

L. A. KLING.
STEP OPERATING MECHANISM FOR CARS.
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Patented Dec. 12, 1911.

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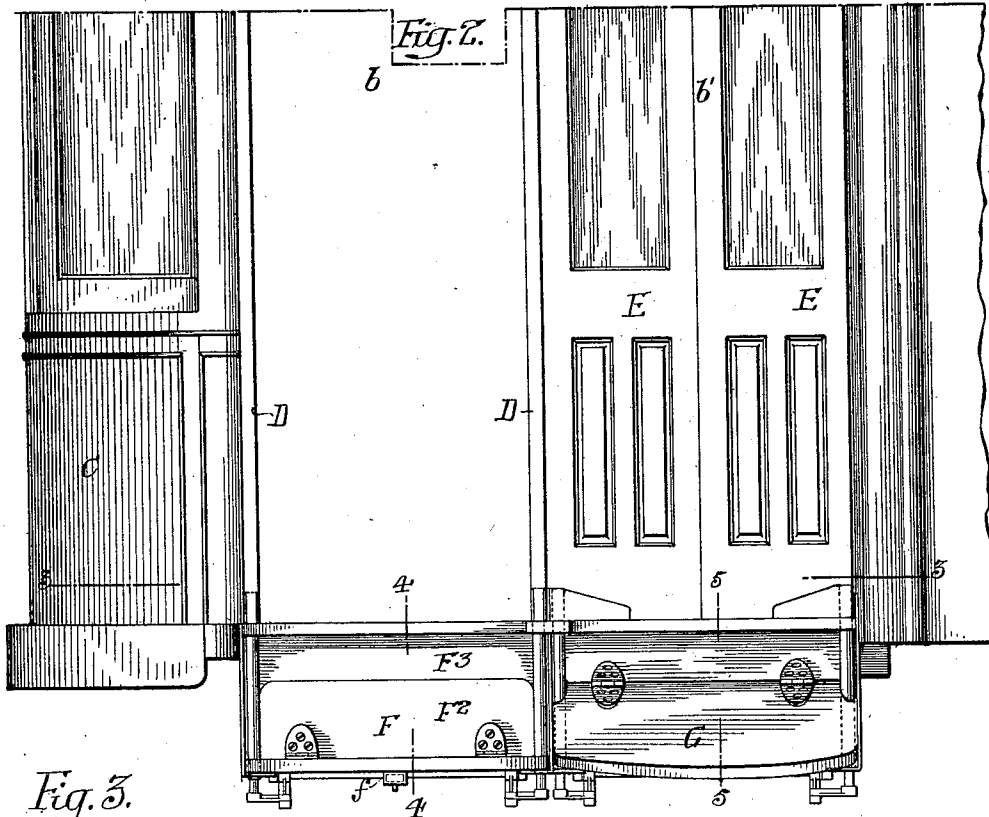


Fig. 3.

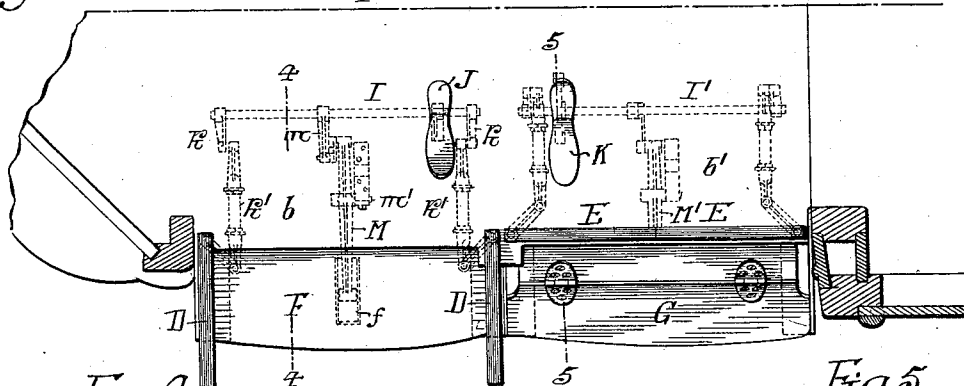
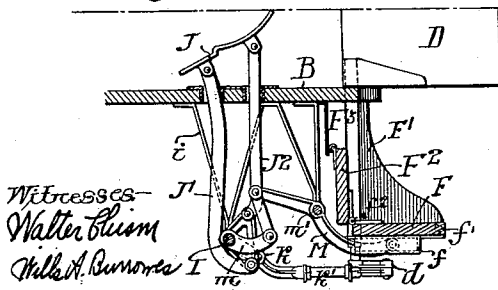
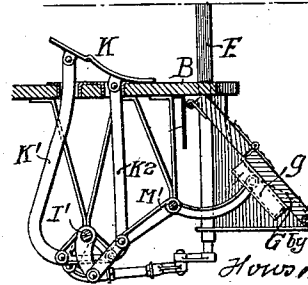


Fig. 4.

Fig. 5



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UNITED STATES PATENT OFFICE.

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STEP-OPERATING MECHANISM FOR CARS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LOUIS A. KLING, a citizen of the United States, residing in Elizabeth, county of Union, State of New Jersey, have invented certain Improvements in Step-Operating Mechanism for Cars, of which the following is a specification.

This invention relates to certain improvements in passenger cars which are provided with doors at the sides of the platform and movable steps.

One object of the invention is to operate the doors and steps by means of foot levers so that the conductor or motorman is free to use the hands for other purposes.

A further object of the invention is to so arrange the movable steps that they will assume an inclined position when out of use.

I have illustrated the invention as applied to the double doors on the rear platform of a car in which a passenger pays his fare on entering the car; one passageway being used for the ingress of passengers and the other for the egress, but it will be understood that the invention can be used to operate the egress doors and step at the forward end of the car; the mechanism being operated by the motorman.

In the accompanying drawings:—Figure 1, is a perspective view of sufficient of the rear end of a passenger car to illustrate my invention; Fig. 2, is a side view, showing one of the steps in position with the doors open and the other step out of operative position and the doors closed; Fig. 3, is a sectional plan view on the line 3—3, Fig. 2; Fig. 4, is a transverse sectional view on the line 4—4, Fig. 2; Fig. 5, is a transverse sectional view on the line 5—5, Fig. 2; and Fig. 6, is a detached perspective view of the rock shaft and its connections.

A is the body of the car.

B is the platform.

C is the front vestibule casing made in the ordinary manner. In the present instance there are two doorways b, b' ; the doorway b being the ingress doorway and the doorway b' being the egress doorway. These two doorways are separated by a vertical post. The doors may be arranged close together in which case the vertical post can be dispensed with.

D, D are the doors closing the ingress

passageway b and E, E are the doors closing the egress passageway b' .

F is the step in front of the ingress doorway b , and G is the step in front of the egress doorway b' . Both the doors D, D and the doors E, E as well as the step are hinged at the outer edge and the step tilts upward out of position as illustrated in the drawings.

I is a longitudinal shaft mounted in suitable bearings i hung from the bottom of the platform and on this shaft are two arms i', i'' . The arm i' is connected to a treadle J by a link J' and the arm i'' is connected to a treadle K by a link J^2 . On the shaft are two arms k, k' which are connected by links k' to levers d, d on the vertical shaft D' on which the doors are hung so that any rocking movement imparted to the shaft I will open and close the doors D, D.

On the shaft I is an arm m connected to a lever M which is pivoted at m' to a bracket on the underside of the platform; the connection in the present instance being made by a link m^2 . On the end of the lever M are rollers which travel in guides f secured to the step F. The step F is pivoted at f' to brackets F' depending from the edge of the platform B and is hinged at f^2 to a riser section F² which travels on the face of a depending plate F³ permanently secured to the underside of the platform. Rollers or other anti-friction devices may be mounted on this riser section F² and arranged to bear upon the plate F³.

When the heel of the treadle J is depressed the doors swing to the open position and the step is in proper position to be used, as clearly shown in Fig. 4, but when the toe of the treadle is depressed then the doors are closed and the step assumes the position illustrated in Fig. 5; the step and the riser being tilted.

The mechanism for operating the doors, E, E and the step G is identical with that for operating the doors D, D and the step F. The shaft I has arms connected by links K', K² to a treadle K and the arms on the doors E, E are connected to arms on the shaft I', and one arm of the bell crank lever M' is connected to an arm on the shaft I', while the other arm is adapted to slide in a guide g on the step G. In some instances a single shaft may be used instead

of the shafts I, I', in which case a single treadle will be used and the two sets of doors will be opened or closed simultaneously. In some instances when a fixed step

is used the mechanism may be only connected to the doors, or, if certain forms of doors are used, which are to be opened and closed by other means, then the means may be used for only operating the steps.

The platform may be divided in any suitable manner to form ingress and egress passageways leading to the interior of the car, but these divisions have not been shown as they form no part of the present invention.

As before remarked, the mechanism may be used at the forward end of the car to open and close the exit passageway and in this construction the treadles will be in position to be operated by the motorman.

The treadles when shifted to either extreme position are so connected to the arms of the rock shaft that the step section is locked in either of its two positions and in order to release the step section the treadles must be actuated. In some instances hand operated levers may be substituted for the treadles; the levers being pivoted to the floor and attached to the links which are connected to the rock shafts.

This invention is particularly adapted for use in connection with passenger cars of the pay-as-you-enter type in which inclosed platforms are used. In the general type of pay-as-you-enter cars the platform is divided into ingress and egress passageways leading to and from one side of the platform so that passengers may either enter the car or leave the car at the rear.

By the above invention these passageways are closed by two independently operated pairs of doors; either pair being operated by the conductor pressing upon certain treadles and the steps opposite the doors to be opened or closed are simultaneously moved into and out of position and, as before remarked, the mechanism for closing the single doorway and operating the step at the forward end of the car may also be actuated by treadle mechanism controlled by the motorman.

I claim:

1. The combination in a passenger car, of a platform, a pivoted door arranged to close the passageway leading from the platform, a step normally extending beyond the platform and having a tread and riser pivotally connected and movable into and out of position, a shaft connected to the door and to the step, and mechanism for rocking the shaft.

2. The combination in a passenger car, of a platform, a pivoted door arranged to close the passageway leading from the platform, a step movable into and out of position, a

shaft connected to the door and to the step, and a treadle for rocking the shaft, said treadle extending through the floor of the platform.

3. The combination of a platform, a pair of hinged doors arranged to close the passageway leading to and from the platform, a movable step in front of the hinged doors, a rock shaft located under the platform and connected to the step and to the pair of doors, with a treadle for rocking the shaft so as to either open or close the doors and move the step into operative or inoperative position.

4. The combination in a passenger car, of a platform, two doorways at the side of the car, a pair of doors arranged to close said doorways, a movable step located in front of each doorway, two rock shafts, a treadle connected to each rock shaft, said treadles being placed close together, one rock shaft actuating one set of doors and steps and the other rock shaft actuating the other doors and steps.

5. The combination of a platform, a step mounted at the side of the platform, a rock shaft, an arm on the rock shaft, a lever connected to said arm and arranged to actuate the step, and a treadle connected to said rock shaft.

6. The combination of a platform, brackets at the side of the platform, a step pivoted near its outer edge to the brackets, a riser section hinged to the step at the inner edge, a rock shaft, an arm on the rock shaft, a lever connected to the arm and arranged to bear against the under side of the step, and treadle mechanism for rocking the shaft so as to move the step into and out of position.

7. The combination of a platform, brackets at the side of the platform, a step pivoted to the brackets, a riser section hinged to the inner edge of the step, a guideway on the under side of the step, a lever having one arm adapted to travel in said guideway, a rock shaft, an arm on the rock shaft connected to the other arm on the lever, and mechanism for actuating the rock shaft.

8. The combination of a platform, a movable step having a tread section and a riser section pivotally connected, and manually operated means for tilting the step so as to bring the riser and step into alignment and at an angle to the platform, said means being located within the car.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

LOUIS A. KLING.

Witnesses:

WM. E. SHUPE,

WM. A. BARR.