

COMBINED DOOR AND STEP OPERATING MEANS FOR RAILWAY CARS.

Patented Sept. 7, 1909.

933,574.



Attest:
Wm. H. Ford
J. H. Cook.

Inventor:
Michael O'Brien,
by E. S. Knight
Att'y.

M. O'BRIEN.

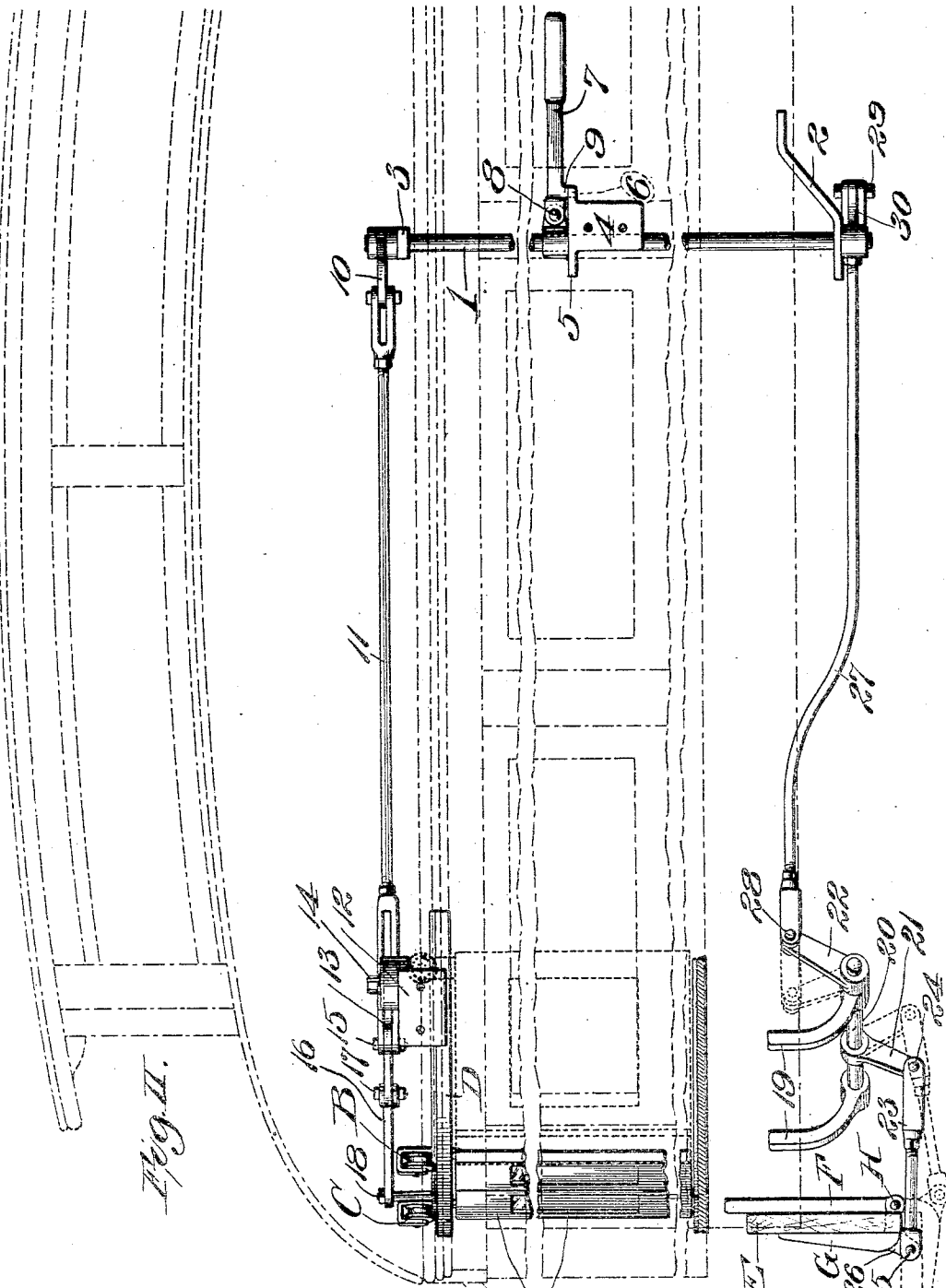
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2 SHEETS—SHEET 2.

933,574.



Attest:
[Signature]
J. H. Con...

Inventor:
Michael O'Brien
by *[Signature]* Atty.

UNITED STATES PATENT OFFICE.

MICHAEL O'BRIEN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNITED RAILWAYS COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

COMBINED DOOR AND STEP OPERATING MEANS FOR RAILWAY-CARS.

933,574.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed April 29, 1909. Serial No. 493,028.

To all whom it may concern:

Be it known that I, MICHAEL O'BRIEN, a citizen of the United States of America, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Combined Door and Step Operating Means for Railway-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a means for use in opening and closing doors of railway cars, and also for lowering and raising steps adjacent to such doors, and whereby, when the door is closed the step may be elevated into a non-serviceable position, and lowered to a serviceable position when the door is open.

The means to which my invention relates is intended more particularly for use upon what are now known as "pay-as-you-enter" railway cars more particularly used upon street railways, and the device is more especially intended for use at the exit opening of the car on which the means is used and which may be controlled by the door operated by my improved means.

Figure I is a top or plan view of my door and step operating means with the parts to which my improvement pertains shown in full lines, and a car vestibule shown in dot and dash lines. Fig. II is an elevation of my door and step operating means with portions broken out, the car body being illustrated by dot and dash lines and being partly broken out horizontally to contract the view.

In the accompanying drawings: A designates a door by which an opening in a portion of the car may be controlled, this door being illustrated in the drawings as being composed of sections hinged to each other and being preferably so made. The door is supported by hangers B and C that are arranged to ride upon an overhead track D, in order that the door may be at one time positioned to control the opening in the car, and at another time retracted from said opening to expose it.

E designates a step located at the opening as controlled by the door A, and which is supported by hinge members F and G pivoted to each other at H, the former of which is secured to a part of the car beneath the opening mentioned, and the latter of which is secured to the step. The hinge member

r', therefore, becomes a fixed member, while the hinge member G serves as a connection to the hinge member F that permits of the step being at one time in an elevated or vertical position, (as seen in full lines in the drawings,) and at another time in a lowered or horizontal position, as illustrated in dotted lines.

1 designates a staff or main operating member in my door and step controlling means, this staff being vertically positioned upon the car and being preferably so located as to be in close proximity to the motorman, or another operator upon the car. The staff is supported at its lower end by a bracket 2 (see Fig. II,) and at its upper end by a bracket 3, these parts being suitably attached to fixed parts of the car. 4 is a keeper bracket fixed to a portion of the car and through which the staff extends. The staff is pivoted to it at 8.

7 is an operating lever located above the keeper 5 carried by the bracket 4, and which is provided at its lower end with a tooth or projection 9 that is adapted to enter a notch 6 in the keeper for the purpose of holding the lever, and consequently the staff from movement when the lever is in a horizontal position.

The staff 1 has fixed to it a lower arm to which is pivoted one end of the connecting rod 11.

12 is a stationary bracket preferably carried by the overhead track rail D, and 13 is a throw lever having one of its ends pivoted at 14 to the bracket 12. The connecting rod 11 is pivotally united at 15 to the throw lever 13 intermediate of the ends of said lever.

16 is a link, one end of which is pivoted at 17 to the end of the throw lever 13 farthest removed from its point of pivotal support, the other end of said link having pivotal connection at 18 with the hanger C that serves with the hanger B to support and guide the door A into slidable opening and closing movement.

19 designates hangers located beneath the floor of the car and supported by attachment in any suitable manner to a part or parts of the car. These hangers have loosely mounted in them a rock shaft 20 that has fixed to it curved arms 21 and 22.

23 is a throw rod having one of its ends pivotally connected at 24 to the curved arm

21, and its other end pivoted at 25 to the step E at the inner edge of the step, a suitable connection member 26 being attached to the step to permit of the pivotal connection
5 between the throw rod and the step.

27 designates a connecting rod having one of its ends pivoted at 28 to the curved arm 22 attached to the rock shaft 20. The other end of this connecting rod is located in proximity to the staff 1 and is pivotally connected
10 at 29 to the lever arm 30 fixed to said staff at its lower end.

In the practical use of my door and step operating means, the parts normally occupy
15 the positions in which they are seen in full lines in the drawings, at which time the door A is closed and controlling the opening that is to be guarded thereby, and the step E is in an elevated position in order that it may
20 not be utilized by a passenger in an effort to gain access to the car through the door-guarded opening, which, as previously stated, is only intended to be used as an exit opening, and to be exposed when the door
25 and step operating means is operated by the person whose duty it is to operate it. When the door is to be opened and the step lowered, the operator by grasping the throw lever 7 elevates said lever to free its tooth 9 from the
30 keeper 5, and then by moving said lever in an arc of a circle imparts rotation to the staff 1. As said staff rotates, it carries with it the lever arms 10 and 30 whereby the connecting rods 11 and 27 are moved longitudinally with
35 the result of causing them to act respectively upon the other lever 13 and the curved arm 22 of the rock shaft 20. Upon this action taking place, the other lever 13 is elevated laterally so that its end connected to the link
40 16 moves in a direction away from the door A and the pull is exerted upon said link to cause it to impart movement to the hanger C upon the overhead track rail D, this movement being continued until the door A supported by said hanger is conducted to an
45 open position. Simultaneously with the operation of the door as explained, the connecting rod 27 by acting upon the curved arm 22 causes the rock shaft 20 to be rotated, and the curved arm 21, also carried by
50 said rock shaft, to be moved in a direction away from the step E, whereby the throw rod 23 is moved inwardly and the step is

lowered to a horizontal position, as illustrated by dotted lines, Fig. II. It is obvious that movement of the operating lever 7 in a direction the reverse of that in which it is moved to open the door and lower the step will cause the parts actuated by the staff 1 to be moved contrariwise to the previously described movement and so that they will act to close the door and elevate the step, thus returning the parts to their normal positions.

I claim:

1. The combination, with a door and a step adjacent to said door; of a main shaft, a lever connected to said door, a rod connecting said main shaft to said door lever, a rock shaft connected with said step, a rod connecting said main shaft to said rock shaft and means for operating said main shaft.

2. The combination with a door and a pivotally supported step adjacent to said door, of a main operating shaft, a lever connected to said door, a connecting rod uniting said lever to said main operating shaft, a rock shaft having connection with said step, a connecting rod uniting said rock shaft to said main operating shaft, and means for operating said main shaft.

3. The combination with a door and a pivotally supported step adjacent to said door, of a main operating shaft provided with a pair of lever arms, a lever having connection with said door, a connecting rod uniting said lever to one of said lever arms, a rock shaft having connection with said step, a connecting rod uniting said rock shaft to the other of said lever arms, and means for operating said main shaft.

4. The combination with a door and a pivotally supported step adjacent to said door, of a main operating shaft, means of connection between said main operating shaft and said door and step, whereby the door may be either opened or closed, and the step may be lowered or raised, a hand lever pivoted to said main operating shaft, and a keeper associated with said main operating shaft and with which said hand lever is adapted to engage to hold it from movement.

MICHAEL O'BRIEN.

In the presence of—

EMMETT P. WORTH,
HERMAN WOHLER.

It is hereby certified that the assignee in Letters Patent No. 933,574, granted September 7, 1909, upon the application of Michael O'Brien, of St. Louis, Missouri, for an improvement in "A Combined Door and Step Operating Means for Railway-Cars," should have been described and specified as *United Railways Company of St. Louis, of St. Louis, Missouri, a corporation*, instead of "United Railways Company, of St. Louis, Missouri, a corporation of Missouri;" and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of October, A. D., 1909.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.