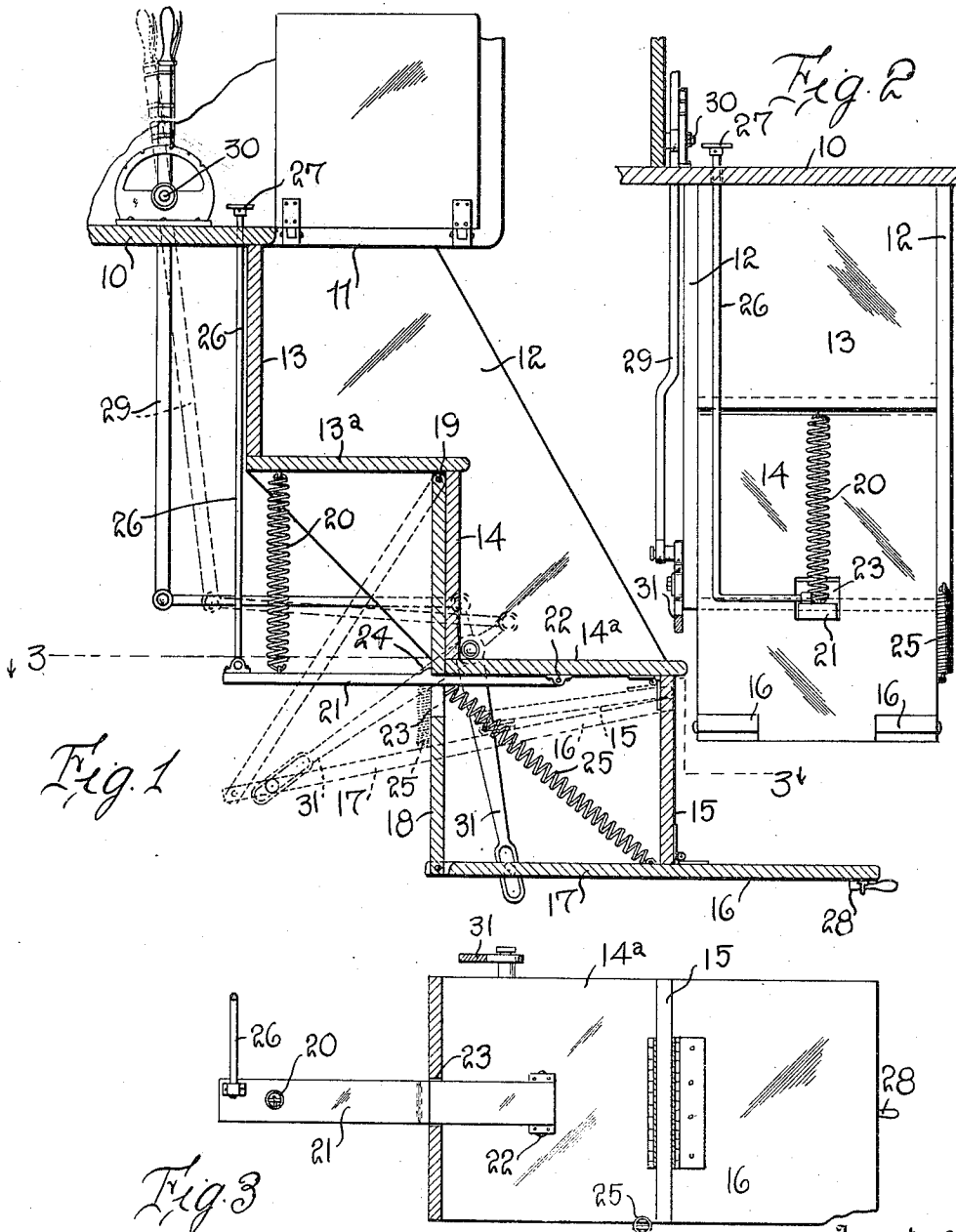


J. J. McCARTHY & C. MERTZ.
FOLDING CAR STEP.
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JOHN J. McCARTHY AND CARL MERTZ, OF LAWLER, IOWA.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN J. McCARTHY and CARL MERTZ, citizens of the United States, residing at Lawler, in the county of Chickasaw and State of Iowa, have invented certain new and useful Improvements in Folding Car-Steps, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to car steps, and particularly to folding car steps.

The general object of our invention is the provision of a car step having a permanent series of treads and risers and an auxiliary step attached to the lower end of the permanent series of steps normally supported beneath the permanent steps but shiftable into a lowered position and when so shifted locked in position.

A further object of our invention is the provision of a step of this character which may be retracted by simply pressing upon a trip rod and which may be projected either by pulling outward upon the auxiliary step or by means of a lever mechanism.

The steps of almost all railway cars to-day are disposed at considerable distance above the platform and as a consequence the porters or other attendants have to place stools at the car steps when the train stops in order for passengers to mount or alight. This is avoided by our improved car step in the manner which will be later seen.

Our invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a vertical section of a car step constructed in accordance with our invention; Fig. 2 is a rear view thereof with the auxiliary step closed; Fig. 3 is a section on the line 3—3 of Fig. 1.

Referring to these drawings, 10 designates the ordinary platform of a car having the usual opening 11. Extending downward from this opening in parallel relation and at a slight inclination are the side pieces 12 which support the treads and risers 13, 13^a and 14 and 14^a, respectively. All of these parts are of any suitable or usual construction. Hinged to the lower tread 14^a adjacent its outer edge is an auxiliary riser 15 which is normally retained in a position approximately parallel to the tread 14^a but may be turned into a vertical position. Hinged to the lower edge of this auxiliary riser 15 is the auxiliary tread 16. This tread is hinged intermediate its length so that there is a

portion 17 which projects rearward of the riser 15 when the riser is in its vertical position. The rear end of this portion 17 is notched or otherwise formed to pivotally engage with a supporting member 18 which in turn is pivotally connected adjacent its upper end, as at 19, to the side pieces 12. Normally this pivoted hanger 18 extends downward and inward, as illustrated in dotted lines in Fig. 1. When the auxiliary step, however, is shifted into operative position this hanger 18 extends vertically downward as illustrated in full lines in Fig. 1.

In order to hold the auxiliary step in its raised position and urge it to this position, we provide the spring or springs 25. These springs are each attached at one end to the auxiliary step 17 and at the other end to the hanger or supporting member 18 so that the springs normally act to hold these members in an angular relation to each other, and it will be seen that these springs are expanded upon a movement of the step into its operative position.

In order to hold the step in its operative position against the force of the spring 20, we provide the latch 21 having the form of a bar which is pivoted at 22 to the lower riser 14^a. This latch extends inward through a slot 23 formed in the hanger and is formed with a shoulder to engage with the hanger when the hanger is in a vertical position. The extremity of the detent or latch is connected by means of a spring 20 to any suitable fixed support, as for instance, the lower face of the tread 13^a.

For the purpose of releasing the latch, we provide a trip rod 26 which at its lower end is connected to the latch bar 21 and at its upper end extends through an opening in the platform 10 and is provided with the tread plate 27. It will be obvious now that by stepping upon this tread plate, the latch 21 will be forced downward from the position shown in Fig. 1, and when this latch is so forced downward the springs 25 will act to retract the step into the position shown in dotted lines in Fig. 1. For the purpose of shifting the auxiliary step to its operative position, a handle 28 may be disposed upon the under side of the auxiliary step so that the auxiliary step may be readily drawn out by drawing outward upon the handle. It is obvious, however, as illustrated in Fig. 1, that a lever may be used for this purpose which may be operated from the car plat-

form to throw the step outward. We have illustrated a lever 29 which extends up through the car platform and which is pivoted at 30 and whose lower end is linked to a lever 31 engaging the tread of the auxiliary step. We do not wish to be limited, however, to the particular form of this lever as it is obvious that other lever mechanisms might be used for this purpose. By shifting the upper end of the lever 29 rearward, the lever 31 is shifted downward, forcing downward and forward upon the tread plate 16.

The operation of this invention will be obvious from what has gone before. When the train stops, the porter or other attendant may either operate the lever 29 to lower the auxiliary step, or getting off the car may pull upon the handle 28 to lower the step. When the step is lowered it is automatically locked by the latch 21 so that it cannot move rearward. This auxiliary step comes relatively close to the platform so that there is no trouble in mounting the car or descending therefrom. When it is desired to raise the step it is only necessary to step on the trip 26 which releases the latch, whereupon the springs 20 will retract the step to its position underneath the regular step.

It is obvious that the exact construction and arrangement of parts may be changed without departing from the spirit of the invention and many modifications might be made which would be within the scope of the invention.

Having described our invention, what we claim is:

1. The combination with a permanent car step having a lower tread, of an auxiliary step comprising a member pivotally connected to the tread and an auxiliary tread pivotally connected to the lower end of the member and extending rearward therefrom, a hanger pivotally connected to the permanent steps and pivotally engaged with the rear end of the auxiliary tread, means normally urging the parts into a position with the auxiliary tread in approximately parallel relation to the lower step and beneath said step, means for latching said parts in position with the auxiliary tread parallel to but projected beyond the lower tread of the permanent car step, and means for releasing said latching means.

2. The combination with a permanent car step having a lower tread, of an auxiliary step comprising a member pivotally connected to the tread and an auxiliary tread pivotally connected to the lower end of said member and extending rearward therefrom, a hanger pivotally connected to the permanent steps and pivotally engaged with the rear end of the auxiliary tread, means normally urging the parts into a position with the auxiliary tread in approximately parallel relation to the lower step and entirely

beneath the step, a spring actuated latch adapted to engage the hanger when in a vertical position to hold it from movement and thereby hold the auxiliary tread projected beyond the lowest tread of the permanent steps, and means for releasing said latch.

3. The combination with a permanent car step having a lower tread, of an auxiliary step comprising a riser pivotally connected to the tread and a tread pivotally connected to the lower end of the riser and extending rearward therefrom, a hanger pivotally connected to the permanent steps and pivotally engaged with the rear end of the auxiliary tread, springs normally urging the parts into a position with the auxiliary riser and tread in approximately parallel relation to the lower step and beneath said step, and a spring actuated latch bar adapted to engage the hanger when in a vertical position to hold it from movement, and means for releasing said latch bar.

4. The combination with a permanent car step having a lower tread, of an auxiliary step comprising a riser pivotally connected to the tread and a tread pivotally connected to the lower end of the riser and extending rearward therefrom, a hanger pivotally connected to the permanent steps and pivotally engaged with the rear end of the auxiliary tread, springs normally urging the parts into a position with the auxiliary riser and tread in approximately parallel relation to the lower step and beneath said step, and a spring actuated latch bar adapted to engage the hanger when in a vertical position to hold it from movement, and means for releasing said latch bar, said means comprising a trip rod passing upward from the inner end of the latch bar to and through the platform of the car.

5. The combination with the platform of a car, and a permanent car step extending down therefrom, the step including side members and a lower tread, of a riser pivotally connected to the forward edge of the lower tread, an auxiliary step hingedly connected intermediate its ends to the lower edge of the auxiliary riser, a hanger pivotally mounted at its upper end between the side members of the permanent car step and depending therefrom and pivotally connected to the rear end of the auxiliary tread, said hanger being slotted, springs connected to the permanent step and to the auxiliary tread at its point of connection with the corresponding riser, a latch bar pivotally connected to a tread of the permanent car steps, extending rearward therefrom and passing through and formed with a notch to form one wall of the slot, said latch bar holding the hanger in a depending position when so engaged, a spring connected to the outer end of the latch bar and urging it upward, and a trip rod connected to the outer end of the

latch bar and passing upward through the platform.

6. A car step including permanent treads and risers, an auxiliary riser hingedly connected to the lowermost permanent tread and foldable into parallel relation thereto and beneath said tread, an auxiliary tread pivotally connected to the auxiliary riser, a lever operatively supported in connection with the permanent steps and having one end slotted, means on the rear end of the auxiliary tread engaging said slot, and man-

ually operable means for actuating said lever to shift the auxiliary tread into position entirely beneath the permanent tread or projected beyond the permanent tread.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

JOHN J. McCARTHY.
CARL MERTZ.

Witnesses:

G. E. HIMES,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."