B. SMITH & G. SHIVADECKER.

EXTENSION CAR STEP.

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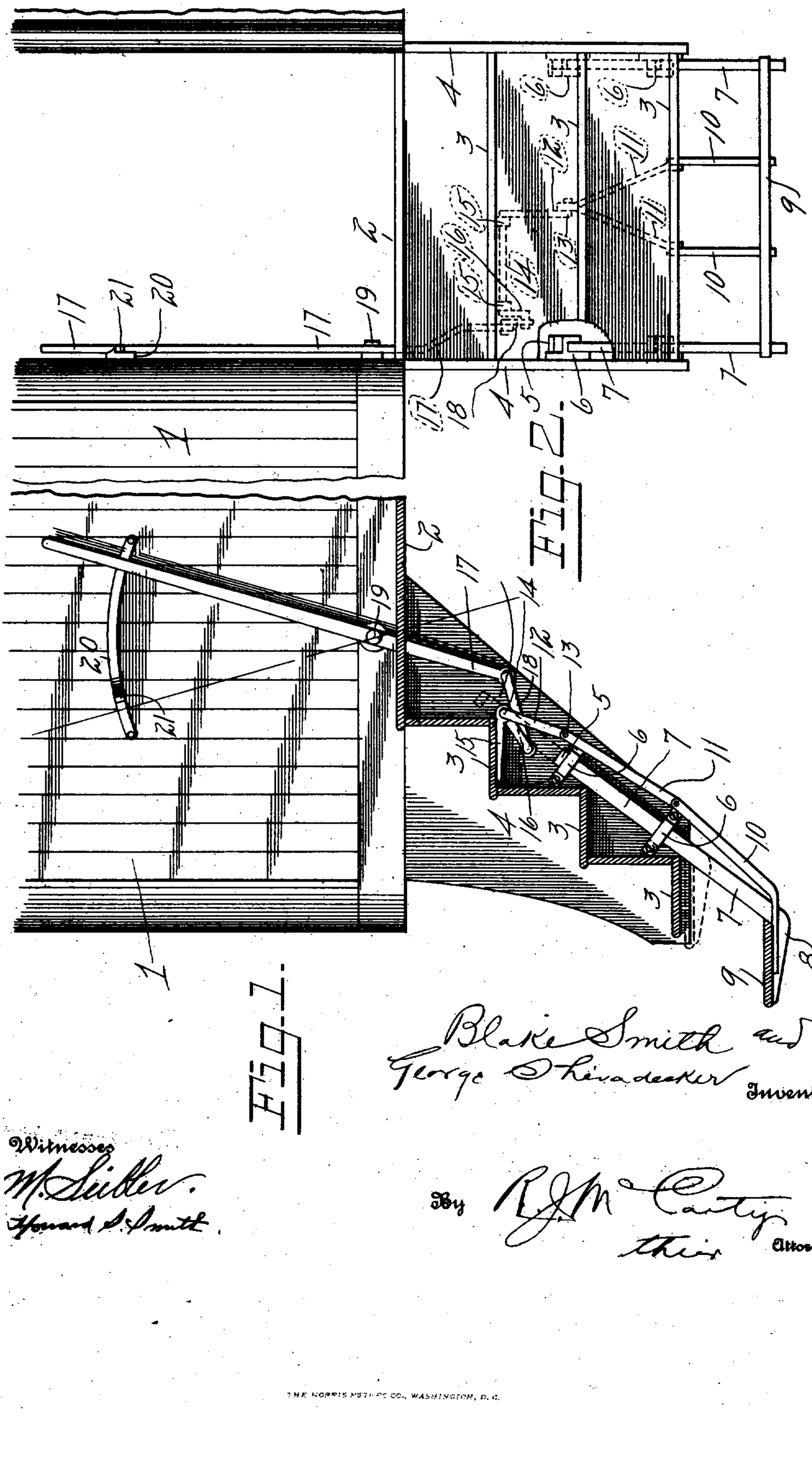
973,714. **Patented Oct. 25, 1910.**



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UNITED STATES PATENT OFFICE.

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EXTENSION CAR-STEP.

973,714. Specification of Letters Patent. Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that we, BLAKE SMITH and GEORGE SHIVADECKER, citizens of the United States, residing at Verona, in the county of Preble and State of Ohio, have invented certain new and useful Improvements in Extension Car-Steps; and we do 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 and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in extension steps for steam railway cars and traction cars.

It is well known to the traveling public that the steps of cars of the above type are necessarily placed a considerable distance from the ground; that is to say, the lower step is placed at such a distance from the ground in order to avoid striking obstructions, that it is necessary to provide means such as a stool to take the place of a car step in enabling passengers to alight from the cars. These stools often become misplaced or lost and in some cases it is not convenient to use a stool at short stops such as are made by traction cars especially.

The object of the present invention is to provide an auxiliary or extension step which is always in a convenient place and which may be lowered to a serviceable position or elevated to a position out of the way of obstructions with little effort.

The particular novelty of the invention will be hereinafter pointed out in the specification and incorporated in the claim.

In the accompanying drawings Figure 1 is a sectional end elevation through the steps of a car. Fig. 2 is a front elevation of the same showing the extension step lowered as in Fig. 1.

In the specification and drawings similar reference characters designate corresponding parts.

1 designates the end of a car equipped with a platform 2 and a series of steps 3 supported upon side members 4 extending downwardly from the platform 2 and all of which are of the usual form and construction. Slidingly mounted upon the side members 4 and movable within keepers 6 are right and left supporting bars 7—7 the lower ends of which extend outwardly at right angles and are secured to the under side of the extension or auxiliary step 9 as shown at 8. The extension step 9 is shown in full lines in the drawings and in this position it supplements the regular steps 3 of the car and provides an additional step a convenient distance from the ground. The dotted lines immediately below the lower stationary step 3 show the extension step 9 elevated out of a serviceable position and in a position where obstructions cannot interfere with it.

The upper ends of the slidable supporting bars or members 7—7 are provided with enlargements 5 which may be formed by bending the upper extreme ends of said bars. These enlargements or bent portions 5 engage the uppermost keeper on each side of the steps and thus serve to support the extension step in its lowered or serviceable position as in Fig. 1 of the drawings. The sliding movement of the bar 7 is equal to the distance between the stationary steps so that the extension step has a similar movement to and from the lower stationary step.

The extension step 9 is raised and lowered by the following devices: Extending upwardly from said extension step are two arms 10 the lower ends of which extend at an angle and are attached to the under side of the extension step. The upper ends of the arms 10 are pivotally connected to the lower ends of levers 11. The upper ends of the two levers 11 are brought together and are connected to the lower end 13 of one arm of a crank 12. The crank 12 is mounted, or rather the shaft portion 14 of the crank, is journaled in bearings 15 attached to the next highest stationary step 3 of the car. The crank shaft is also provided with a second crank 16 at the end opposite to that at which the link levers 11 are attached and the said crank 16 is suitably connected to a hand-operative lever 17 through a link connection 18. It will thus be seen that an operation of the hand lever 17 will throw the system of levers in a manner which will elevate or lower the extension step according to the direction of movement given the lever 17. The upper end of the lever 17 engages a segment 20 attached to the adjacent portion of the car structure and which is provided with a shoulder 21 adapted to engage said lever and to hold it when the extension step 9 is elevated out of use. The lever 17 extends

through a suitable opening in the platform 2 and has a fulcrum at 19 upon the adjacent portion of the car. In operating the lever 17 the resiliency thereof acts as a spring in passing over the shoulder 21.

From the foregoing description it will be seen that when the parts are in the position shown in full lines in Fig. 1 and the upper end of the lever 17 is moved to the left, the extension step 9 will be elevated; and if said step 9 is in its upper position and the lever 17 is released from the shoulder 21 and moved to the right, the step will be lowered for the use of passengers alighting from the car. It will also be seen from the drawings that the lever is in a position to be operated by the conductor or other trainman without leaving the platform of the car.

We claim:

In an extension step for railway cars, the combination with the platform and stationary steps of a car, of an extension step below the lower stationary step of the car and movable to a position to serve as a supplemental step, sliding bars having their lower ends extending parallel with the extension step and to which said extension step is attached, keepers attached to the side members of the stationary steps and forming guides for said sliding rods, the upper ends of said sliding rods having means thereon acting as stops in connection with the uppermost keepers to support the extension step in its lower position, arms extending from said extension step parallel with the sliding rods, levers extending parallel with said sliding rods and to which the upper ends of the first named levers are attached, said last named levers having their upper ends engaging and pivotally connected to one arm of a crank shaft, said crank shaft being supported in bearings attached to the uppermost stationary step of the car and provided with a second arm, a hand-operative lever extending above the platform of the car and having its lower end connected to the second arm of the crank shaft by a link lever, and a segment attached to the car and having a shoulder adapted to engage said hand lever, substantially as specified.

In testimony whereof we affix our signatures, in presence of two witnesses.

BLAKE SMITH.
GEORGE SHIVADECKER.

Witnesses:
MATTHEW SIEBLER,
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