C. E. HEDGEPETH.

CAR STEP.

APPLICATION FILED JUNE 8, 1909.

945,531.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

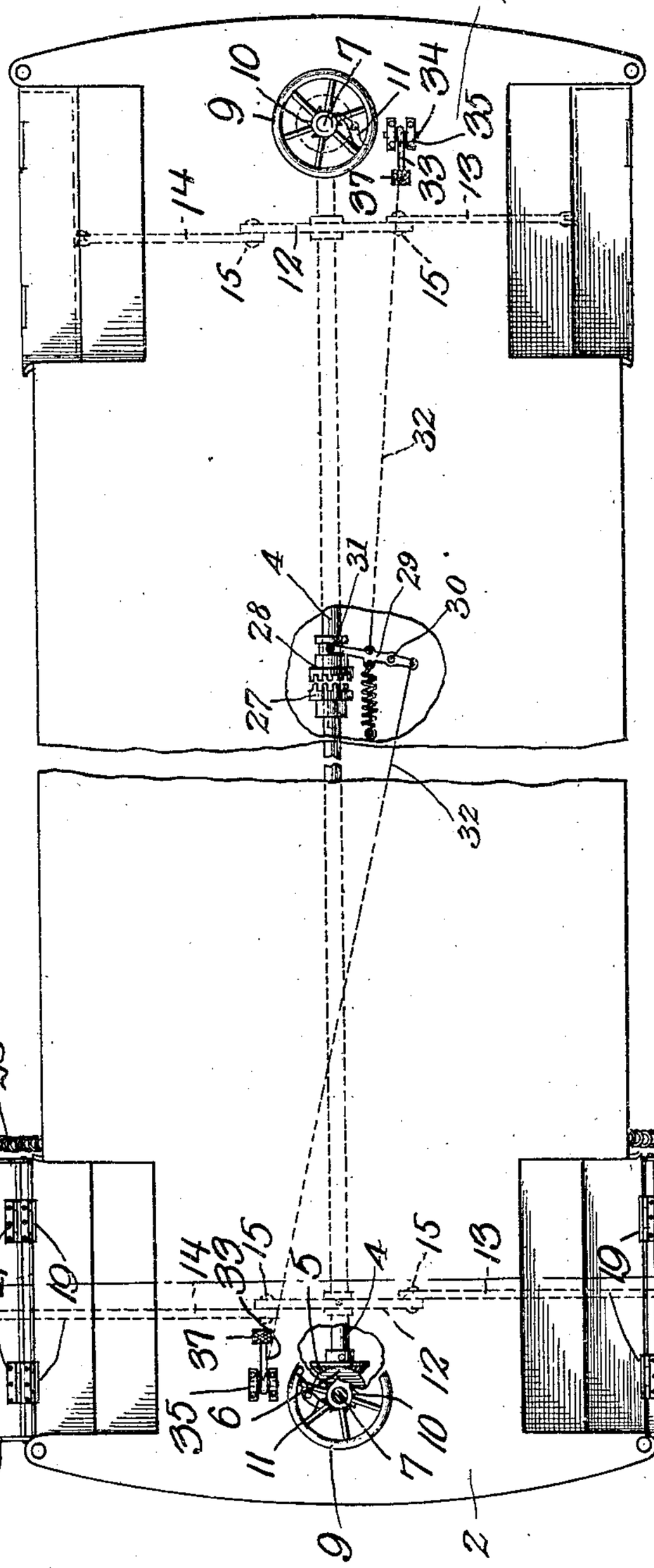

Fig. 1.

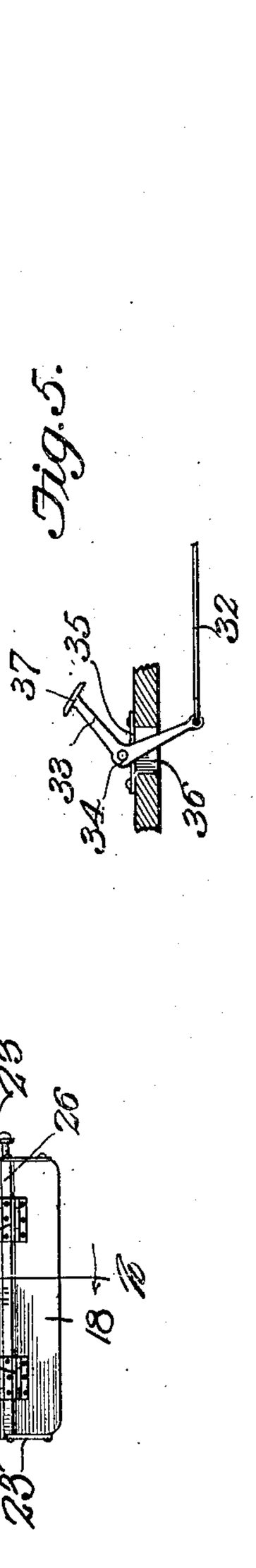

Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 2.

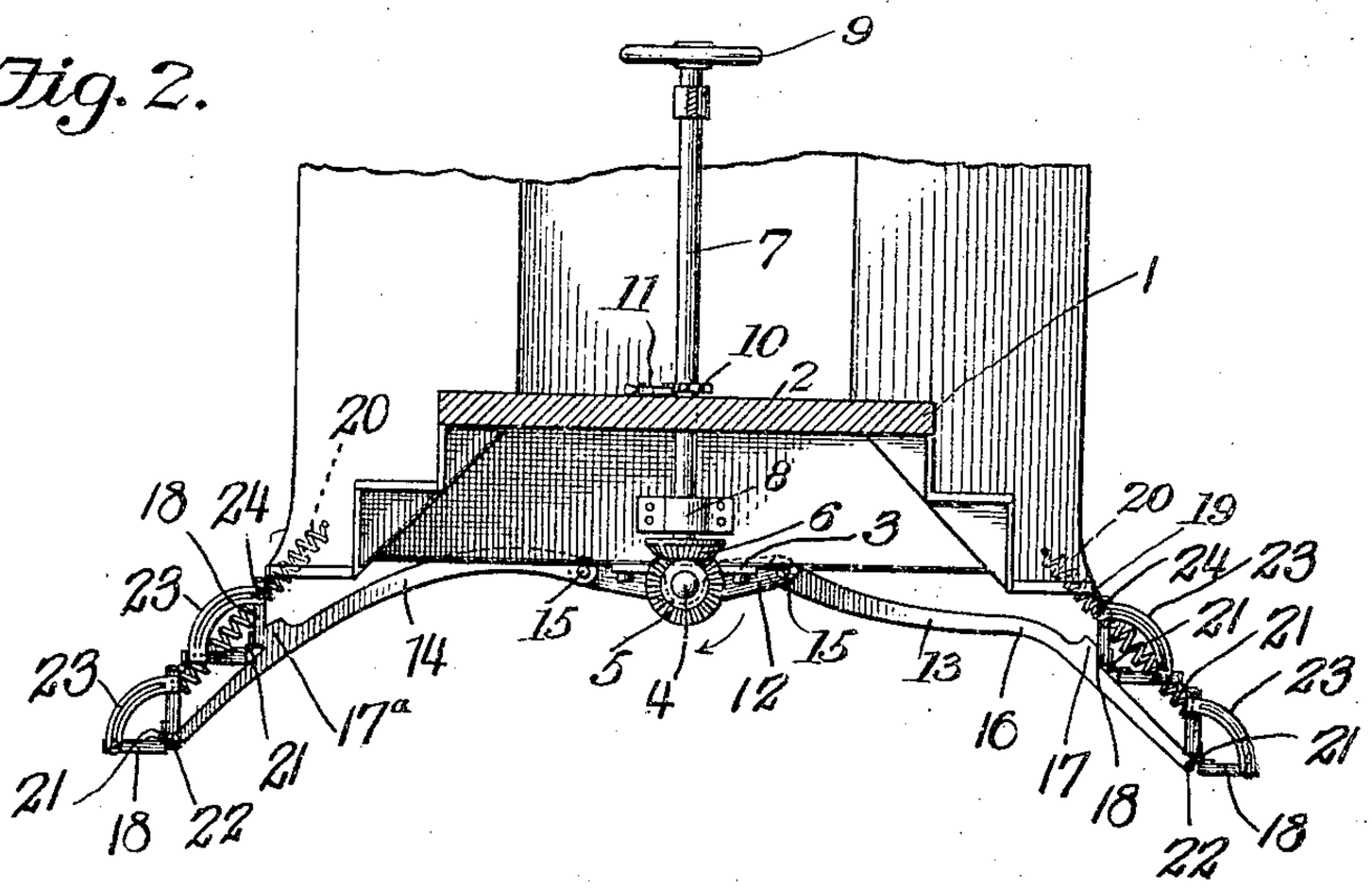


Fig. 3.

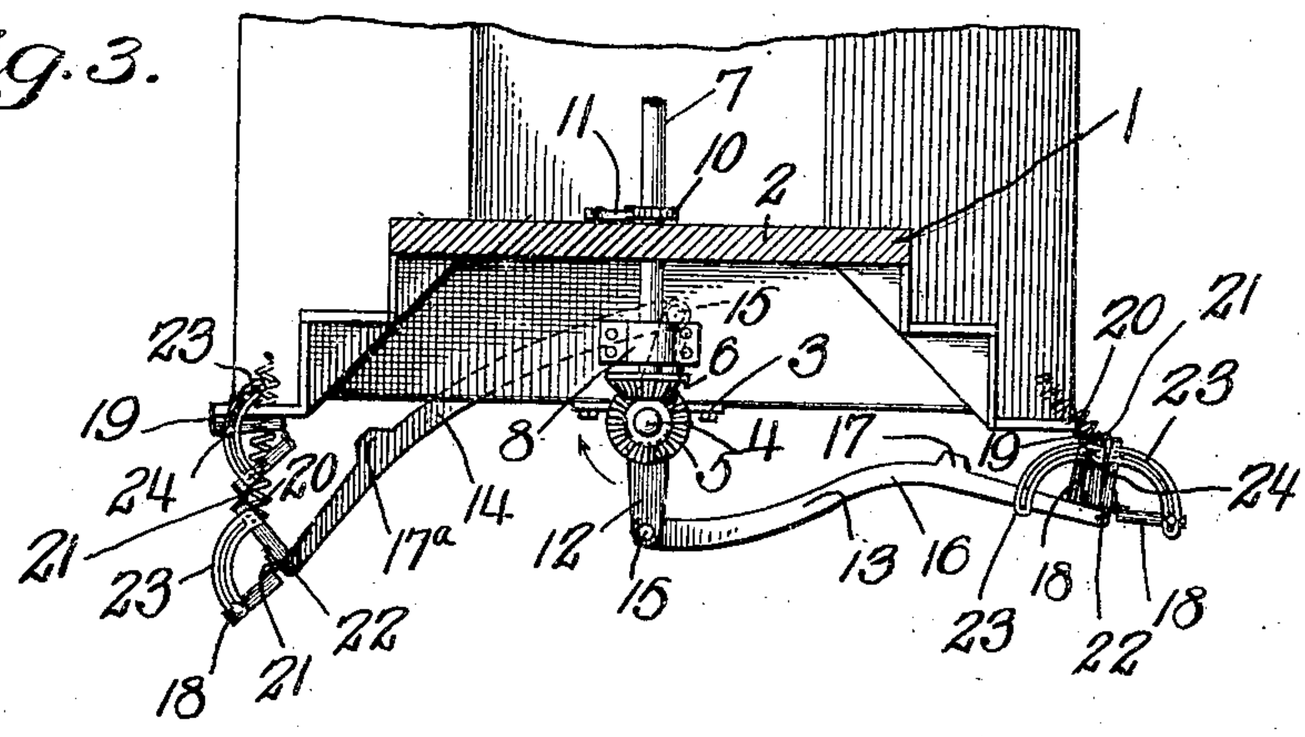
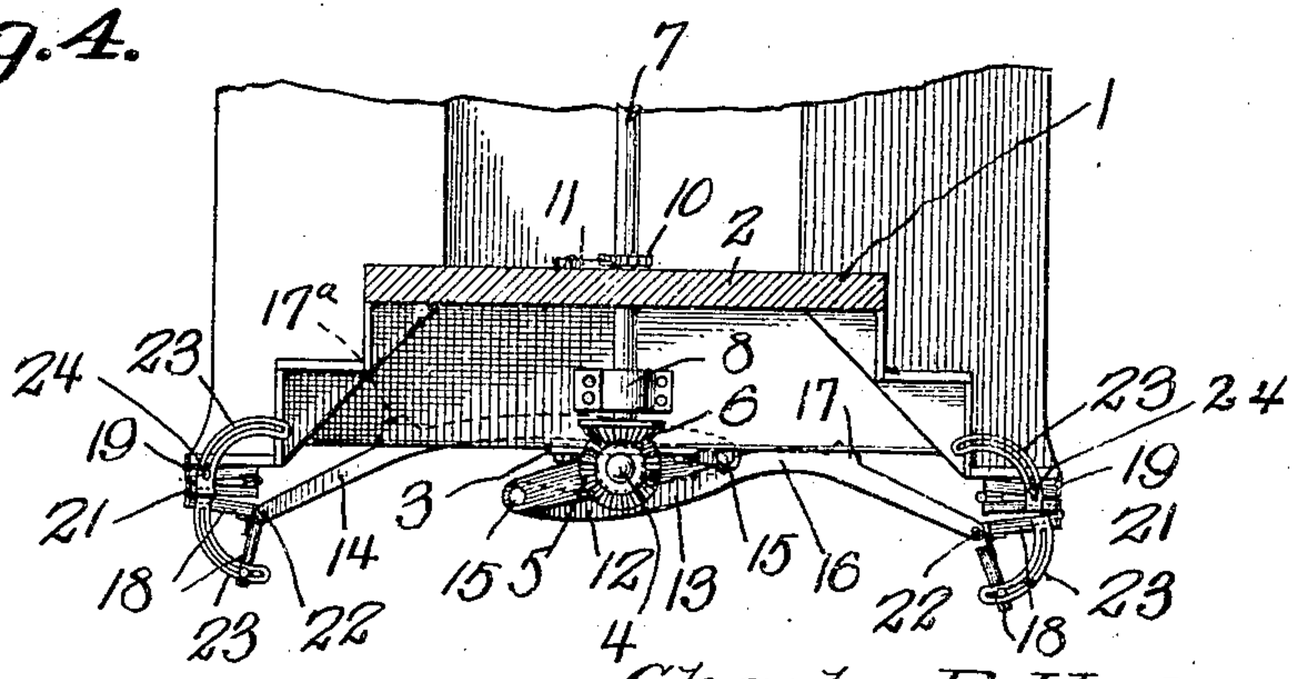


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CAR-STEP.

945,531. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed June 8, 1909. Serial No. 500,820.

To all whom it may concern:

Be it known that I, CHARLES E. HEDGEPETH, a citizen of the United States of America, residing at Nashville, in the county of Nash and State of North Carolina, have invented new and useful Improvements in Car-Steps, of which the following is a specification.

This invention relates to extensible car steps, and one of the principal objects of the same is to provide reliable and efficient means within the control of the motorman or the conductor for extending a series of steps from the ordinary rigid steps on the platform of a car to assist passengers to alight from the car or to gain an entrance thereto.

Another object of the invention is to provide simple, reliable and efficient means to operate the four steps at the different ends of the car simultaneously or to operate one or more of the steps independently as required under certain circumstances.

Still another object of the invention is to provide an extensible car step in which the levers for extending the step are operated by means of a hand wheel and connections at each end of the car, means being provided for returning the steps to their folded position at the will of the motorman or conductor.

These and other objects may be attained by means of the construction illustrated in the accompanying drawings, in which,—

Figure 1 is a plan view of an extensible car step made in accordance with my invention, two of the steps being shown extended and the other two folded, and the operating shafts being shown in section. Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1, looking in the direction indicated by the arrows. Fig. 3 is a similar view, showing the extensible steps partially folded. Fig. 4 is a like view, showing the extensible steps folded underneath the lower rigid step of the platform. Fig. 5 is a detail sectional view, showing the foot lever for operating a clutch to render all the extensible steps operable simultaneously or independently at the opposite ends of the car.

Referring to the drawings, the numeral 1 designates the floor of the car, and 2 are the end platforms. Journaled in keepers 3 underneath the floor of the car is a longitudinal shaft 4, said shaft being in two sections separated in the center and adapted to be connected by a suitable clutch to be hereinafter described. Upon the ends of the shaft 4 are fitted beveled gears 5 adapted to mesh with beveled gears 6 on the vertical shafts 7 extending through the front of the platform 2 and mounted to rotate in a suitable keeper 8 underneath the platform. The shaft 7 is provided with a hand wheel at its upper end designed to be operated by the motorman. Carried by the shaft 7 is a ratchet wheel 10 adapted to be engaged by a pawl 11 pivoted to the platform 2.

Connected to the longitudinal shaft 5 is a two-armed lever 12, and pivotally connected to the outer ends of the lever 12 are the step-operating members 13, 14, said members being pivoted at 15 to the two-armed lever 12. The members 13 are each curved upwardly, as at 16, and provided upon their upper surface with a stop lug 17. The lever 14 is provided with a continuous curve from end to end and also has a stop lug 17^a on its upper surface. The extensible car steps 18 are hinged at their upper ends at 19 to the lower step 20 rigidly connected to the platform 2, said steps 18 being connected together by hinges 21.

The levers 13 and 14 are pivotally connected to the lower extensible step 18 at 22. The steps 18 are connected together by means of slotted arcuate bars 23, said bars being connected to one of the steps and having a stud 24 connected to the next adjacent riser or step to pass through the slot in the arcuate bars, thus permitting the steps to be folded and to be supported in proper position when extended. Spiral springs 25 are connected at their lower ends to the extended ends of the lower hinge pintle 26, the upper ends of said springs being connected to a rigid part of the frame of the car. The tension of the springs 25 is exerted to fold the steps after they have been extended and after the shaft 7 has been released by actuating the pawl 11.

In order that the steps at the opposite ends of the car may be independently operated I have provided a clutch comprising a member 27 secured to one section of the shaft 4 and a sliding clutch section 28 mounted upon the other section of the shaft 4. The section 28 may be moved to engage the member 27 or disengage the same by means of a lever 29 pivoted at 30 under the floor 1 of the car, said lever having a yoke 31 which engages the reduced portion in the

sliding member 28. Wire or other flexible connections 32 are attached to the lever 29 at opposite sides of its pivotal point 30, said connections extending to the opposite ends of the car and connected to the foot levers 33 of elbow form, said levers each being pivoted at 34 to a bracket 35 secured to the platform of the car, one arm of said lever passing through a hole 36 in the platform, and the opposite arm being provided with a roughened pedal 37.

The operation of my invention may be briefly described as follows:—When the extensible steps 18 are held in the position shown in Fig. 4 and the motorman desires to let the passengers on or off the car, he releases the pawl 11 from the ratchet wheel 10 with his foot and by giving a slight turn to the hand wheel 9 the levers 13 and 14 assume the position shown in Fig. 3, and by a further movement of the hand wheel the steps 18 are fully extended, as shown in Fig. 2, with the upper step member bearing against the stop lug 17 and the studs 24 being at the end of the slots in the arcuate bar 23. The steps are thus held in rigid condition to assist passengers on or off the car. Should it be desired to operate only the steps at one end of the car, which may occur when the car has partially passed a platform, and the front of the car is at the side of a ditch, the clutch 27, 28 is operated by means of the foot lever 33. Just before the car is started the hand wheel 9 is operated, and is assisted by the springs 25 to return the extensible steps to the position shown in Fig. 4, the spring *a* serving to return the lever 29 to its original position.

From the foregoing it will be obvious that an extensible car step made in accordance with my invention is simple in construction, is quick in operation, can be readily applied to any car and can be operated to extend the steps at either end of the car independently of the other, or all the steps may be operated simultaneously.

I claim:—

1. An extensible car step comprising a series of steps hinged together and hinged to the lower step of the platform, a longitudinal shaft journaled under the car and provided with a two-armed lever, step-operating members pivotally connected to said lever and pivoted to said steps, stop lugs on said members, a vertical shaft extending through the platform, beveled gears on said shafts, a hand wheel on said vertical shaft, and a pawl and ratchet for holding said shaft in adjusted position for extending and folding the steps.

2. In an extensible car step, the combination of a longitudinal shaft journaled under a car, said shaft being made in sections and provided with a clutch for connecting said sections, means for operating said clutch, a two-armed lever connected near opposite ends of said longitudinal shaft, step-operating members pivoted to said two-armed lever, a series of extensible steps hinged together and connected by hinges to the lower step of the platform, said step-operating members being pivotally connected to the extensible steps and provided with a stop lug, slotted arcuate bars for limiting the movement of the steps, and vertical shafts provided with hand wheels at opposite ends of the car for operating the longitudinal shaft.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES EUGINE HEDGEPETH.

Witnesses:

A. G. WALKER,

C. P. HARPER.