V. O. SAUER AND W. B. REEVE.

FOLDING EXTENSION STEP.

APPLICATION FILED OCT. 28, 1919.

1,349,585. Patented Aug. 17, 1920.

Fig 1

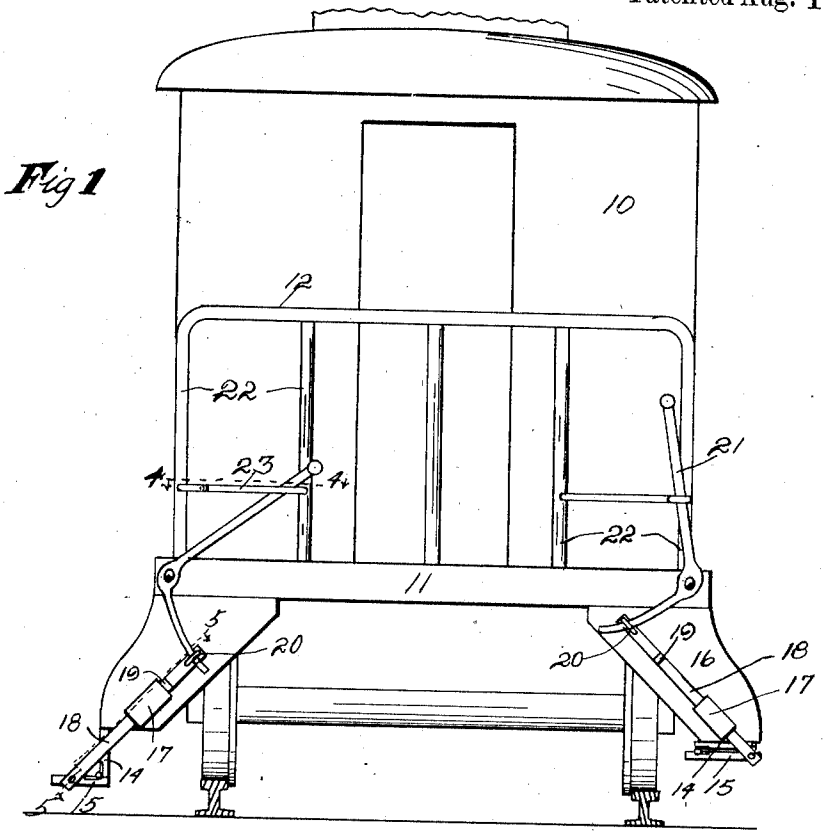


Fig 3

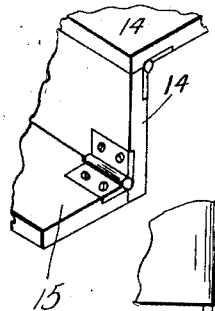


Fig 4

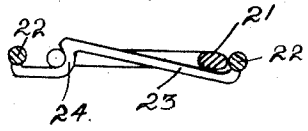


Fig 5

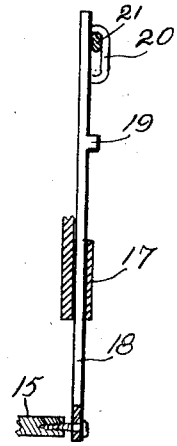
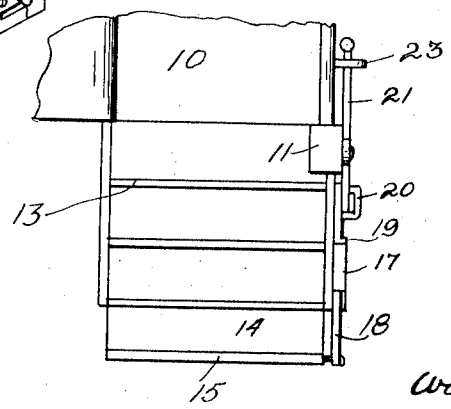


Fig 2



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FOLDING EXTENSION-STEP.

1,349,585. Specification of Letters Patent. Patented Aug. 17, 1920.

Application filed October 28, 1919. Serial No. 334,063.

To all whom it may concern:

Be it known that we, VONNIE O. SAUER and WILLIAM B. REEVE, citizens of the United States, and residents of Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Folding Extension-Step, of which the following is a specification.

The object of our invention is to provide a folding extension step of simple, durable and inexpensive construction, adapted to be supported adjacent to the lower step of a passenger coach or the like and to be readily and easily operable from the platform.

Still a further object is to provide such a step which will be of simple construction, and yet of such strong construction as to be very little susceptible to breakage during ordinary use.

With these and other objects in view our invention consists in the construction, arrangement and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claim and illustrated in the accompanying drawings, in which:

Figure 1 shows a rear elevation of a passenger coach equipped with a folding step extension embodying our invention.

Fig. 2 shows a detail, side elevation of a corner of the car with the step thereon.

Fig. 3 shows a perspective, detail view of a portion of the step.

Fig. 4 shows a horizontal, sectional view taken on the line 4—4 of Fig. 1; and

Fig. 5 shows a sectional view of the operating mechanism taken on the line 5—5 of Fig. 1.

In the accompanying drawings we have used the reference numeral 10 to indicate generally the body of a passenger coach having the extending platform 11, for passengers, protected by the hand rail 12 and having on opposite sides the respective series of steps 13, whereby the passengers may enter or leave the car.

It is well-known that many times the lower step of the ordinary series 13 is too far above the station platform for the convenience and comfort of the passengers.

We have, therefore, hinged to the forward portion of the lower step member of the series of steps 13 a folding extension step member 14 so as to permit said member 14 to move from substantially vertical position, as illustrated in Fig. 3 and at the left-hand side of Fig. 1, upwardly and inwardly to substantially horizontal position immediately under the lower permanent step, as illustrated at the right-hand side of Fig. 1.

Hinged to the step member 14 is a second folding extension step member 15 arranged, when our step is extended, to stand in horizontal position, as illustrated in Fig. 3, and when the step is collapsed to fold up under the member 14 as illustrated at the right-hand side of Fig. 1.

At the sides of the steps 13 are frame members 16. Secured to the rear wall of each frame member 16 is rigidly mounted a tubular guide 17 in which slides a controlling bar 18. The lower end of the controlling bar 18 is pivoted to the end of the step member 15 near the forward edge thereof.

On the controlling bar 18 is a stop lug or the like 19 so located as to engage the upper end of the guide 17 when the folding extension step, is in its open or extended position for readily supporting the step in such position as illustrated at the lower left-hand part of Fig. 1.

On the upper end of the controlling bar 18 is a loop 20. Pivoted at its central portion on the frame of the car is a controlling lever having the bell crank shape, and comprising the operating handle 21 and the curved arm 22 slidably extended through the loop 20.

Mounted on the posts 22, which support the rail 12, is a resilient yoke or keeper 23.

In the operation of the handle 21, it is swung alongside the yoke or keeper 23.

The yoke 23 has at a suitable place in its length a notch 24 so arranged that the handle 21 may be slipped into said notch for locking the handle in position for holding the folding extension step in its collapsed or closed position, as illustrated in Fig. 1 at the left-hand side.

In the practical use of our improved folding step, the step is open, with the member 14 arranged in vertical position and the member 15 arranged in horizontal position, as illustrated in Figs. 2 and 3, and at the lower left-hand part of Fig. 1.

The stop lug 19 engages the upper end of the guide 17 and holds the operating bar

18 in proper position for maintaining the extension step in position for use.

As a further insurance against accidental further lowering of the extension step, it may be noted that the handle 21 engages a portion of the yoke 23, so as to hold the step member 15 against further downward movement.

After the passengers have all entered the car or dismounted, the extension step may be raised and collapsed by seizing the handle 21 and swinging it from its position illustrated at the left side of Fig. 1, toward its position illustrated at the right side of said figure, and causing it to be received in the notch 24.

This movement causes the arm 22 to travel through the loop 20 for drawing the operating bar 18 upwardly, and thereby folding and collapsing the step members 15 and 14, and drawing them up closely under the lower step of the series.

An extension step of the type illustrated herein is much safer than the stool which is commonly used with passenger coaches.

It will not become lost or mislaid; it can not be placed in the wrong position when extended; it is of simple construction; and it is entirely out of the way when not in use and can easily be made rigid enough for all practical purposes.

Some changes may be made in the construction and arrangement of the parts of our improved device without departing from the essential features and purposes of our invention, and it is our intention to cover by our claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within its scope.

We claim as our invention:

A folding extension step comprising a step member, hinged along one edge; a second step member hinged to said first step member; a controlling bar pivoted to said second step member; a guide for said bar; a stop on said bar for engagement with said guide for limiting the opening movement of said step; a loop on said bar; a lever having a curved arm extending through said loop; and means for holding said lever at the opposite limits of its movement.

Des Moines, Iowa, October 1, 1919.

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