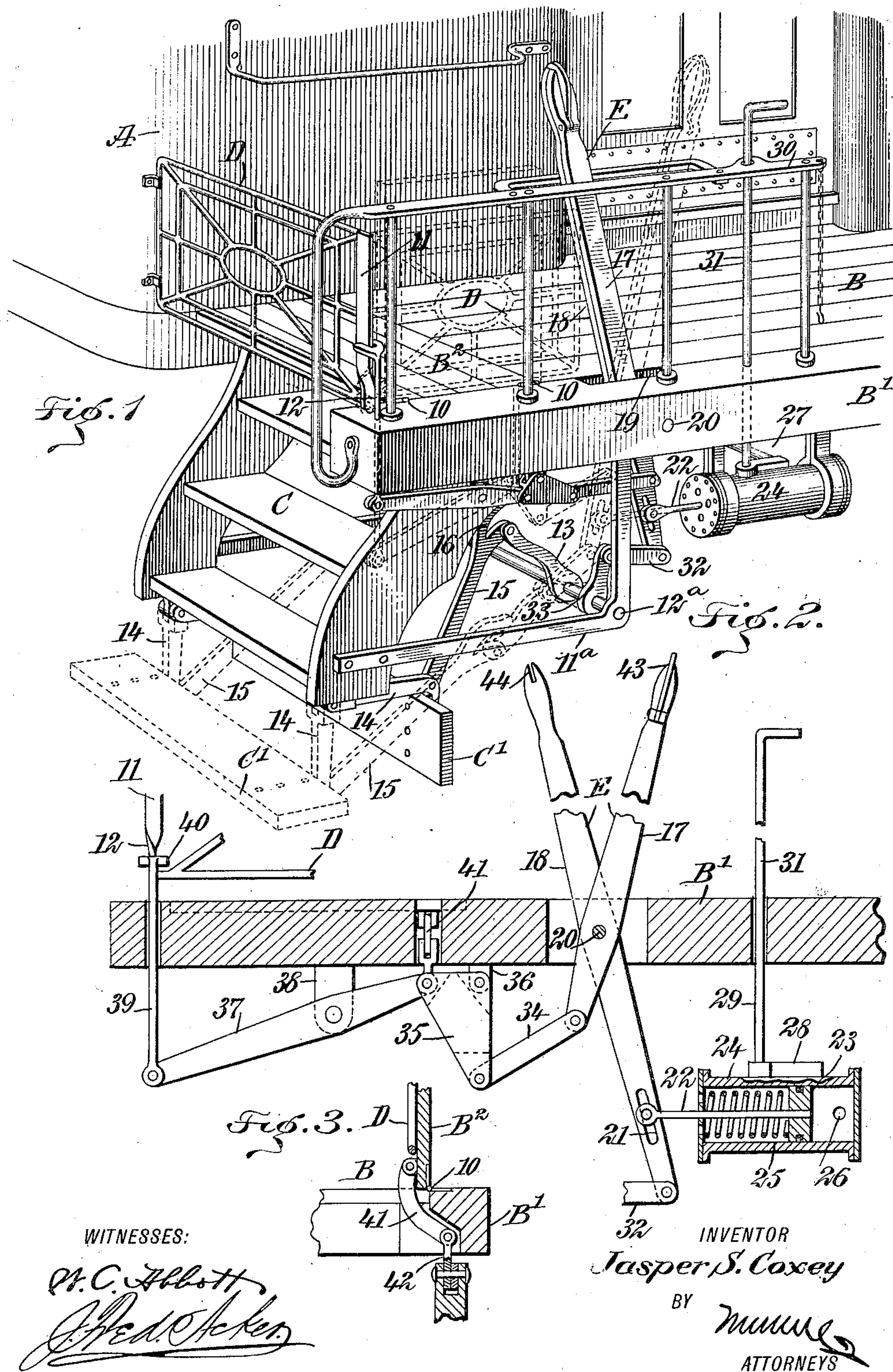


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PATENTED MAY 29, 1906.

J. S. COXEY.
FOLDING AND EXTENSION CAR STEP.

APPLICATION FILED AUG. 22, 1905.



WITNESSES:

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FOLDING AND EXTENSION CAR-STEP.

No. 822,102.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed August 22, 1905. Serial No. 275,200.

To all whom it may concern:

Be it known that I, JASPER SHOEMAKER COXEY, a citizen of the United States, and a resident of Aberdeen, in the county of Chehalis and State of Washington, have invented a new and Improved Folding and Extension Car-Step, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple and readily-applied means whereby to simultaneously operate a folding extension car-step from the platform of a car and raise and lower the temporary platform which normally covers the steps and open or close the gate at the platform when a gate is employed.

A further purpose of the invention is to provide means for simultaneously accomplishing the said results through the medium of an air-cylinder connected with the train-pipe or other source of air-supply and also to so construct the operating mechanism that the temporary platform and gate may be operated by hand whenever desired without operating the folding extension-step.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a portion of a car-platform and the applied mechanism, illustrating the parts in normal position by positive lines and illustrating in dotted lines their position when operated to carry out the auxiliary step and to raise the temporary platform and to open the gate. Fig. 2 is an enlarged section through a portion of the sill of the platform and a front sectional view of a portion of the operating mechanism, showing how the temporary platform and the gate may be operated independently of the auxiliary or folding step; and Fig. 3 is a transverse section through a portion of the temporary platform for the steps, the said platform being in open position, and a sectional side elevation of a portion of the mechanism for operating the said temporary platform.

A represents the end of the body of a car, B an end platform of the car, and B' the outer sill of the platform B.

C represents the steps leading from the

platform, which steps are of the customary type and are fixed relative to the platform.

B² represents an auxiliary or temporary platform which is employed to cover the upper step when the steps are not required for use, the said auxiliary or temporary platform B² being connected with the sill B' by hinges 10, as is illustrated in Figs. 1 and 3.

C' represents an auxiliary folding or extension step which is adapted to be added to the fixed steps C, as is shown by dotted lines in Fig. 1, and when this auxiliary step C' is not used it is adapted to be folded back on the fixed steps C, occupying a space in front of, yet free from, the walls of the truck, as is shown by positive lines in Fig. 1.

D represents a gate which is pivoted on the sill B' just above the fixed steps C and at the outer longitudinal edge of the temporary or auxiliary platform B². The pivot-post 11 of the gate D is made flat and rectangular in cross-section and is straight from its upper portion to a point near the end which is pivoted in the sill B'; but at the pivot portion of the said gate the swing post or bar 11 is rendered spiral, being given a quarter pitch or twist 12, for example, as is particularly illustrated in Figs. 1 and 2.

An angle-bracket 11^a is secured to each side portion of the fixed steps C and to the platform B, the attachment being made in any suitable or approved manner, and preferably where the members of the said angle-brackets 11^a connect a shaft 12^a is mounted to turn. This shaft 12^a is provided with two crank-arms 13, which extend normally upwardly and outwardly, as is shown by positive lines in Fig. 1, and said crank-arms 13 are ordinarily constructed more or less on the lines of a compound curve. Angle-brackets 14 are secured to the auxiliary or folding step C', and these angle-brackets are hinged to the lowermost step of the fixed steps C, as is also shown in Fig. 1, so that the said auxiliary step C' may be carried to the front of the fixed steps and held in a horizontal position, thus adding to the fixed steps, or it can be carried to the rear and beneath the said fixed steps out of the way when not required.

Bars 15 are secured to the under face of the auxiliary or folding step C', and these arms are pivotally connected with the forward ends of the crank-arms 13. In the construction of the bars 15 a member 16 is upwardly and rearwardly curved over the ends of the bars, which are pivoted to the crank-arms 13,

so that when the auxiliary step C' is carried in position for use, as is shown by dotted lines in Fig. 1, the member 16 will close over the pivotal connection between the bars 15 and the crank-arms 13, providing a lock-joint, and will effectually prevent the step C' from being carried accidentally from its position of use.

A dual lever E is employed in connection with the operation of the said auxiliary step C', and this dual lever consists of two members 17 and 18. Both of these members extend through an opening 19 produced in the sill B' and are pivoted to the sill by means of a common pivot-pin 20, as is shown in Figs. 1 and 2. The member 17 of the dual lever E extends a shorter distance below the sill B' than does the opposing member 18, as is also shown in Figs. 1 and 2. At the lower end of the member 18 of the dual lever a longitudinal slot 21 is produced, and at this slotted portion of the lever the outer end of a piston-rod 22 is connected, which piston-rod is attached to a piston 23, located in a cylinder 24, suitably situated beneath the platform B of the car. A spring 25 is located in the said cylinder, having a tendency to carry the piston 23 to the rear, and the said cylinder is provided with a port 26, which connects with a pipe 27, connected with the compressed-air cylinders of the train, as the cylinder 24 is adapted to receive air under compression. When the air is admitted to the cylinder 24, the piston 23 is forced outward, and consequently the lower end of the member 18 of the dual lever E is carried in the same direction. The supply-pipe 27 for the cylinder 24 is provided with a valve of any suitable description, adapted in one position to admit air to the cylinder and in another position to cut off the air-supply, and when the air-supply is cut off the valve opens a suitable port in the cylinder to permit the discharge of air therefrom and permit the spring 25 to act to carry the piston 23 inward and restore the member 18 of the dual lever E to its normal position. (Shown by positive lines in Figs. 1 and 2.) This valve, which is a three-way valve of any approved construction, is operated ordinarily through the medium of an arm 28, and said arm is controlled by a rod 29, which extends upward through the sill B' and through the upper bar 30 of the rail 31, which is usually provided at the outer edge of the platform B, as is illustrated in Fig. 1.

The lower end of the member 18 of the dual lever E is pivotally connected with a link 32, and this link in its turn is pivotally connected with an upwardly and rearwardly extending arm 33, secured on the shaft 12^a, so that when the piston 23 is carried outward and forces the lower end of the dual lever E in an outward direction the connection between the said lever and the shaft 12^a will operate to turn the said shaft outwardly and

straighten the crank-arms 13 and connected bars 15, as is shown by dotted lines in Fig. 1, thereby bringing the auxiliary step C' from its rear folded position (shown by positive lines in Fig. 1) to the forward position for use. (Shown by dotted lines in the same figure.)

At the lower end of the other shorter member 17 of the dual lever E a link 34 is pivoted, and this link is also pivotally connected with the lower pointed end of a triangular cam-lever 35, which lever at one side of its upper or wider portion is pivoted upon a bracket 36, which extends down from the sill B' of the platform B of the car, as is especially shown in Fig. 2, and at the opposite side of the upper wider end of the cam-lever 35 a lever-arm 37 is pivotally attached to said cam-lever. This lever-arm 37 is fulcrumed between its center and the end connected with the cam-lever 35 upon a bracket 38, which extends down from the sill B' of the platform B, and at the forward end of the lever-arm 37 the lower end of a shifting bar 39 is pivoted, which shifting bar extends up through a suitable opening in the sill B'. The said shifting bar 39 at its upper end is provided with a horizontal forked head 40, adapted to receive and to freely pass over the swing-post 11 of the gate D. This forked head 40 of the shifting bar 39 has no influence on the gate D while it passes over the straight portion of the swing-post 11 of the gate, but when said forked head 40 reaches the spiral section 12 of said swing-post 11 it tends to swing the gate upon its pivot either inward or outward, according to the direction in which said shifting bar 39 is operated.

The platform B² is raised through the action of the member 17 of the dual lever E, preferably in the following manner:

A curved link 41 is pivotally attached to the temporary or auxiliary platform B² adjacent to its hinged or outer end, as is shown by Fig. 3, and this link 41 is then connected by a second link 42 with the cam-lever 35 at the same point where the lever-arm 37 connects with said cam-lever, as is shown in both Figs. 2 and 3. The two members 17 and 18 of the dual lever E are held together and made to operate in unison by means of a snap-catch 43 of any approved construction carried, for example, by the member 17 of the said dual lever, the opposite member 18 being provided with a recess 44 to receive the said catch.

In operation supposing the two members 17 and 18 of the dual lever E to be secured together when the train stops at a station—for example, where there is no platform or where the platform is very low—the train-hand need simply to turn the rod 31 to open the valve in the cylinder 24, whereupon the dual lever E at its lower end will be carried outward to the position shown by dotted lines in Fig. 1, and the consequence will be

that the auxiliary step C' will be advanced to the front and the cam-lever 35, which normally occupies a horizontal position shown by positive lines in Fig. 1, will be carried down to the perpendicular position shown by dotted lines in Figs. 1 and 2, and the link 41 will at that time be compelled to raise the temporary platform B², and just about the time this temporary platform B² is partially raised the forked head 40 of the shifting bar 39 will commence to act upon the spiral section 12 of the swing-post 11 of the gate to open said gate inward against the rising temporary platform, and thus permit the ordinary steps C to be approached, and the auxiliary step C' will then be in position to add to the stationary steps.

In the event it is not necessary to bring the auxiliary step C' to the front, but it is desirable to open the gate and raise the temporary platform B², this action can be simultaneously accomplished by hand upon disconnecting the member 17 of the dual lever E from the member 18 and carrying the member 17 to the rear, as shown in Fig. 2, whereupon the gate and temporary platform will be operated in the manner heretofore described, but the auxiliary or folding step C' will not be moved from its folded position.

The device is very simple, easily applied to any car, and is very efficient in operation.

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

1. A car-platform, steps fixed thereto, an auxiliary step having a hinged connection with the fixed steps, a temporary platform having hinged connection with the main platform and located over the fixed steps, an air-cylinder, means for supplying air thereto and controlling the supply, and devices connected with the temporary platform, the auxiliary step and the piston-rod of the said cylinder, for moving the auxiliary step and raising and lowering the temporary platform.

2. A car-platform, steps fixed thereto, an auxiliary step having hinged connection with the fixed steps, a temporary platform hinged to the main platform and located over the fixed steps, a gate pivoted on the platform above the said fixed steps, an air-cylinder, a shifting device for the said gate, a device for raising and lowering the said temporary platform, and connections between the piston-rod of the said cylinder, the shifting device for the gates, the operating device for the temporary platform and the auxiliary step, whereby at one operation of the piston of the said air-cylinder to simultaneously operate the auxiliary step, open or close the gate and raise or lower the auxiliary platform.

3. A car-platform, steps fixed thereto, a temporary platform hinged to the main platform, a gate mounted to swing on the main platform, the swing-post whereof is spiral at

its lower portion, an auxiliary step hinged to the main steps, a rock-shaft, connections between the rock-shaft and the auxiliary step, to carry the latter forward or rearward, a lever fulcrumed upon the platform, a shifting bar having a forked head which moves along the swing-post of the gate, a lever-arm connected with the said shifting bar, a cam-lever connected with the lever-arm, a connection between the cam-lever and the lever fulcrumed on the platform, a connection between the latter lever and the said rock-shaft, a link connection between the cam-lever and the temporary platform, an air-cylinder, the piston of which is connected with the lever fulcrumed on the platform, and means for controlling the supply and the outlet of air to the said cylinder.

4. A platform for a car, steps fixed thereto, an auxiliary step hinged to the fixed step, a temporary platform hinged to the main platform, a gate mounted to turn on the main platform, an operating-lever in two sections, a latch connection between the sections, each section of the lever being adapted for independent operation, an air-cylinder, means for controlling the supply thereto, a connection between the piston-rod of the said cylinder and one section of said operating-lever and an operating connection between the section of the lever connected with the cylinder and the auxiliary step, means for operating the gate and for raising and lowering the temporary platform, and an operative mechanism carried by the other section of the said operating-lever and connected with the operating means for the temporary platform and the gate.

5. A platform for a car, a gate mounted to turn on the said platform, provided with a swing-post having a spiral lower section, a temporary platform hinged to the main platform, a lever pivoted on the main platform, a triangular cam-lever fulcrumed beneath the said platform at its wider end, a link connection between the narrower end of the said cam-lever and the operating-lever, a link connection between the wider end of the said cam-lever and the temporary platform to raise and lower the platform, a lever-arm fulcrumed beneath the main platform and pivotally connected with the wider end of the cam-lever, a shifting rod connected with the opposite end of the lever-arm, and a forked head at the upper end of the shifting rod, adapted to travel over the swing-post of the gate and particularly over the spiral portion of said post.

6. A car-platform, steps fixed thereto, an auxiliary step having a hinged connection with the fixed steps, a temporary platform having hinged connection with the main platform and located over the fixed steps, a gate pivoted on the platform above the fixed steps, and a single means for moving the aux-

iliary step, for raising and lowering the platform and for opening and closing the gate.

7. A car-platform, steps fixed thereto, an auxiliary step having a hinged connection with the fixed steps, a temporary platform having hinged connection with the main platform and located over the fixed steps, a gate pivoted on the said platform above the fixed steps, a single means for moving the auxiliary step, for raising and lowering the platform and for opening and closing the gate, and a separate means for moving the platform and opening the gate.

8. A car-platform, steps fixed thereto, an auxiliary step having a hinged connection with the fixed steps, a temporary platform having a hinged connection with the main platform and located over the fixed steps, a single means for moving the auxiliary step and for raising and lowering the platform, and a separate means for raising and lowering the platform.

9. A car-platform, steps fixed thereto, an auxiliary step having a hinged connection with the fixed steps, a temporary platform having hinged connection with the main plat-

form and located over the fixed steps, a gate pivoted on the platform above the fixed steps, means for moving the steps, means for raising and lowering the platform and for opening and closing the gate, and means whereby to connect said first and last named means.

10. A car-platform, steps fixed thereto, an auxiliary step having a hinged connection with the fixed steps, a temporary platform having hinged connection with the main platform and located over the fixed steps, a gate pivoted on the platform above the fixed steps, means for moving the steps, means for opening and closing the gate and for raising and lowering the platform normally connected with said first-named means, and means whereby to disconnect said first and last named means.

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

JASPER SHOEMAKER COXEY.

Witnesses:

PHIL. S. LOCKE,
S. K. BOWERS.