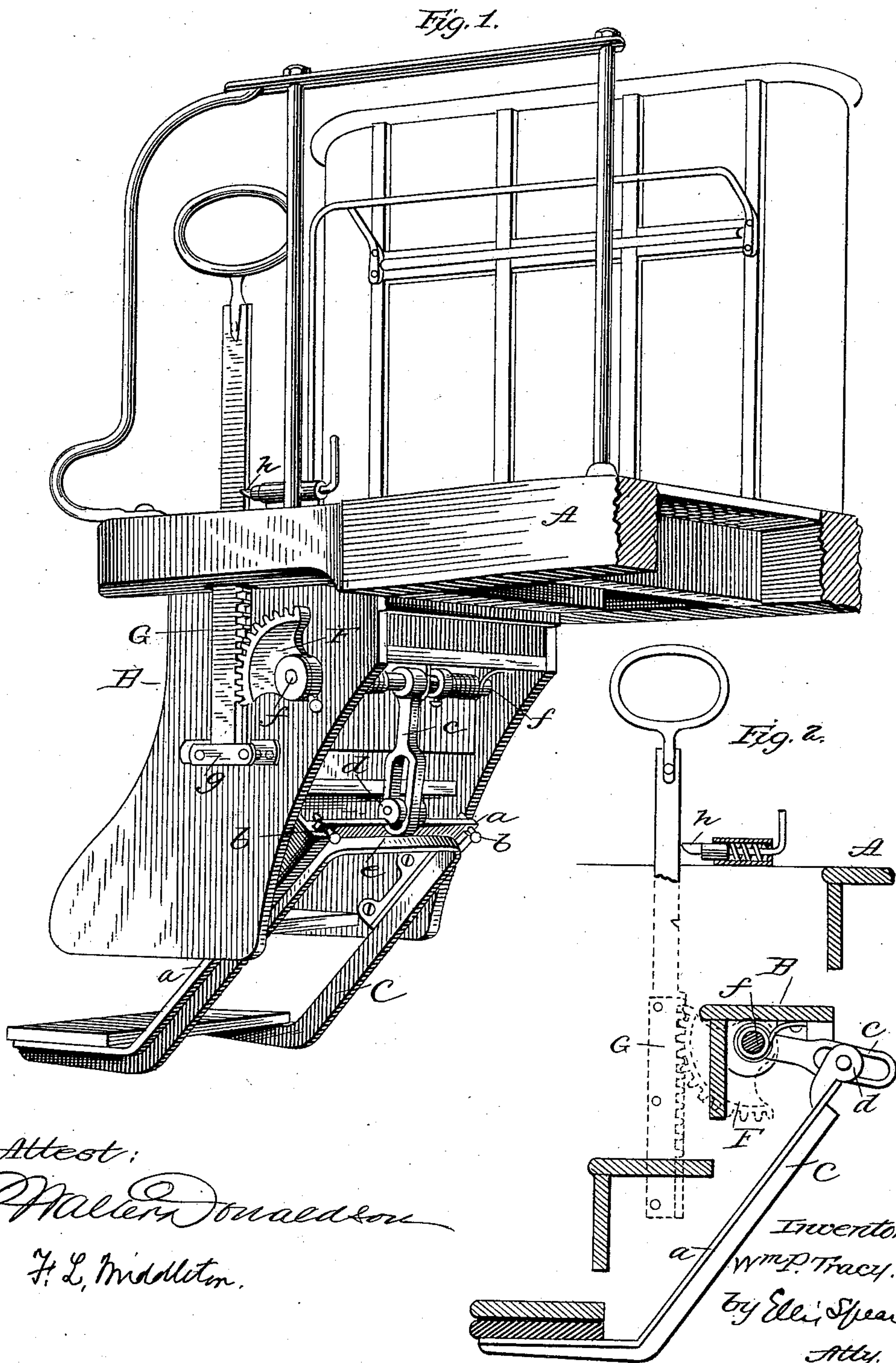


(No Model.)

W. P. TRACY.
RAILWAY CAR STEP.

No. 379,140.

Patented Mar. 6, 1888.



UNITED STATES PATENT OFFICE.

WILLIAM P. TRACY, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO WILLIAM R. SHELBY AND ABE M. AMBERG, OF SAME PLACE.

RAILWAY-CAR STEP.

SPECIFICATION forming part of Letters Patent No. 379,140, dated March 6, 1888.

Application filed October 18, 1887. Serial No. 252,671. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. TRACY, of Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful
5 Improvement in Railway-Car Steps; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to railway-cars, and particularly to the steps thereof. Its object
10 is to provide an extensible step in addition to the three steps in ordinary use, the fourth step being adapted to be held up against the bottom of the rigid steps during the time the train is in transit and to be lowered to form a fourth
15 step when the train comes to a stop at a station. Such a step is very desirable, as it is well known that in order to clear any obstructions (which may be found upon all railroads) the car-steps are located at a considerable distance from the ground, and it is found neces-
20 sary to either have the cars run alongside of the platform some distance above the ground, in order to come within a reasonable distance of the lower step of the car, or else, where the
25 cars come in upon the same level as the platform, to provide a portable box which serves as an additional step.

My invention consists of an extensible step secured beneath the fixed steps of the car and
30 adapted to be moved into position positively in advance of the bottom of the fixed series to form a fourth step and to be returned automatically by releasing the devices controlling its movement.

35 The invention further consists in the details of construction, all as hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a rear perspective view of the steps and a portion of the platform, representing the step as
40 extended. Fig. 2 represents a sectional view through the steps.

In the drawings, A represents the platform of the car, and B the steps leading therefrom, this being of ordinary construction. The ex-
45 tensible step is supported on an angular extended end of a frame, C. The body of this frame is composed of angular metal, which provides upon either side a flange, *a*, and these
50 flanges are fitted to guiding-lugs which are se-

cured to the inner surfaces of the side pieces of the steps. These guiding projections have flanges which embrace the flanges of the frame. This frame is adapted to slide in the guiding
projections for limiting the movement therein, 55 and in its lowest position the step is below and in advance of the last fixed step of the series. The frame is arranged to slide approximately parallel to the line of the fixed steps and is strongly supported by means of the
60 guiding projections from the side, a weight upon the step tending to bind the frame in the embrace of the said projections. Pins or suitable stops may be provided at the upper part of the frame, as shown at *b*, to limit its down- 65 ward movement.

In its normal position the extensible step is beneath and in close contact with the under step of the fixed series, and is held so with the frame in its upper position by means of a ten- 70 sional spring or springs coiled about a rod, *f*, extending across beneath the second step, the said rod being in connection with the frame by means of a slotted arm or arms, *c*. Ears
75 *d* project from the center of the cross-bar *e* of the frame, and between these ears the slotted portions of the arm *c* fit, being held in place by means of the pins passing through the ears and the slot of the arm. The rod *f* is supported in the side pieces of the step by 80 means of a bracket in the center toward the two pieces. A coiled spring surrounds the rod at each end, one end of the spring being fastened to the under end of the step and the other end to a collar fixed to the rod, so that 85 in the lowest position of the frame and step secured thereto these springs are under tension. Upon the outer end of this rod is secured a toothed segment, *F*, and in connection with this segment is a vertically-arranged rack- 90 bar, *G*, having a guide, as shown at *g*, at its lower end, with its upper end terminating in a handle located at the sides of the steps directly beneath the ordinary iron railing found at the end of cars. In order to extend the 95 step, this handle is moved vertically, which moves the segment in gear with the teeth thereof, and this operation turns the rod *f* and moves the frame to its lowest position to extend the step through the arm *c*, connected 100

rigidly to the said rod. A spring-catch, *h*, engages with a notch in the operating-rod and holds the step in its extended position. By releasing the operating-lever from this spring-catch the springs upon the rod *e* exert their force and through the fixed arm retract the frame, which draws the step snugly beneath the bottom step of the fixed series. In order to take up the shock by the action of the springs in retracting the frame, I provide a suitable buffer beneath the second step, against which the frame strikes in its upward movement.

I do not limit myself to the precise operating devices shown, as these may be varied without departing from the spirit of my invention. Neither do I limit myself to the arrangement of parts, as, instead of having the step extending by positive means and closing automatically, the parts may be reversed and the steps opened automatically and closed positively, though I prefer the arrangement above described. I may employ two arms *c* instead of the one shown, and position them at either end of the cross-bar *e*.

I claim as my invention—

1. In a railway-car, an extensible step attached to a sliding frame, positively-operating devices for lowering the step, and automatically-operating devices for raising it, substantially as described.

2. In a railway-car, a sliding frame having a step attached thereto, said frame and step being normally in a raised position under spring-tension, an operating-lever for positively lowering said step, a shaft for receiving the action of the operating-lever, and intermediate connections between said shaft and frame, substantially as described.

3. In combination with a car and with the steps thereof, an extensible step supported by a sliding frame, a rod under tension adapted

to hold said frame normally in one position, a segment upon the end of said rod, and a rack-bar terminating in a handle for operating said bar against the tension of its spring or springs for changing the position of the step, substantially as described.

4. The combination, with the steps of a car, of an extensible step supported by a frame sliding in curved ways, a slotted arm connected to the upper part of the said arm and in connection with the rod held under spring-tension, a segment secured to said rod, and a rack-bar terminating in a handle for operating said segment to move the bar and frame against the tension of the spring, substantially as described.

5. The combination, with the steps of a railway-car, of a sliding frame moving in guides in line with the line of the steps, a step secured to the ends of said frame with spring devices for holding said step against the bottom of the lower of the fixed steps normally, and with positively-operating devices for extending the step beneath the plane and in advance of the fixed step of the series, substantially as described.

6. In a railway-car, a sliding frame, a step secured to the ends of said frame, a slotted arm in connection with the upper part of the frame for moving the same, a bar under spring-tension secured to said arm, a segment connected to said bar, a rack-bar terminating in a handle for operating said segment, and the spring-latch for holding said handle in an elevated position, substantially as described.

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

WILLIAM P. TRACY.

Witnesses:

G. A. WOLF,

A. M. AMBERG.