

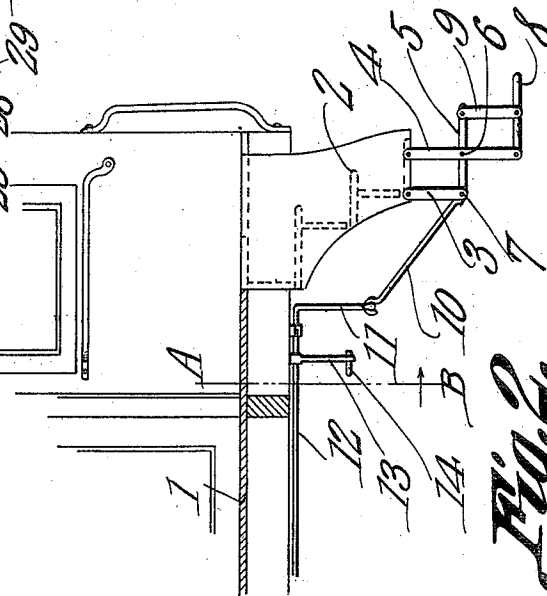
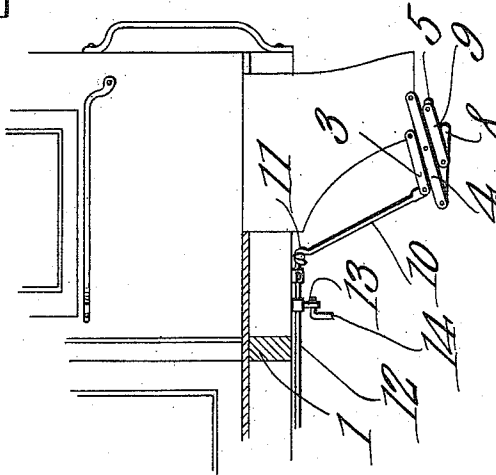
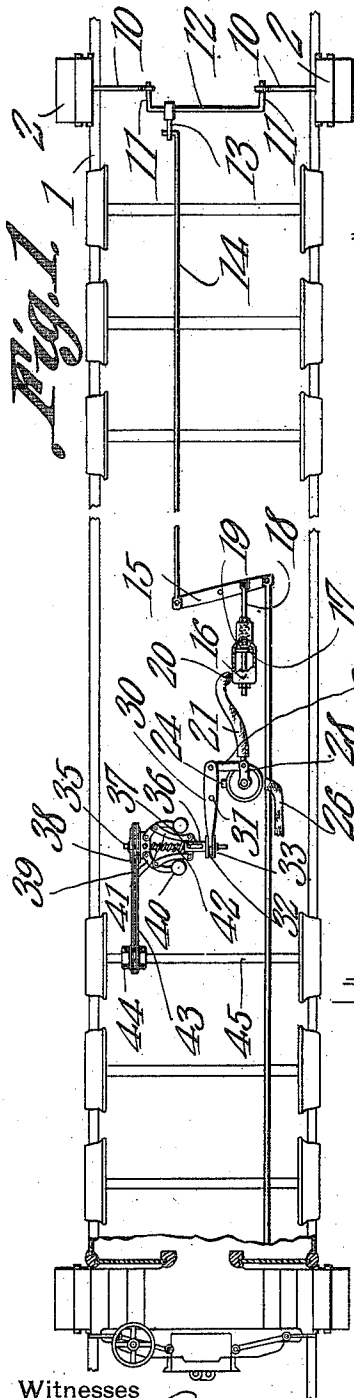
J. D. COLLIER.
CAR STEPS.

APPLICATION FILED APR. 11, 1910.

986,142.

Patented Mar. 7, 1911.

2 SHEETS—SHEET 1.



Witnesses

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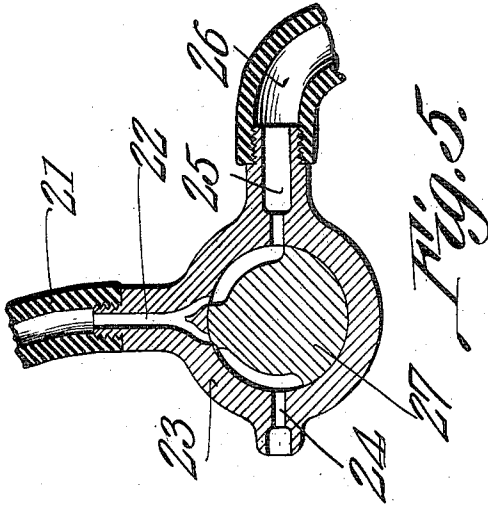


Fig. 5.

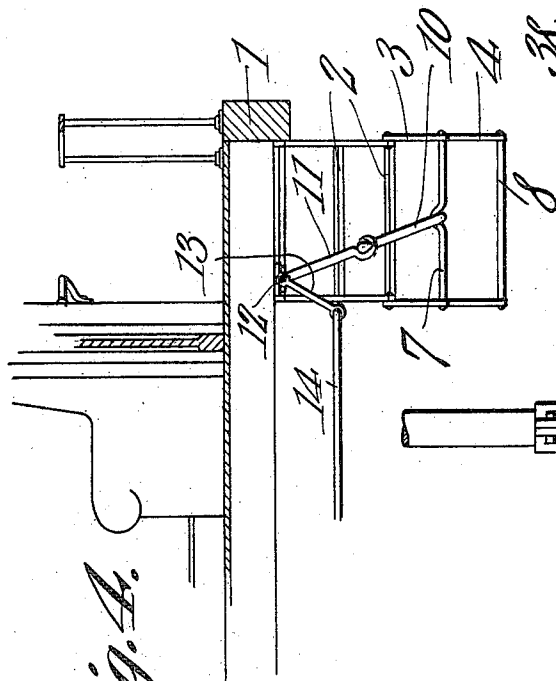


Fig. 4.

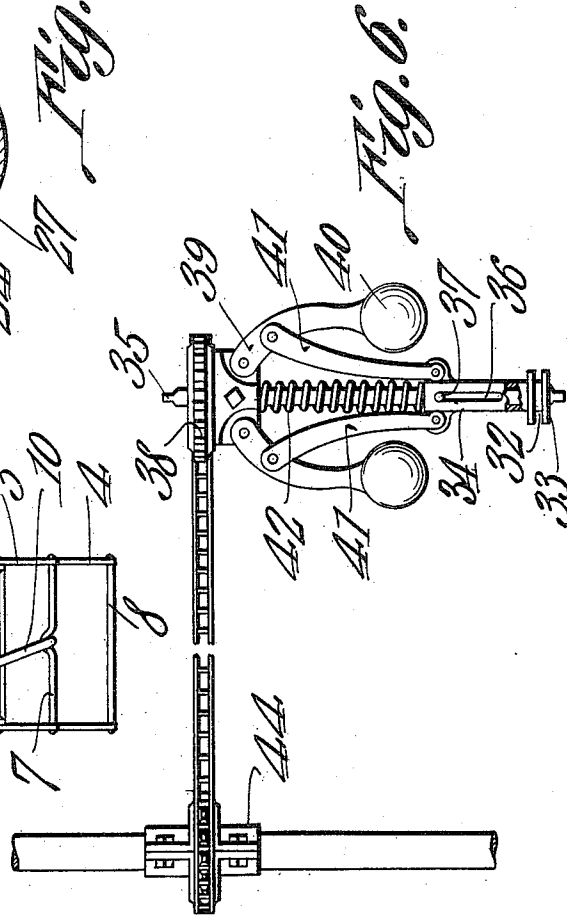


Fig. 6.

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UNITED STATES PATENT OFFICE.

JAMES DALLAS COLLIER, OF WOODVILLE, TEXAS.

CAR-STEPS.

986,142.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed April 11, 1910. Serial No. 554,671.

To all whom it may concern:

Be it known that I, JAMES DALLAS COLLIER, a citizen of the United States, residing at Woodville, in the county of Tyler and State of Texas, have invented new and useful Car-Steps, of which the following is a specification.

This invention relates to car steps and its object is to provide extension steps adapted to be automatically folded out of the way when the car is in motion and which will be automatically moved into extended position when the car comes to a stop.

A further object is to provide novel means for actuating the steps, said means being of simple construction and capable of convenient application to the types of cars now in use.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a plan view of a portion of the running gear of a railway car and showing the position of the step actuating mechanism relative thereto, portions of the car structure being shown partly in plan and partly in section. Fig. 2 is an end elevation of one set of extension steps and adjoining parts of the car and of the operating mechanism. Fig. 3 is a view similar to Fig. 2 and showing the steps folded out of the way. Fig. 4 is a section on line A—B Fig. 2. Fig. 5 is an enlarged section through the valve of the mechanism. Fig. 6 is an enlarged view showing in detail the governor and the adjacent parts of the mechanism.

Referring to the figures by characters of reference 1 designates the car structure provided at both sides of each end with fixed steps 2 of the usual construction. Pivoted hangers 3 and 4 extend downwardly from the sides of the fixed steps, the hangers 4 being longer than the hangers 3. An upper extension step 5 is pivotally connected to the hangers 4 at intermediate points as indicated at 6 and to the hangers 3 at their lower ends, as indicated at 7. A lower extension step 8 is pivotally connected to the lower ends of the hangers 4 and also to the lower ends of hangers 9 which are hung from the front portion of the step 5. It will be ap-

parent therefore that the hangers 3, 4 and 9 and the steps 5 and 8 form lazy tongs whereby, when the hangers are swung inwardly under the car structure 1, the steps 8 and 5 will be swung together and under and close to the fixed steps 2. This folded position of the extension steps has been indicated in Fig. 3.

The pivot 7 is preferably in the form of a rod extending parallel with the steps 5 and this rod has a link 10 secured to it and pivotally connected to an arm 11 extending downwardly from a transversely extending shaft 12. This shaft is journaled upon the bottom of the car structure 1 and has an arm 13 extending from it. A rod 14 is pivotally connected to the arm 13 and extends longitudinally under the car structure 1 and is pivotally attached to one end of a centrally fulcrumed lever 15.

A cylinder 16 is secured to the car structure 1 and has a piston 17 therein, the piston rod 18 being pivotally connected to the lever 15. A spring 19 is seated within one end portion of the cylinder and bears against the piston 17 so as to hold the said piston normally disposed adjacent one end of the cylinder 16. An air inlet port 20 is located adjacent said end of the cylinder and is connected, by means of a pipe 21, with a port 22 formed within a valve casing 23. An exhaust port 24 also is formed within said casing 23 and an inlet port 25 opens into said casing and is connected, by means of a pipe 26, with an air reservoir or the like, not shown. A valve 27 is mounted for rotation within the casing 23 and is adapted, when in one of its positions, to establish communication between port 22 and port 25 and, when moved to its other position, to establish communication between port 22 and the exhaust port 24. This valve has an arm 28 extending from its stem and a link 29 connects the said arm with one end of a lever 30. This lever is fulcrumed at a point between its ends, as indicated at 31 and has a fork at one end thereof which is seated within an annular groove 32 formed within a collar 33. This collar is formed on or secured to a sleeve 34 adapted to slide upon a shaft 35. A slot 36 is formed longitudinally within the sleeve and has a guide lug 37 projecting into it from the shaft, this lug serving to prevent independent rotation of the sleeve and shaft and at the same time permitting the sleeve to be moved longitudinally upon the shaft.

A sprocket 38 is secured and rotates with the shaft 35 and has oppositely extending arms 39 pivotally connected to opposite sides thereof, each of the arms carrying a ball 40. Links 41 connect the arms with the sleeve 34 and a spring 42 is coiled about the shaft 35 and bears at its ends against sprocket 38 and sleeve 34 respectively. It will be apparent that this spring serves to hold the arms 39 normally folded toward the shaft 35, thus causing the lever 30 to maintain valve 27 with the port 22 normally in communication with the port 25.

A chain 43 serves to transmit motion to the shaft 38 from a sprocket 44 which is secured upon a revoluble axle 45, the said sprocket 44 being preferably formed of two sections clamped upon the axle.

It is to be understood that when the car is at a standstill air will be free to pass under pressure from the reservoir through pipe 26 and ports 25 and 22 to pipe 21 and thence to the cylinder 16, said air thus forcing the piston 17 against the spring 19 and shifting lever 15 so as to cause the rod 14 to pull on the arm 13. Arm 11 will thus be swung downwardly and will force rod 10 against the lazy tongs so as to extend the steps 5 and 8 downwardly into position below the fixed step 2. When the car is moved motion is transmitted from the axle 45 through sprocket 44 and chain 43 to the sprocket 38 and shaft 35. The governor arms 39 will thus be swung outwardly by centrifugal force and will cause the links 41 to pull on the sleeves 34. Lever 30 will thus be moved so as to shift the valve 27 and place the port 22 in communication with the exhaust port 24, at the same time closing the port 25. The air within the cylinder 16 will thus escape through the exhaust port and the released spring 19 will shift the piston 17 toward the opposite end of the cylinder. Rod 18 will therefore pull on the lever 15 and this lever will in turn push the rod 14 and actuate the various parts so as to fold the steps 8 and 5 together and under and close to the steps 2. The extension steps will thus be maintained in folded position as long as the car is in motion, but, as soon as this car again comes to a stop, the governor arms 39 will swing toward each other and shift the sleeves 34 so as to actuate the valve 27 and place the ports 22 and 25 again in communication, the air thus rushing into the cylinder and moving the steps to their extended positions.

As shown especially in Fig. 1, the mechanism which has been described can be used for simultaneously actuating four sets of steps, one set being located at each side of

each end of the car. Each of the shafts 12 can be employed for actuating two sets of steps and the rods 14 extending from the arms 13 on the two shafts 12 may be connected to the two ends of the lever 15.

It is of course to be understood that the mechanism can be so arranged that the air may be utilized for holding the steps folded while the car is in motion and the spring employed for opening the steps outward when the car comes to a stop. Such an arrangement would merely necessitate the reversal of the positions of the spring 19 and the port 20.

It is of course to be understood that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. The combination with a car, of movably connected extension steps at each end thereof, a connection between the said steps at the two ends of the car, a spring for holding said connection normally in a predetermined position, fluid operated means for shifting the connection out of normal position, a valve, separate means for directing fluid under pressure to the valve and from the valve to said shifting means, and means under the control of a car wheel for actuating the valve.

2. The combination with a car, of upper and lower extension steps, a spring pressed piston, means actuated thereby for folding the steps together, a valve, separate means for directing fluid under pressure to the valve, and from said valve to the piston, a governor, means for transmitting motion to the governor from an axle of the car, and means operated by the governor for actuating the valve.

3. The combination with a car, of an extension step at each end thereof, a jointed connection between said steps, said connection extending longitudinally of the car, a spring pressed piston attached to the connection, a governor, means for transmitting motion thereto from one of the wheels of the car, and means under the control of the governor for directing fluid under pressure against the piston to actuate the connection and simultaneously shift the steps.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES DALLAS COLLIER.

Witnesses:

MILDRED COLLIER,

JOHN A. MOONEY.