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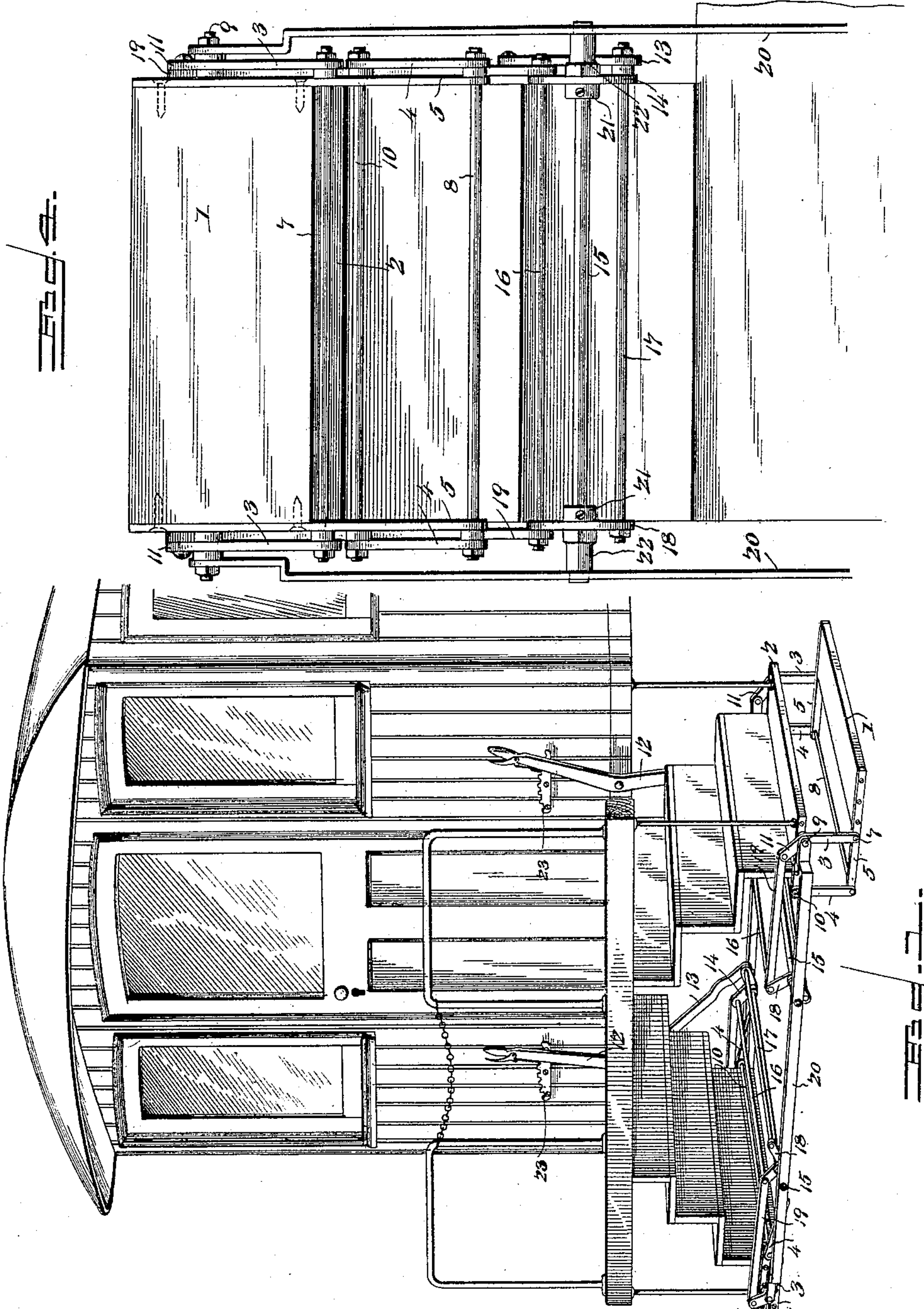
W. J. GRIFFITHS, JR.

EXTENSION CAR STEP.

(Application filed June 20, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
*E. F. Stewart*  
*J. F. P. Day*

By *W. J. Griffiths Jr.* Attorney.  
Inventor  
*William J. Griffiths Jr.*  
*C. A. Snow & Co.*





# UNITED STATES PATENT OFFICE.

WILLIAM JAMES GRIFFITHS, JR., OF MOUNT VERNON, NEW YORK.

## EXTENSION CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 616,230, dated December 20, 1898.

Application filed June 20, 1898. Serial No. 683,985. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM JAMES GRIFFITHS, Jr., a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented a new and useful Extension Car-Step, of which the following is a specification.

The invention relates to improvements in extension-steps for railway-cars.

The object of the present invention is to improve the construction of extension-steps for railway-cars and to provide a simple, inexpensive, and efficient device adapted to be readily operated from the platform of a car and capable of extending the additional or folding step from its position beneath the lowermost step of a car to its operative position and of returning it to its folded position.

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 an extension car-step constructed in accordance with this invention. Fig. 2 is a vertical sectional view, partly in elevation, the parts being arranged as shown in Fig. 1. Fig. 3 is a similar view, the extension-step being folded. Fig. 4 is a reverse plan view, the step being folded. Fig. 5 is a detail view illustrating the manner of journaling the rod which forms the support for the bell-crank levers.

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

1 designates an extension-step connected with the lowermost step 2 of a car by front and rear links 3 and 4, arranged in pairs and located at the ends of the step 2 and depending therefrom when the extension-step is in operative position, as illustrated in Figs. 1 and 2 of the accompanying drawings. The extension-step 1 is provided at its ends with rearwardly-extending arms 5, preferably formed by metal bars secured to the end edges of the step 1 and projecting rearward therefrom, and the lower ends of the links 3 and 4 are secured to the arms 5, near the inner and outer ends thereof, by rods 7 and 8, disposed longitudinally of the step 1 and con-

necting the links. The upper ends of the links are pivoted to the car-step 2 by rods 9 and 10; but any other suitable means may be employed for this purpose, and the upper ends of the links 3 are extended to form arms 11, which are arranged at a slight angle to the body portions of the links. The links are adapted to swing backward and forward to extend the step 1 and to fold the same beneath the car-steps.

The oscillation of the links 3 and 4 is effected by means of a hand-lever 12, fulcrumed between its ends at one side of the car-steps near the platform and having its lower portion or arm arranged at an angle to the upper portion and connected by a bar 13 with the lower arm of a bell-crank lever 14. The bell-crank lever 14, which is fulcrumed on a rod 15, is connected by rods 16 and 17 with a companion bell-crank lever 18, located at the opposite side. The upwardly-extending arms of the bell-crank levers are connected by horizontal rods or bars 19 with the upwardly-extending arms of the front links 3. The transverse rod 15, upon which the bell-crank levers are fulcrumed, is journaled at its ends in suitable bearings of horizontal braces 20, and the bell-crank levers which are provided at their angles with perforations for the rod 15 are rigidly secured to the same by inner collars 21 and outer nuts 22. The nut 22, which engages the threaded end of the rod or shaft 15, is provided with a rounded extension forming a journal fitting in a bearing-opening of the adjacent brace 20, and by this construction the rod or shaft is adjustably journaled thereon and may be varied in length, so as to fit properly the space between the braces 20. It also enables any wear of the parts to be readily taken up.

The bar 17, which connects the lower or rearwardly-extending arms of the bell-crank lever 14 with the hand-lever, is provided between its ends with an inwardly-extending bend to clear the upper rod 16 when the step 1 is extended, as clearly illustrated in Fig. 2 of the drawings.

The horizontal braces 20, which are located in the same plane as the lowermost car-step, are secured to the same and they are preferably extended entirely across the car, as illustrated in Fig. 1 of the accompanying draw-



ings, and secured to the steps at both sides of the same, and they are outwardly offset near their terminals.

The hand-lever of each set of step-operating mechanisms is adapted to be oscillated to swing the links 3 and 4 inward to arrange the extension-step beneath the car-steps and also to swing them outward to bring the extension-step in operative position, and the operating-levers are locked against accidental movement by means of ratchets 23, mounted on the body of the car, and pawls or dogs carried by the levers.

The invention has the following advantages: The extension car-step and the operating mechanism are simple and comparatively inexpensive in construction and possess great strength and durability and are adapted to be mounted upon a car without interfering with any of the ordinary mechanism thereof or necessitating any alteration in the arrangement of the same. The operating mechanism is positive and reliable and the extension-step is locked in its folded and extended positions, so that there is no liability of it accidentally dropping when a car is in motion or giving way under the weight of a person.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is—

1. In a device of the class described, the combination with the stationary steps of a car, of the front and rear links pivoted to the lowermost step, the front links being provided at their upper ends with arms, an extensible step provided with rearwardly-extending arms pivoted to the lower ends of the links and supported by the same, the bell-crank levers fulcrumed at their angles and located in rear of the links, bars connecting the upper arms of the bell-crank levers with the arms of the front links, rods connecting the arms of the bell-crank levers, a hand-lever fulcrumed on the car-steps near the platform, and a bar connecting the hand-lever with the lower arm of one of the bell-crank levers and provided between its ends with a bend, substantially as described.

2. In a device of the class described, the combination with the stationary car-steps, of

an extension-step provided with rearwardly-extending arms, the links located at the inner and outer ends of the arms and connecting the same with the lowermost car-step and arranged in pairs, one pair being provided with upwardly-extending arms, the horizontal braces extending rearward from the lowermost car-step, a horizontal rod journaled on the braces, bell-crank levers mounted on the rod, rods connecting the arms of the bell-crank levers, bars extending from the upper arms of the bell-crank levers to the arms of the links, a hand-lever, and a bar connecting the hand-lever with the lower arm of one of the bell-crank levers, substantially as described.

3. In a device of the class described, the combination with a car, of extension-steps provided with rearwardly-extending arms, the links located at the inner and outer ends of the arms and connecting the same with the lowermost car-steps and arranged in pairs, one pair of each extension-step being provided with upwardly-extending arms, the horizontal braces 20 extending entirely across the car and secured at their terminals to the lowermost car-steps, said braces being outwardly offset at their ends, horizontal rods journaled on the braces, bell-crank levers mounted on the rods, parallel rods connecting the arms of the bell-crank levers, bars connecting the bell-crank levers with the arms of the links, and means for operating the bell-crank levers, substantially as described.

4. In a device of the class described, the combination of a support having a bearing-opening, a threaded rod or shaft, an arm or lever mounted on the shaft or rod, and the nut 22 engaging the threads of the rod or shaft and provided with a rounded extension forming a journal and arranged in the bearing-opening of the support, whereby the said rod or shaft is adjustably journaled thereon, 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.

WILLIAM JAMES GRIFFITHS, JR.

Witnesses:

GEO. E. TAYLOR,  
WM. J. GRIFFITHS.