No. 647,825. Patented Apr. 17, 1900.

N. GRAY.

CAR STEP.

(Application filed Feb. 18, 1900.)

(No Model.) 2 Sheets—Sheet 1.

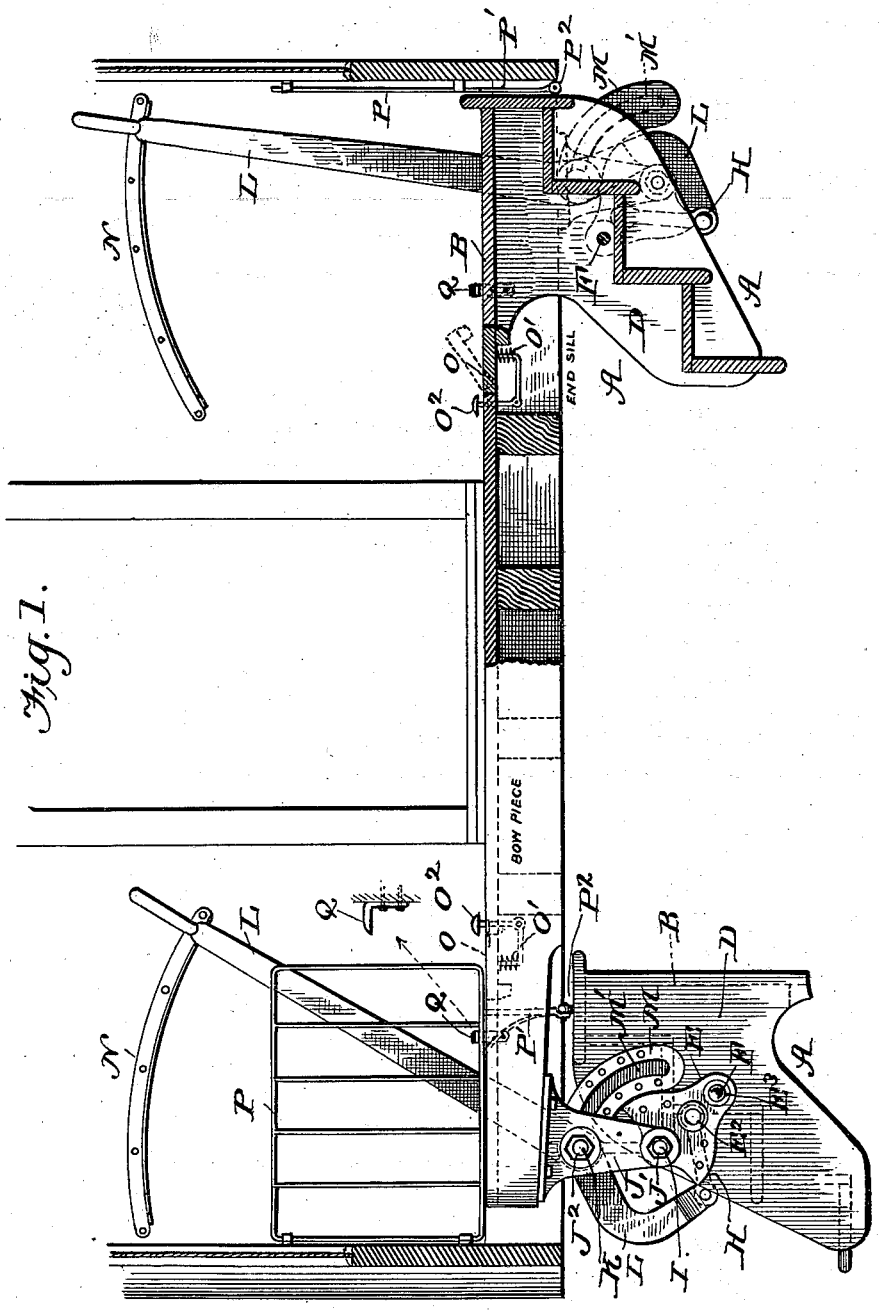

Fig. 1.

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Fig. 2.

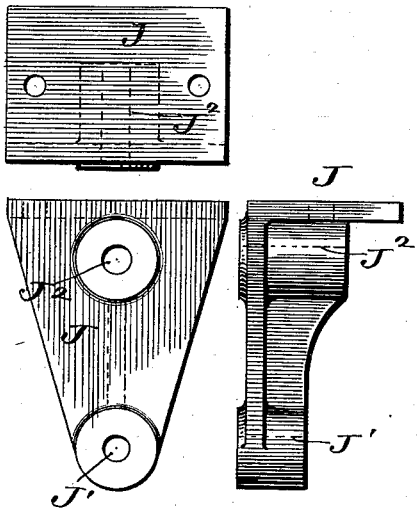


Fig. 3.

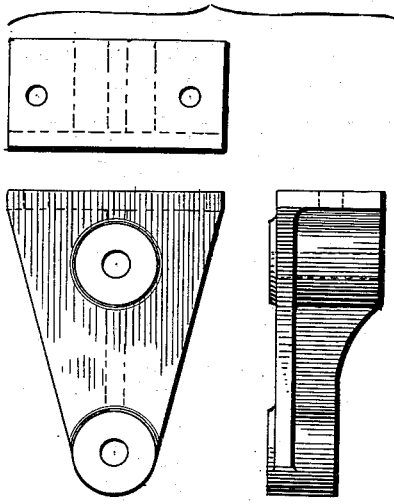


Fig. 4.

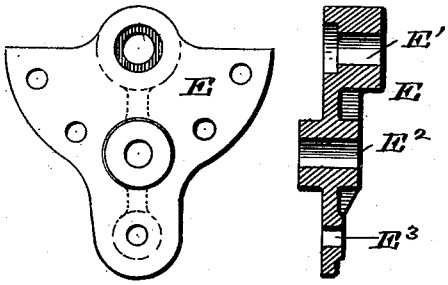


Fig. 5.

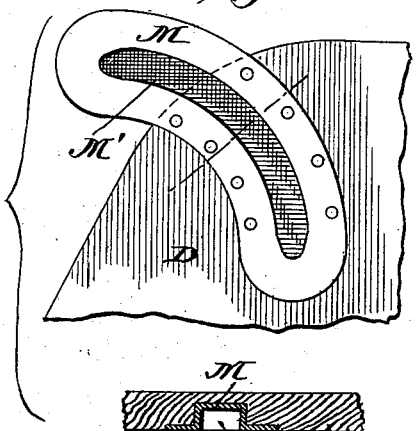


Fig. 6.

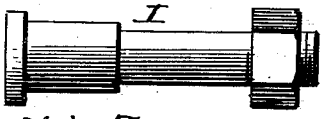
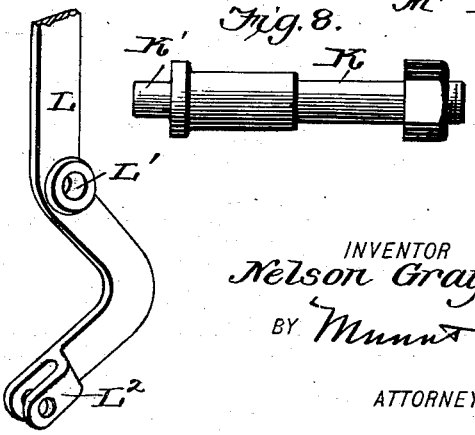


Fig. 7.

Fig. 9.

Fig. 8.



WITNESSES:
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UNITED STATES PATENT OFFICE.

NELSON GRAY, OF LOUISVILLE, KENTUCKY.

CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 647,825, dated April 17, 1900.

Application filed February 13, 1900. Serial No. 5,064. (No model.)

To all whom it may concern:

Be it known that I, NELSON GRAY, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful Improvement in Car-Steps, of which the following is a specification.

My invention is an improvement in car-steps, and particularly in that class of such steps illustrated by my former patent, No. 623,400, dated April 18, 1899; and the present invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is an end view, partly in section, of a portion of a car provided with my improved step. Fig. 2 illustrates in detail one of the hangers on which the step and the operating-lever are pivoted. Fig. 3 illustrates in detail a slightly-different construction of such hanger. Fig. 4 illustrates in detail the bracing-plate for the step. Fig. 5 is a detail view illustrating in side view and section the stop-plate for limiting the movements of the step. Fig. 6 is a detail side view of the hinge-pin for the step. Fig. 7 is a detail view of the pin which connects the operating-lever with the step. Fig. 8 is a side view of the pivot-pin for the lever, and Fig. 9 is a detail perspective view illustrating the lower portion of the operating-lever.

The step-section A, as in my former patent, No. 623,400, before referred to, is supported so it can be inverted, or partially so, enabling the adjustment of the section to position in which the steps can be used, as shown at the left in Fig. 1, and to the position shown at the right in Fig. 1, in which latter position a platform-section carried by the step-section is adjusted to position to form an extension of the fixed platform of the car.

In my present invention, as in my former patent, before referred to, the platform-section B is arranged on the under side of the step-section A below the steps and in fixed relation thereto, so it will move with the steps into either of the positions shown in Fig. 1; but in my present invention I seek to so arrange the platform-section relatively to the steps of the step-section that but a slight movement of the step-section will be necessary to adjust the parts from the position shown at the left in Fig. 1 to that shown at the right in said figure. In securing this result I arrange the platform-section B parallel with the risers and at right angles to the treads of the steps of the step-section. This differs in arrangement from the construction shown in my former patent, in which the platform-section is shown as extended parallel to the treads of the steps and at right angles to the risers. By the present construction it is only necessary to turn the step-section a quarter of a revolution to adjust the steps into or out of position for use, as will be readily understood from the drawings.

In supporting the steps I secure to the outer sides of their side plates or boards D the bracing-plates E, which are shown in detail in Fig. 4 and are suitably formed to provide the openings E′, E^2, and E^3, together with suitable bolt-holes for the passage of the bolts, which secure the plates E rigidly to the sides D of the step-section. A cross-rod F passes through the openings E^3 and between the opposite plates E, connecting them together and forming a cross-brace for the steps. The opening E^2 is for the pin G, which connects the link H with the plate E, and the opening E′ is for the hinge-pin I of the steps. This hinge-pin I passes through the opening E′ and also through an opening J′ at the lower end of the step-hanger J and so operates to secure the steps pivotally to the step-hanger. These hangers J also have an opening J^2 for the pivot-pin K for the lever L, such pin K passing through the opening L′ in the lever L and also through the opening J^2 in the hanger J and being provided with a stud projection K′, which enters the groove M′ in the stop-plate M, which is secured to the side of the step-section next to that which is pivoted to the hanger J, to which the lever L is pivoted. The link H connects the lower bifurcated end L^2 of the lever with the plate E upon the step-section, as will be understood from Fig. 1. By this construction the plate E operates to connect the steps with the hanger J and also serves for the connection of the operating-lever L and the hangers, and the pivot-pin for the lever which is secured to said hanger coöperates with the stop-plate upon the said section to limit the movement of the step-section in either direction. The lever L is secured in

either of its adjustments by entering notches properly arranged in a rack-bar N. (See Fig. 1.)

When the step-section is adjusted to the position shown at the right in Fig. 1, the board B will rest at its inner edge flush against the outer edge of the hinged platform-section O. This hinged section O may lift, as indicated in dotted lines, Fig. 1, to permit the section B to adjust to the position shown at the right in Fig. 1, when the section O will drop quickly to its place, being aided in such movement by the spring O'. It should be understood that the upper end of the spring O' is secured to the car-framing or other fixed part, while the end of the lever O^2 above said spring is secured to the under side of the platform-section O. In the operation of this construction the spring O, which encircles the foot-lever and bears at its lower end upon such lever at the bend thereof, as shown in the drawings, will be compressed when the lever is operated to lift the hinge-section O. When the foot-lever is released, the spring O' will react against the foot-lever and force the same to its normal position, and as the foot-lever is secured to the under side of the platform-section O such lever will, under the operation of the spring before described, aid in readjusting the hinged platform-section to its normal position. When it is desired to adjust the step-section from the position shown at the right in Fig. 1 to that shown at the left, the section O may be raised clear of the board B by means of the foot-leyer O^2.

To brace the step-section in position for use, as shown at the left in Fig. 1, I prefer to arrange the vestibule door or gate P in such manner that a portion P' near the swinging edge thereof will adjust over and bear upon the step-section, as shown at the left in Fig. 1, when the vestibule-door is opened and the steps are lowered to position for use. In such adjustment of the door or gate P it operates to brace the step-section and is braced in turn by a latch Q, which resists upward strain on the outer edge of the door P and so relieves the hinges of such door of strain and operates to more rigidly secure the steps in the desired position. As shown, the portion P' is in the form of a rod depending from the gate proper and having at its lower end a roller P^2 to reduce friction.

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

1. A folding car-step section which is pivotally supported and is provided with a platform-section arranged approximately at right angles to the treads of the steps and adapted to form an extension of the platform when the steps are adjusted out of position for use, substantially as set forth.

2. A folding car-step section, combined with the vestibule-door arranged to fasten or lock the step-section in place when such section is adjusted into position for use substantially as set forth.

3. A folding car-step section which is pivotally supported, combined with the vestibule-door arranged to lock the step-section in place when such section is adjusted to position for use, and means for bracing the door in position to so lock the step-section, substantially as set forth.

4. The combination of the step-section pivotally supported, the hangers to which said section is pivoted, the brace-plates secured to said section and forming the pivotal connection thereof with the hangers, and the lever pivoted to one of the hangers and connected with one of the brace-plates, substantially as set forth.

5. The combination of the step-section provided with a grooved stop-plate, the hanger to which said section is pivoted, the lever for operating the step-section and the pin on which said lever is pivoted, said pin being secured to the hanger and provided with a projecting portion which enters the groove of the stop-plate on the step-section, substantially as set forth.

6. The combination of the step-section pivotally supported whereby it may be inverted, the vestibule-door provided near its swinging edge with a depending portion arranged to bear upon the step-section and lock it in position for use, and a latch by which to brace the vestibule-door in position to lock the step-section in position for use, substantially as set forth.

7. The combination of the step-section provided with a platform-section movable with the steps and arranged to form an extension of the fixed platform-section when the steps are adjusted out of position for use, the brace-plates fixed to said step-section, the stop-plate fixed to such section and having a stop groove or channel, the hangers pivoted at their lower ends to the brace-plates of the step-section, the lever pivoted to one of such hangers and having its pivot-pin extended to enter the stop-plate of the step-section, and the link connecting the operating-lever with one of the brace-plates of the step-section, substantially as set forth.

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Witnesses:
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N. T. GRAY.