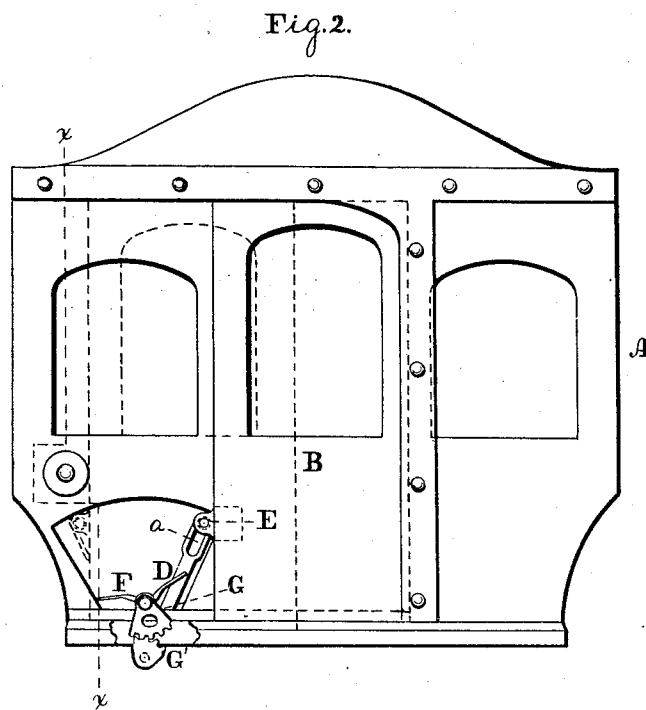
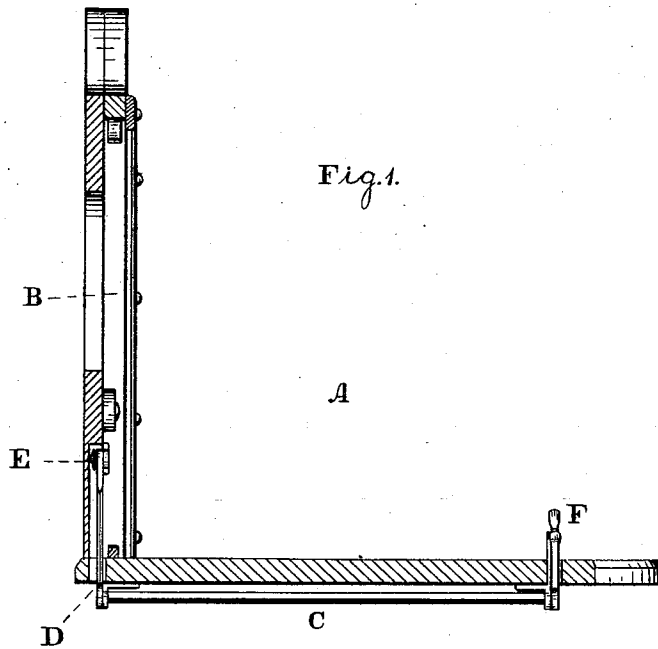


G. M. BRILL.
Operating Car Doors.

No. 157,368.

Patented Dec. 1, 1874.



Witnesses:

L. F. Brown.

H. P. Grant.

Inventor:

George M. Brill.
by *John A. Diederichsen,*
Att'y.

UNITED STATES PATENT OFFICE.

GEORGE M. BRILL, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN OPERATING CAR-DOORS.

Specification forming part of Letters Patent No. **157,368**, dated December 1, 1874; application filed October 22, 1874.

To all whom it may concern:

Be it known that I, GEORGE M. BRILL, of the city and county of Philadelphia and the State of Pennsylvania, have invented a new and useful Improvement in Operating Car-Doors; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a longitudinal vertical section in line *x x*, Fig. 2. Fig. 2 is a front view, the front wall of the car being removed.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to the operation of a car-door from the front platform; and consists of a slotted arm, which engages with a pin or stud on the car-door, and, reciprocating by means of a rock-shaft, imparts the necessary opening and closing motions of the door.

The rock-shaft extends forward to the front part of the car, and is engaged by a lever, which is under control of the driver, and constructed of two parts to increase the leverage, which is another feature of my invention.

Referring to the drawings, A represents the body of a car, and B the door sliding at the rear thereof. At the bottom of the car there is mounted a rock-shaft, C, which extends longitudinally and carries at its rear end an arm, D, which projects upwardly in a space in the rear wall or walls of the car. The upper portion of the arm D is slotted in the direction of its length, as at *a*, and into the slot is fitted a pin or stud, E, which is secured to the door B and extends longitudinally therefrom.

The front portion of the shaft is operated by a lever, F, which should be within reach of either the foot or hand of the driver, said lever having an axis on the floor or bottom of the car, and carrying a toothed segment, G, which meshes with another segment, G', secured to the rock-shaft.

In lieu of the segments the lever may be extended below its axis and an arm secured to the rock-shaft, and by means of a slot and pin the power of the lever may be communicated to the rock-shaft.

The operation is as follows: The driver wishing to open the door depresses, by foot, the proper side of the lever F, which thus causes a rotation of shaft C and moves the arm D therewith, which arm describing the arc of a circle, draws the door with it, but owing to the slot *a* it permits a right-lined movement of the door, so that there is no rising or binding of the latter.

Should a hand-lever be employed, the operation will be similar to that of the foot-lever just described.

It will be seen that by properly operating the lever the door will be closed, the movement of parts being in reverse order to that performed in opening the door.

It will also be seen that by means of the gearing G G' a short motion of the lever F will impart, through the rock-shaft C, a large motion to the arm D, and consequently to the door B.

The door will be found to be quickly, easily, and reliably opened and closed, and the means therefor are simple, inasmuch as but few parts are employed, the door remaining intact and the arm D swinging in a space not otherwise occupied.

Owing to the latter feature it is evident that my invention is readily applicable to cars in service, it being requisite only to apply the pin or stud to the door, secure the rock-shaft in position, introduce the arm D in the back space or groove of the car, and properly mount the operating-lever F on the platform.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the sliding car-door, of the pin or stud E, secured to said door, and the swinging arm D formed with a slot, *a*, substantially as and for the purpose set forth.

2. The combination of the slotted arm D, pin or stud E, rock-shaft C, and lever F to operate a car-door, as set forth.

3. The combination, with the car-door, of the pin or stud E, swinging arm D, rock-shaft C, lever F, and the gearing G G', intermediate of the said lever and rock-shaft, substantially as and for the purpose set forth.

GEO. M. BRILL.

Witnesses:

JOHN A. WIEDERSHEIM,
JNO. H. BELL.