No. 675,916. Patented June 11, 1901.

H. E. YOUTSEY.

EXTENSION CAR STEP.

(Application filed Jan. 2, 1901.)

(No Model.) 2 Sheets—Sheet 1.

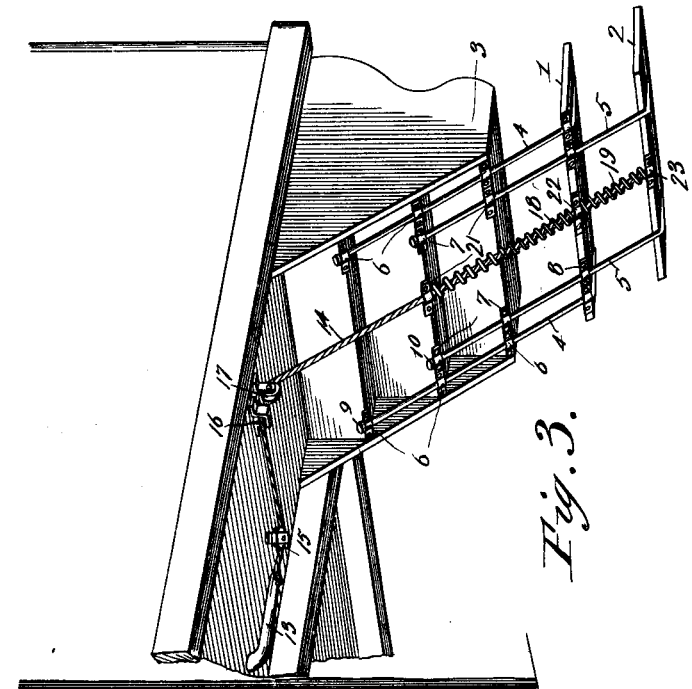

Fig. 3.

Fig. 1.

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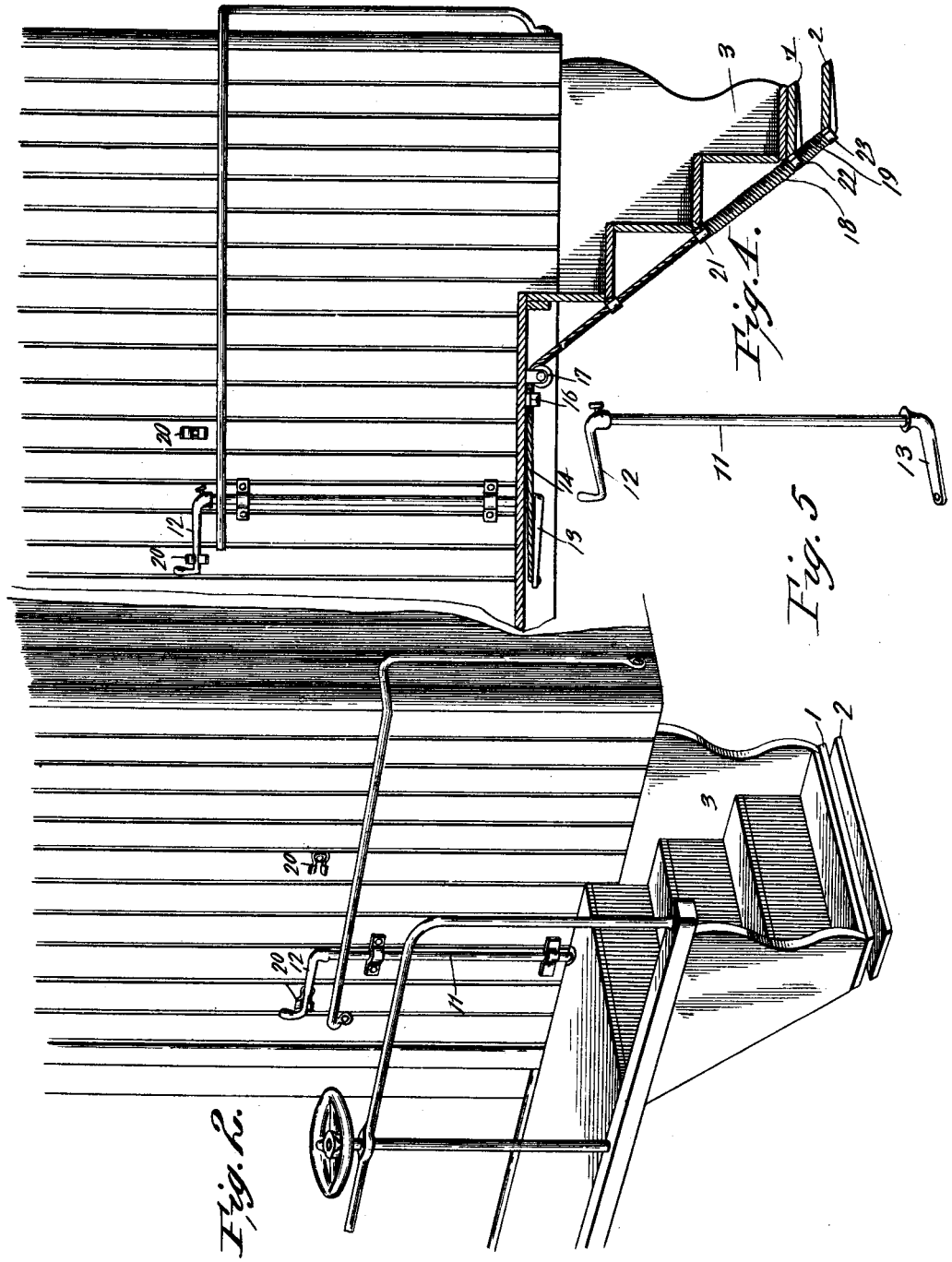

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UNITED STATES PATENT OFFICE.

HENRY E. YOUTSEY, OF LOUISVILLE, KENTUCKY.

EXTENSION CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 675,916, dated June 11, 1901.

Application filed January 2, 1901. Serial No. 41,868. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. YOUTSEY, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Extension Car-Step, of which the following is a specification.

The invention relates to improvements in extension car-steps.

The objects of the present invention are to improve the construction of extension-steps for passenger-coaches and other railway-cars and to provide a simple, inexpensive, and efficient device adapted to be readily operated by a conductor or other train-hand while entering or leaving a car and capable of enabling a step or steps to be readily extended and retracted to form a continuation of the permanent steps of a car and to arrange such extension step or steps so that they will be out of the way when the car is in motion.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a portion of a car provided with extension-steps constructed in accordance with this invention and arranged for use. Fig. 2 is a similar view, the extension-steps being folded. Fig. 3 is a similar view showing the back of the steps, the parts being arranged as illustrated in Fig. 1. Fig. 4 is a vertical sectional view, the parts being arranged as shown in Fig. 2. Fig. 5 is a detail view of the vertical rock-shaft.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 and 2 designate upper and lower extension-steps slidingly connected with the permanent steps 3 of a car 4 by the means hereinafter described and adapted to be arranged, as illustrated in Figs. 1 and 3 of the accompanying drawings, to form continuations of the permanent steps of a car to facilitate passengers leaving the same and to obviate the necessity of employing a stool or other device for such purpose. The extension-steps 1 and 2 are provided with slides 4 and 5, consisting of rods arranged in pairs, as clearly shown in Fig. 3, and the rods 4 of the upper extension-step pass through guides 6, mounted on the permanent steps at the back thereof and consisting of plates provided with openings. The rods 5 of the lower extension-step are arranged in guides 7 and 8, constructed similar to the guides 6 and mounted, respectively, on the permanent steps and on the upper extension-step, as clearly illustrated in Fig. 3 of the accompanying drawings. The lower ends of the rod 4 and 5 are bent outward and are secured to the lower faces of the upper and lower extension-steps 1 and 2, and the upper ends of the rods are provided with heads 9 and 10, arranged to engage the top guides to limit the downward movement of the steps.

The extension-steps are drawn upward by means of a vertical rock-shaft mounted on the car, as clearly illustrated in Fig. 1 of the accompanying drawings, and this rock-shaft 11, which is journaled in suitable bearings at the inner side of the permanent steps, is provided at its upper end with a crank-handle 12, and it has an arm 13 arranged at its lower end and connected with the extension-steps by a flexible connection 14, preferably consisting of a rope or cable located at the back of the permanent steps and arranged on suitable guide-pulleys 15, 16, and 17, located beneath the platform of the car. The lower end of the flexible connection is attached to the lowermost step, and coiled springs 18 and 19 are disposed on the flexible connection and located above and below the upper extension-step 1. These coiled springs, which are compressed when the steps are drawn upward, as illustrated in Fig. 4 of the accompanying drawings, are adapted to throw the extension-steps downward and outward when the flexible connection is slackened or released by the rock-shaft, as hereinafter explained. The guide-pulley 17 is located directly in rear of the permanent steps of the car, and the guide-pulley 16 is located adjacent to the inner side of the steps at a point in rear of the same. The pulley 16 is located in rear of the pulley 17, and the said guide-pulley is mounted in suitable brackets. The guide 16 is arranged in advance of the lower arm of the rock-shaft when the steps are extended and the arm is turned outward,

as illustrated in Fig. 3 of the accompanying drawings, and when the arm is swung inward it pulls upon the flexible connections and raises the extension-steps. The arm 13 is arranged parallel with the handle 12, and when the latter is swung inward toward the car the extension-steps will be raised, and when the rock-shaft is turned in the opposite direction the flexible connection will be slackened or released and the coiled springs will operate to throw the extension-steps outward and downward. The rock-shaft is adapted to swing in the direction the conductor or other train-hand is going, so that it does not interfere with the usual occupations of such train-hands and it does not require any time to manipulate it, and as the train-hand operating it will be the first to leave the car and the last to enter it he will have the use of the extension-steps when leaving and entering. The handle is secured in either position by clips or clamps 20, preferably consisting of resilient jaws arranged in pairs and adapted to automatically engage and release the crank-handle when the latter is shoved inward and pulled outward.

It will be seen that the extension-steps are exceedingly simple and inexpensive in construction, that they are adapted to be operated by a conductor while he is entering and leaving a car, and that the operating mechanism does not require a conductor to stop and manipulate any fastening devices or the like. Instead of employing a pair of extension-steps only, one may be used, as will be readily apparent. The flexible connection passes through suitable guides 21 and 22, mounted on the permanent steps and on the upper extension-step, and the lower end of the flexible connections is preferably secured to the lower extension-step by a plate 23.

What I claim is—

1. In a device of the class described, the combination with a car, of an extension-step movably connected with the car and adapted to move upward and downward, the upright rock-shaft extending above and below the platform of the car and provided at its upper end with an operating-handle arranged to swing inward and outward and adapted to be moved outward by the operator in leaving the car, and inward when the operator enters the car, connections located beneath the platform, and extending from the rock-shaft to the extension-step and adapted to move the same upward and downward as the operating-handle swings inward and outward, and catches arranged at opposite sides of the upper portion of the rock-shaft and adapted to engage the handle to hold the same in either position, substantially as described.

2. In a device of the class described, the combination with a car, of extension-steps provided with rods forming slides and having heads for limiting the downward movement of the steps, guides receiving the rods, a rock-shaft mounted on the car, a flexible connection extending from the rock-shaft to the lower extension-step, and coiled springs disposed on and supported by the flexible connection and interposed between the upper extension-step and the adjacent steps, substantially as described.

3. In a device of the class described, the combination with a car, of an extension-step, a spring for throwing the same outward, a rock-shaft mounted on the car and provided with an operating-handle located above the platform of the car and in convenient position to be grasped and arranged to swing inward and outward, catches located at opposite sides of the rock-shaft and arranged to engage the handle to hold the same in either position, and flexible connections between the rock-shaft and the extension-step, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY E. YOUTSEY.

Witnesses:
CALEB POWERS,
WILLIAM A. EARL.