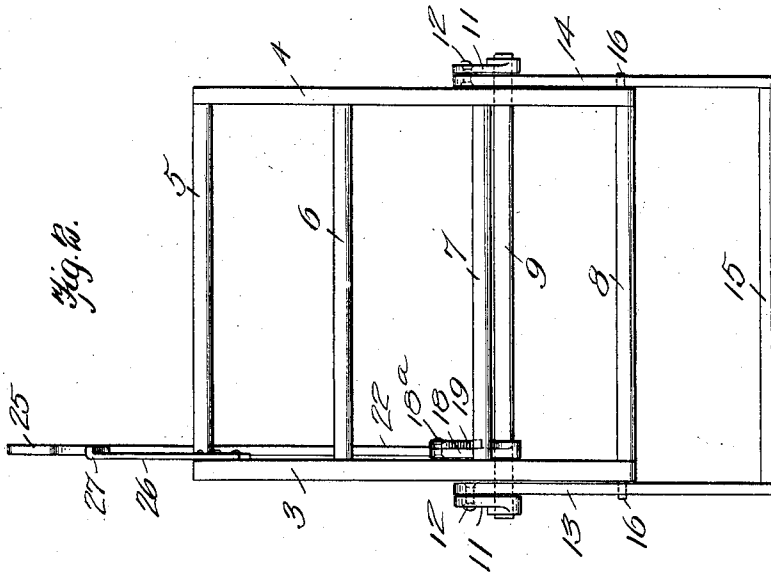


J. H. VAUGHAN.
ADJUSTABLE CAR STEP.
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Patented May 20, 1913.



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ADJUSTABLE CAR-STEP.

1,062,523.

Specification of Letters Patent.

Patented May 20, 1913.

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To all whom it may concern:

Be it known that I, JAMES H. VAUGHAN, a citizen of the United States, and a resident of Mobile, in the county of Mobile and State of Alabama, have invented a new and useful Improvement in Adjustable Car-Steps, of which the following is a specification.

My invention relates to adjustable steps for general use, and more particularly to those employed in connection with movable cars for the purpose of enabling passengers to readily board and alight from the same.

My invention comprehends more especially a small stair adapted to be mounted upon a car platform or other suitable portion of a car body, and provided with a step which may, at the will of the operator, be shifted into different positions relatively to the stair for the purpose of virtually lengthening and shortening the latter.

My invention further contemplates provision for so guiding the adjustable step relatively to the stair that when the step is in its normal or inactive position, it is drawn up closely below, and slightly rearward in relation to, the lowermost step of the stair; but when the adjustable step is thrown into its abnormal or active position, it is spaced from the lowermost step of the stair by a distance comparable with the spatial distance between consecutive steps of the stair.

My invention further comprehends means for guiding the adjustable step relatively to the steps of the stair so that when the adjustable step is in its lowermost or abnormal position, it occupies a position obliquely outward relatively to the steps of the stair, and because of this fact it is substantially in alinement with the several steps of the stair so that the adjustable step and the various steps of the stair now constitute practically a continuous series of steps extending obliquely downward in the same general direction.

My invention further comprehends simple and convenient mechanism controllable at the will of the operator for handling the adjustable step from the car platform or other point convenient for the purpose.

Reference is made to the accompanying drawings forming a part of this specifica-

tion, and in which like letters indicate like parts.

Figure 1 is a side elevation showing my device complete and ready to be mounted upon a car platform or the like, the step being shown by full lines in its lowermost or abnormal position and by dotted lines in its lowermost or normal position; Fig. 2 is a front elevation of the device; Fig. 3 is a fragmentary plan showing the lever mechanism for actuating the adjustable step and parts immediately associated therewith.

A pair of supporting beams 4 are secured to the ends of boards 5, 6, 7, 8 fashioned into suitable form to serve as steps, the board 4 being of sufficient width to enable the upper edges thereof to serve as balusters. The supporting beams 3, 4 and the steps between these boards together constitute a small stair of such form as to be conveniently mounted upon a platform or other convenient portion of a car. A rocking shaft 9 is journaled in bearings 10 located upon the under side of the supporting beams 4 which are inclined as indicated in Fig. 1. Mounted rigidly upon the ends of the shaft 9 are two cranks 11 which are parallel with each other. These cranks at their outer ends are provided with pivot pins 12. Connected with these pivot pins are two side bars 13, 14, each having the proximate form of a triangle. Extending between the lower ends of the side bars 13, 14 is a step 15. Guide pins 16 are inserted in the beams 3, 4 and extend outwardly therefrom in opposite directions. Each side bar 13, 14 is provided with a slot 17 which is straight and located some distance from the pivot 12 and out of alinement therewith. That is to say, according to Fig. 1, if the slot 17 were continued upward, it would extend rearwardly of the pivot 12 shown in said figure. The guide pins 16 extend through the slots 17. The purpose of this arrangement, and particularly of having the slots 17 out of alinement with the guide pins 16, is to enable the slots 17 to serve as cam grooves for the purpose of guiding the side bars 14 and step 15 in such manner that the step 15 when moved as hereinafter described will take up certain predetermined positions relatively to the stair. That is to say, when the

step 15 and side bars 14 are raised into their uppermost positions, the step 15 will be located closely below, and slightly to the rearward of, the step 8, as indicated by dotted lines in Fig. 1. When, however, the step 15 and side bars 13, 14 are in their lowermost positions, as indicated by full lines in Fig. 1, the step 15 is not only spaced from the step 8 by a distance approximately equal to the distance between any two consecutive steps 5, 6, 7, 8, but also occupies substantially the same plane as the steps last mentioned. In other words, when the step 15 is moved into the position indicated by full lines in Fig. 1, the left edge of the step 15 is substantially flush with an imaginary line extending obliquely downward to the left along the several front edges of the steps. Mounted rigidly upon the shaft 9 and extending upwardly therefrom is a crank 18. This crank is by aid of a pivot pin 18^a connected to a pitman 19. This pitman is provided with a series of holes 20, and a pivot pin 21 is provided for fitting into any one of these holes. A hand lever 22 is pivoted at its lower end to the pivot pin 21. By shifting this pivot pin from one of the holes 20 to another, the pivotal connection between the lever 22 and the pitman 19 may be shifted so as to alter the virtual or effective length of the pitman. The hand lever 22 is provided with a series of holes 23, and a pivot pin 24 extends through the lever 22 and is adapted to be fitted into any one of these holes. By removing the pivot pin 24, then raising or lowering the lever 22 and replacing the pivot pin, the fulcrum point of the lever may be adjusted into different positions. The hand lever 22 is provided with a handle 25 whereby it may be actuated. A spring latch 26 is mounted upon the supporting beam 2, and is provided with a hook 27 for engaging the hand lever 22 when the latter is moved into the position indicated at dotted lines in Fig. 1.

The operation of my device is as follows:—The parts being formed and arranged as above described, the device is mounted upon a car platform in much the same manner that car steps are generally mounted. With the various movable parts occupying the relative positions indicated by full lines in Figs. 1 and 2 the device is in its abnormal or active position. The step 15 is so located that its left or outer edge is nearly in alignment with the left edge of the steps 5, 6, 7, 8; that is, reckoning obliquely downward to the left according to Fig. 1. The device is now in condition for passengers to board or alight from the car. When the car is ready to start, however, the operator grasps the handle 25 and moves it to the left, according to Fig. 1, until it is engaged and held by the hook 27 of the latch 26. This movement of the lever 22 shifts the position of

the crank 18 and rocks the shaft 9. The cranks 11 thereupon swing upwardly at their outer ends and raise the side bars 14, carrying with them the step 15. The guide pins 16, working as above described in the slots 17, cause the side bars 13, 14 and step 15 to move obliquely upward to such an extent, and in such direction, that the step 15 lodges just below the step 8 and slightly rearward in relation thereto, as indicated by dotted lines in Fig. 1. The step 15 is now not quite flush with the step 8, or in other words, the outer edge of the step 8 slightly overhangs the corresponding edge of the step 15.

To lower the step 15, the operator disengages the hook 27 which he can conveniently do by merely pressing his hand against the latch 26. He now grasps the handle 25 and moves it into the position indicated by full lines in Fig. 1.

As may be readily seen from the foregoing remarks, the step 15 when moving obliquely downward into its lowermost position is also moving outwardly or farther to the left according to Fig. 1. The slots 17 are so located that, in connection with the guide pins 16, the step 15 is shifted far enough to the left to bring the left or outer edge of the step substantially or nearly into alinement with an imaginary line extending from edge to edge of the steps 5, 6, 7, 8 of the stair, as above described. The idea underlying this arrangement is to house the step 15 completely out of the way and well back beneath the step 8 whenever the step 15 is in its uppermost position and yet to bring the step 15 fully out, when the step is to be placed in active use, so that its position relatively to the other steps 5, 6, 7, 8 will accord with the positions of these steps relatively to each other—the step 15 thus being practically a temporary extension of the series of steps of the stair.

While in the particular instance here shown I operate the crank 18 by aid of the pitman 19 and hand lever 22, it is obvious that the pitman 19 may be disconnected from the crank 18, and this crank may be then actuated by any other convenient mechanical means.

I do not limit myself to the precise construction shown, as variations may be made therein without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent is as follows:—

In an adjustable car step, the combination of a stair provided with a plurality of steps, pins carried by said stair, side bars carrying an additional step and mounted upon opposite sides of said stair, said side bars being provided with slots for receiving said pins, said slots being oblique relatively to the general direction in which said stair extends, cranks pivotally connected with said side

bars, a shaft carrying said cranks, another
crank rigidly mounted upon said shaft, a
pitman pivotally connected with said last
mentioned crank and provided with a plu-
5 rality of holes, a hand lever journaled upon
said stair and adapted to rock, said hand
lever being adjustably connected with said
pitman by aid of said holes thereof, and
means carried by said stair for holding said
hand lever in a predetermined position.
JAMES H. VAUGHAN.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."