(No Model.) 2 Sheets—Sheet 1.

H. C. FARQUHARSON.

RAILWAY CAR STEP.

No. 459,170. Patented Sept. 8, 1891.

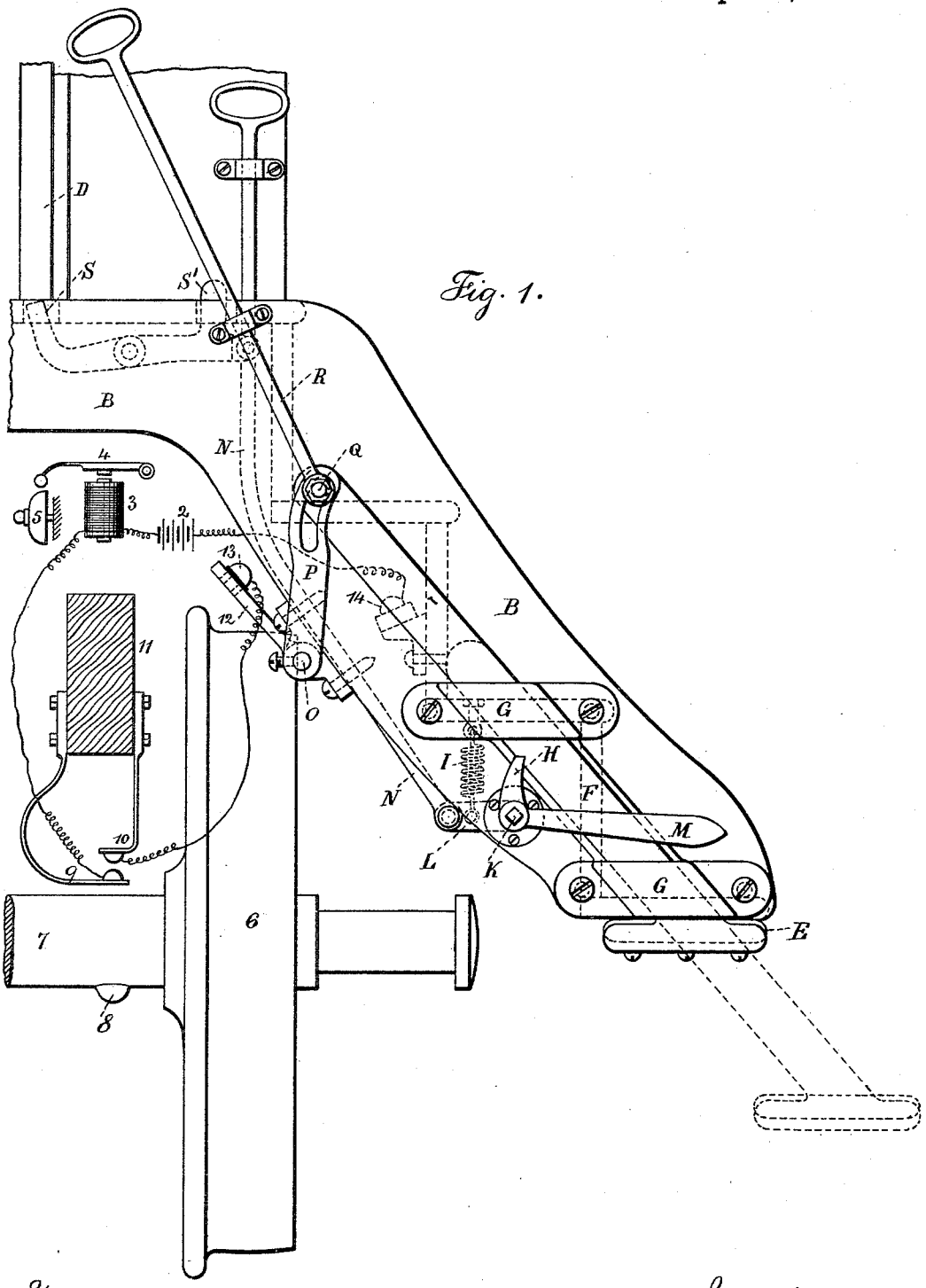

Fig. 1.

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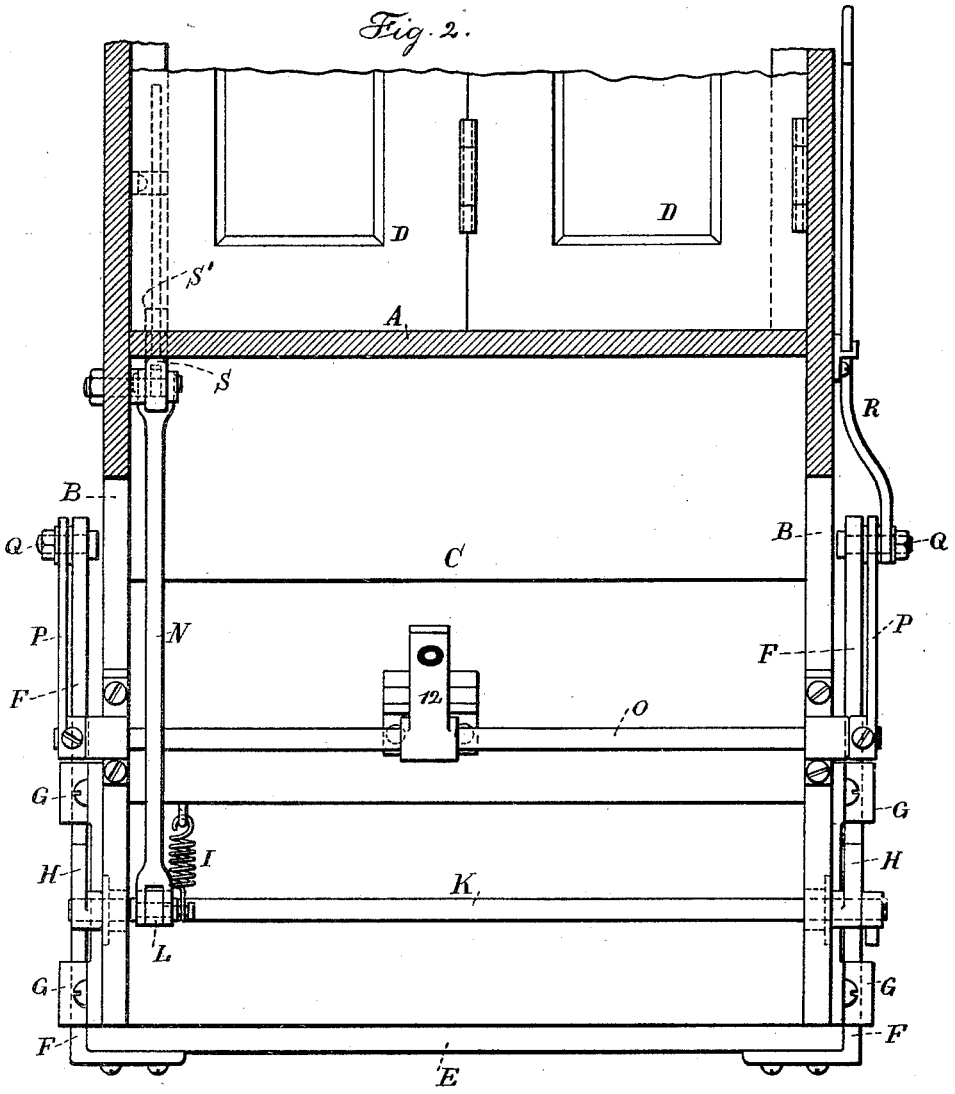
Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY C. FARQUHARSON, OF NEW YORK, N. Y.

RAILWAY-CAR STEP.

SPECIFICATION forming part of Letters Patent No. 459,170, dated September 8, 1891.

Application filed January 8, 1891. Serial No. 377,105. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. FARQUHARSON, a citizen of the United States, residing at the city and State of New York, have invented an Improvement in Railway-Car Steps, of which the following in a specification.

This invention is made with reference to raising and lowering the movable step or platform at the bottom of the stationary car-steps, so that such movable step can be actuated from the platform, and the vestibule-doors of the train cannot be closed until the movable step is drawn up, and in case the car should be started before such movable step is drawn up an alarm or automatic bell will be rung until the car-step is drawn up.

In the drawings, Figure 1 is a diagrammatic representation of the apparatus made use of by me; and Fig. 2 shows my improvements as upon the back of the steps, the platform being in section.

The platform A at the end of the car is represented as provided with the stationary side pieces B and steps C, and at D portions of the vestibule-doors are represented.

The movable step E or platform is provided with side bars F, permanently fastened at their lower ends to the ends of the movable step, and these side bars slide through stationary guides G upon the exterior face of the side pieces B, and these side bars F are held in position when the step is raised by latches H, and I remark that these side bars and the stationary guides may be either straight or of any suitable shape, and the latches H are acted upon by a spring at I to force them into notches in the side bars F, and there is a cross-shaft K, upon the ends of which are the latches H, and there is a lever L on this shaft K, so that both the latches can be simultaneously operated upon when the cross-shaft K is partially turned, and this shaft K may be moved by a hand-lever M. (Shown in Fig. 1.) I provide a rod N, extending down from the platform and connecting to the lever L, whereby the latches can be actuated from the platform, so that by forcing down this rod N the lever L and cross-shaft K are moved to withdraw the latches H and unlatch the side bars F and allow the step to slide down by gravity into the position shown by dotted lines in Fig. 1.

In railway-cars the conductor or attendant very frequently has to board the train as the same gets under way, and there may not be time to return the bottom step to its normal position before the train is in motion. To provide for raising up the movable step from the platform, I make use of a cross-shaft O, with lever-arms P, slotted at their outer ends for acting upon the pin Q, that project from the upper ends of the side bars F, and to one of these pins Q a lifting-rod R is connected, the upper end of which is adjacent to the platform and provided with a suitable handle, so that the attendant can draw this lifting-rod R upwardly and in so doing lift directly upon one of the side bars F, and by the slotted lever-arms P and cross-shaft O the other side bar of the movable step will be lifted with uniformity, so that the step can be drawn up bodily and parallel by the rod R, and such step will assume its normal position, as represented by the full lines in Fig. 1, and it will be close up below the lower step of the stationary steps.

Through inattention or carelessness the movable step may not be drawn up, and the same may be injured by contact with obstructions at the side of the roadway. To prevent this I provide a bolt S, passing vertically through the platform and adjacent to the door-jamb of the vestibule-door D. This bolt is connected to the rod N that extends to the lever L, so that when the movable step E is raised to its place the bolt S is drawn down, and when the movable step is lowered the bolt S is elevated. There is a twofold object in this construction. The bolt S, when beneath the vestibule-door, prevents the movable step being lowered, because such step cannot be lowered until the vestibule-door is opened to allow the bolt S to rise and the latches H to be withdrawn, and when the step is lowered the vestibule-door cannot be closed, because the bolt S is in the way of the same, thereby giving warning to the attendant that the step must be properly drawn up to allow the vestibule-door to be closed. The connection between the bolt S and the rod N may be of any desired character. I have represented the bolt S as in the form of a lever with a projection S′ passing up through the platform, upon which projection the foot may

be placed to press the same and the rod N downwardly to disconnect the latches H.

As a still further precaution against carelessness, I make use of a battery located in any suitable portion of the car, and the same is illustrated at 2, and an electro-magnet 3 is included in the circuit of said battery, and the armature 4 is provided with a hammer to the bell 5. These parts are only illustrated diagrammatically, and they are to be in any desired or convenient portion of the car, and there is a circuit-closer of any suitable construction actuated by the revolving of the car-wheels.

I have represented a car-wheel at 6, with the axle 7 and a cam 8 thereon, and this cam serves to close the electric circuit between the springs 9 and 10, that are supported from any suitable portion of the truck-frame, such as one of the side pieces 11, and I provide for breaking the electric circuit whenever the car-step is properly raised to its normal position and for closing the electric circuit when the car-step is dropped. A convenient way of accomplishing this object is by the arm 12 upon the cross-shaft O, which arm 12 has an insulated circuit-closer 13 coming in contact with a similar insulated circuit-closer 14 upon one of the car-steps when the movable step is depressed, and when the car is started with the circuit-closers 13 and 14 in contact the circuit will be made and broken between the springs 9 and 10 by the action of the cam 8, and the alarm-bell 5 will be rung until such times as the car-step is restored to its normal position.

The drawings represent the steps as provided with risers and closed end pieces B. In cases where the steps are open and supported by iron bars the stationary guides G will be fastened upon the ends of the steps, and the shafts O and K may be supported by the said iron bars that carry the steps; but I do not limit myself to the manner of supporting the parts, as this will vary according to the construction of the stationary steps.

I claim as my invention—

1. The combination, with the movable car-step and its side bars, of a cross-shaft O, lever-arms P upon such cross-shaft, and pawls acting upon the side bars of the movable step, and a lifter-rod extending up to the platform, substantially as set forth.

2. The combination, with the stationary car-steps, the movable step, side bars, and stationary guides through which the side bars pass, of the cross-shaft O, lever-arms P, fastened upon such cross-shaft and slotted at their outer ends, the pins upon the side bars of the movable step, and the lifting-rod extending up to the platform, substantially as set forth.

3. The combination, with the stationary steps and the movable step, the side bars, and the stationary guides for the same, of spring-latches for holding the side bars and step when elevated, a cross-shaft supporting the latches, and a rod extending up to the platform, whereby the latches can be actuated for dropping the step from the platform, substantially as set forth.

4. The combination, with the stationary steps, the movable step and its side bars, of the bolt adjacent to the vestibule-doors, and a connection between the bolt and the movable car-step, whereby the bolt is projected when the car-step is lowered, and the reverse, substantially as set forth.

5. The combination, with the stationary steps and the movable step and its side bars, of a cross-shaft, lever-arms upon the cross-shaft and connections from the same to the side bars of the movable step, a bolt adjacent to the vestibule-doors, and a connection for moving such bolt when the step is moved, substantially as set forth.

6. The combination, with the stationary steps, of a movable step, side bars or supports for the same, and a circuit-closer actuated by the movement of the step, an electro-magnet, and an alarm operated thereby for giving a signal when the movable step is in its depressed position, substantially as set forth.

7. The combination, with the stationary and movable car-steps, of an electric-circuit closer actuated by the movable car-step, an electro-magnet and alarm, and an electric circuit and circuit-breaking device actuated by the car-wheel, whereby the alarm is rung when the train is in motion if the movable step is in its depressed position, substantially as set forth.

Signed by me this 19th day of December, 1890.

H. C. FARQUHARSON.

Witnesses:
GEO. T. PINCKNEY,
HAROLD SERRELL.