W. J. GARRIGAN.

CAR STEP.

APPLICATION FILED NOV. 28, 1916.

1,220,087.

Patented Mar. 20, 1917.

2 SHEETS—SHEET 1.

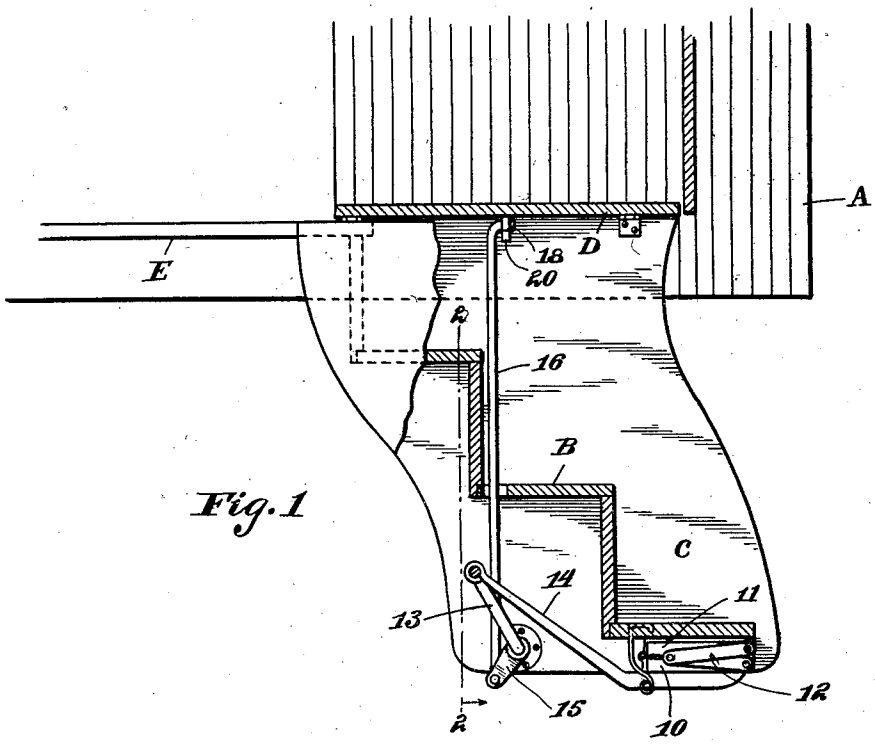


Fig. 1

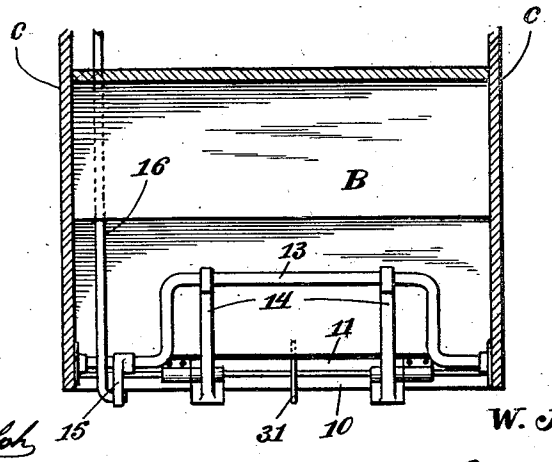


Fig. 2

WITNESSES

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Fig. 3

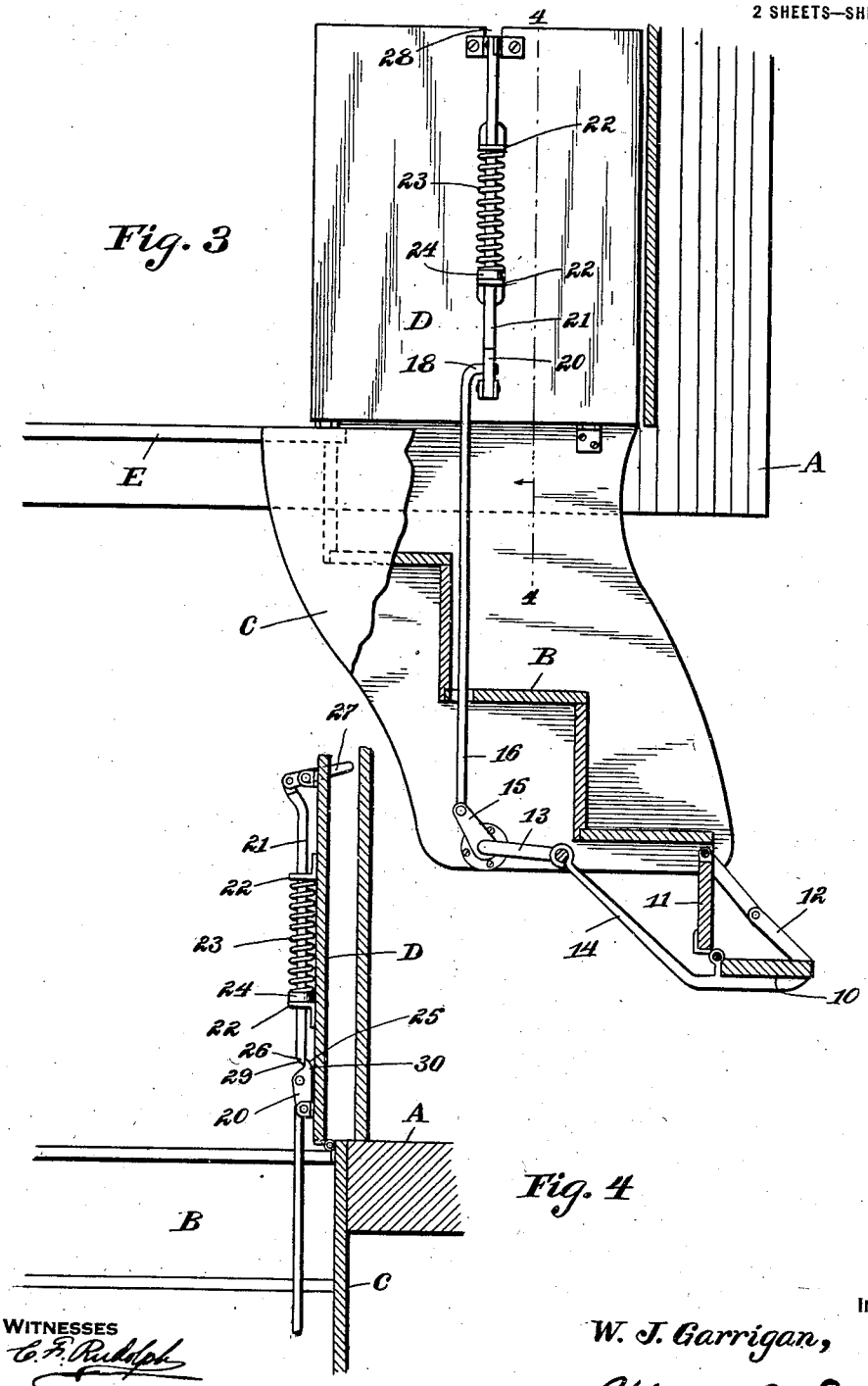


Fig. 4

WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER J. GARRIGAN, OF BRADFORD, PENNSYLVANIA.

CAR-STEP.

1,220,087. Specification of Letters Patent. Patented Mar. 20, 1917.

Application filed November 28, 1916. Serial No. 133,920.

To all whom it may concern:

Be it known that I, WALTER J. GARRIGAN, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented new and useful Improvements in Car-Steps, of which the following is a specification.

This invention relates to car steps and embodies certain improvements over the structure disclosed in Patent 1,115,538 issued to H. C. Warner and myself as joint inventors March 31, 1916. In the above enumerated patent the auxiliary car step is extended for use beyond the lowermost step of the stairway with the opening of the trap door at the head of the stairway, and folded beneath said lower step with the closing of said trap door.

In accordance with the present invention the trap door in addition to controlling the adjustment of the auxiliary step, is capable of being elevated to an opened position while the train is in motion without effecting an adjustment of the auxiliary step, thus obviating all possibility of the auxiliary step being damaged by obstructions along the track, which would result if the step were extended while the train was in motion.

It is also the purpose of this invention to simplify the construction disclosed in the above mentioned patent, and to further increase the strength and safety of the structure as a unit.

The nature and advantages of the invention will be better understood when the following description is read in connection with the accompanying drawings, the invention residing in the construction, combination and arrangement of parts as claimed.

In the drawings forming part of this specification like numerals of reference indicate similar parts in the several views and wherein:—

Figure 1 is a fragmentary side elevation of a flight of steps showing the auxiliary step in folded position.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1 looking in the direction of the arrow.

Fig. 3 is a view similar to Fig. 1 showing the auxiliary step in its extended or active position.

Fig. 4 is a fragmentary front elevation of the steps showing the trap elevated.

Referring to the drawings in detail A indicates generally a railroad coach, and B a flight of steps of usual well known construction, including the side rails or members C. Hingedly mounted upon the upper edge of one of the side rails C is a trap door D which when folded and arranged in a horizontal position prohibits the use of the steps B, and forms a continuation of the platform of the car indicated at E.

An auxiliary step is arranged beneath the lowermost step of the flight B, the auxiliary step being capable of being folded wholly beneath the lowermost step of the flight, or extended to a position for use when desired. The auxiliary step embodies a tread 10 and a riser 11, the latter being pivotally mounted beneath the lower step of the flight B, while the adjacent edges of the tread 10 and the riser 11 are also hingedly connected together. The component parts of the auxiliary step are further braced and held associated by means of pivoted link sections 12 at the opposite sides of the step. The auxiliary step is operated simultaneously with the opening and closing movements of the trap door D, and in carrying this idea into effect I preferably make use of a crank shaft 13 journaled between the side rails C of the steps beneath the latter, while a pair of spaced parallel arms 14, each having one end secured to the underside of the tread 10 of the auxiliary step, and its opposite end loosely embracing the crank portion of the shaft 13, provides a connection between these parts, whereby the auxiliary step is extended to a position for use upon rotation of the shaft 13 in one direction, and folded beneath the lowermost step of the flight B upon rotation of the shaft 13 in an opposite direction. The shaft 13 adjacent one extremity is provided with an extension 15 to which one end of a vertically disposed operating rod 16 is pivotally connected, the rod projecting through the flight of steps B and having its opposite extremity offset as at 18, the offset portion being received and retained within an opening in a pivoted link 20 mounted upon the inner side of the trap door D.

Mounted for sliding adjustment transversely of the trap door is a rod 21, which passes through a pair of apertured guide lugs 22, a coil spring 23 encircling the rod 21 and positioned between the lugs. The spring has one end bearing against the adjacent lug, while the opposite end of the spring bears against a collar 24 on the rod, the spring exerting a pressure to normally maintain the innermost end of the rod in engagement with the pivoted link 20. The end of the link 20 adjacent the rod 21 is formed with a shoulder 25 adapted to be engaged by a shoulder 26 on the rod 21 in the normal position of parts, so that when the trap door D is adjusted the link 20 and rod 21 move as a unit with said door to effect an adjustment of the auxiliary step. However the opposite end of the rod 21 has pivotally associated therewith a lever 27, which when the trap door is in closed position projects above the door through a slot 28, and through the instrumentality of the lever 27 it is manifest that the rod 21 can be moved out of engagement with the link 20 to permit the trap door D to be elevated without effecting an adjustment of the auxiliary step. It is obvious that when the rod 21 is free of the link 20, the latter merely turns upon the offset extremity of the rod 16 as the trap door is elevated without disturbing the auxiliary step. Again when the rod 21 is moved out of engagement with the link 20 the spring 23 is placed under tension so that upon release of the lever 27 the spring expands, thereby arranging the innermost end of the rod 21 in the path of movement of the link 20 when the trap door D is lowered. This end of the rod 21 and the link 20 are provided with coöperating beveled surfaces 29 and 30 respectively, which permit the rod 21 to pass beyond the adjacent extremity of the link 20 during the closing movement of the door D, to engage beneath the shoulder of said link. In this position of parts the auxiliary step is adjusted simultaneously with the movement of the door B.

Depending from the lowermost step of the flight B is a curved resilient finger 31 which engages the auxiliary step when the latter is in folded position, and serves to hold the step in this position when the door D is adjusted independently of the auxiliary step.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily apparent, I desire to have it understood that what is herein shown and described is merely illustrative of the preferred embodiment of the invention to which I do not limit myself, and that such changes and alterations may be resorted to when desired as fall within the scope of what is claimed.

What is claimed is:—

1. In a device of the class described, a platform, a flight of fixed steps, a hinged trap door, a folding step hinged beneath one of said fixed steps, mechanism connecting said door and folding step for simultaneous adjustment, said mechanism including a yieldably supported rod capable of being manually disengaged from said mechanism, to permit said door to be elevated independently of the step, and said rod automatically assuming its normal position with the closing of said door.

2. In a device of the class described, a platform, a flight of fixed steps, a hinged trap door, a folding step hinged beneath one of said fixed steps, a resilient finger depending from said fixed step and engaging the folding step when the latter is in folded position, mechanism connecting said door and folding step for simultaneous adjustment, and said mechanism including a yieldably supported rod capable of being manually disengaged from said mechanism to permit said door to be operated independently of the step.

3. In a device of the class described, a platform, a flight of fixed steps, a hinged trap door, a folding step hinged beneath said fixed steps, a crank shaft journaled beneath said fixed steps, a vertically disposed rod having one end pivotally connected with the crank shaft, a link pivotally associated with said door and similarly connected with the opposite end of said rod, a manually controlled yieldably mounted element normally engaging said link and holding the latter fixed relatively with said door, whereby said folding step is adjusted simultaneously with the adjustment of said door, means for disengaging the movable element from said link to permit an adjustment of said door independently of said folding step.

4. In a device of the class described, the combination with a flight of fixed steps, a folding step hinged beneath the fixed steps, and a pivoted trap door, of mechanism for effecting an adjustment of said hinged step simultaneously with the opening and closing of said door, said means including a vertically disposed rod, a link pivotally mounted on said door and connected with said rod, a second yieldably mounted rod carried by the door for normally engaging the link to provide for the adjustment of the step upon opening of the door, manually operable means for disengaging the second mentioned rod from said link whereby the door may be opened independently of an adjustment of said step, and said yieldable means operating to project the second mentioned rod in the path of said link whereby said parts will be automatically engaged with the closing of said door.

5. In a device of the class described, a

flight of fixed steps, a hinged trap door, a folding step hinged beneath one of the fixed steps, mechanism for adjusting said folding step, and including a vertically disposed rod having one end connected with said door whereby the step is adjusted simultaneously with the adjustment of said door, a yieldably mounted element forming part of the connection between said rod and door and capable of being manually released from the rod to permit the door to be opened independently of an adjustment of the step, and said rod automatically assuming its normal position with the closing of said door.

In testimony whereof I affix my signature.

WALTER J. GARRIGAN.