

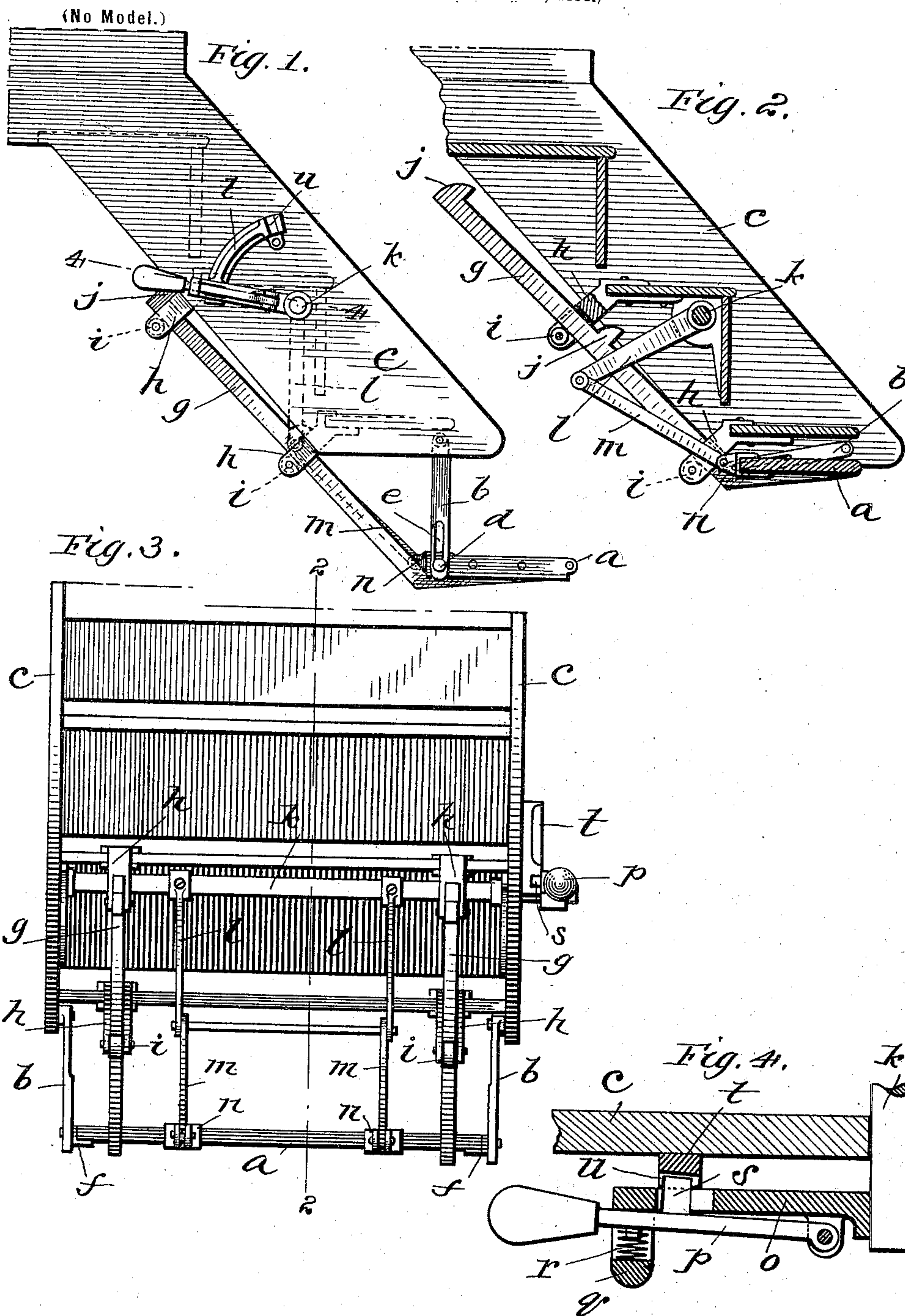
No. 612,429.

T. MAXON.

Patented Oct. 18, 1898.

EXTENSION CAR STEP.

(Application filed June 30, 1898.)



Witnesses
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UNITED STATES PATENT OFFICE.

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EXTENSION CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 612,429, dated October 18, 1898.

Application filed June 30, 1898. Serial No. 684,859. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MAXON, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Extension Car-Steps, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation showing the step extended; Fig. 2, a vertical sectional view on the line 2 2 of Fig. 3, showing the step folded up under the permanent steps; Fig. 3, an under view of the permanent steps with the movable step extended, and Fig. 4 a detail section on the line 4 4 of Fig. 1.

This invention is designed to simplify and improve the devices for extending and withdrawing the movable step and rigidly supporting it when extended, as more fully hereinafter set forth.

Referring to the drawings by letters, *a* designates the movable step adapted to be extended to a position below and a little forward of the lowermost step of the main steps, this movable step being hung to the permanent steps by a pair of swinging links *b*, the upper ends of these links being pivoted to the inner faces of the sidepieces *c* of the main steps near the front edge of the lowermost step, one link being pivoted to each side piece. The other ends of the links are pivoted to the respective ends of the step *a* by means of pins *d*, working in longitudinal slots *e* in the links and fastened in the adjacent ends of said step. The step *a* has metal caps or flange-plates *f* secured over its ends to brace and strengthen the step.

Fastened rigidly to step *a* are a pair of parallel bars *g*, which extend upward to the rear of the permanent steps and work through slotted brackets *h*, rigidly fastened to the permanent steps and projecting backward and downward, the bars being supported in these brackets by rollers *i*, journaled between the arms of the brackets and bearing upon the under sides of the bars. These brackets *h* are made strong and are rigidly attached to the steps, so that the bars will be guided truly and rigidly held against lateral vibration. At the upper end of each bar is formed an upward-projecting stop *j*, which is adapted,

when the step is extended, to abut against the upper bracket *h* and limit the downward movement of the bars. It is obvious that a similar stop may be secured on each bar at a suitable point between its ends to adapt it to abut against the lower bracket *h*. The rigid brackets *h* and the stops *j* will obviously form a rigid structure to support the extended step.

The movable step is actuated by means of a rock-shaft *k*, journaled in the permanent steps and provided with a pair of rigid arms *l*, which extend downward and rearward and are pivotally connected at their ends to links *m*, which latter extend downward and outward and are pivotally connected to rigid brackets *n*, fastened to the rear edge of the movable step. Fastened rigidly to one of the projecting ends of the rock-shaft is a radial arm *o*, and pivotally connected to this arm at a point near the rock-shaft is a hand-lever *p*, said lever *p* lying on the face of the arm *o* and being movable to and from its face and having its handle end projecting beyond the end of said arm radially. Embracing the lever is a yoke *q* projecting outward from the outer end of the arm *o* and serving to limit the movement of said lever, a coil-spring *r* being confined between the lever and the end of the yoke and serving to keep the lever pressed against the outer face of the arm *o*.

The lever *p* is provided on its inner face with a lug or tooth *s*, which works through an opening in arm *o* and normally bears upon the face of a segment *t*, fastened rigidly on the adjacent face of one of the side pieces *c*, this segment being provided near each extremity with a notch *u* in its face. To extend the step, it is simply necessary to take hold of the handle end of lever *p*, press it slightly outward against the action of the spring *r* to release tooth *s* from the upper notch *u*, and then swing the lever downward until the tooth *s* normally engages the lower notch. In this way the step is locked in its two positions and may be extended or withdrawn with practically but a single movement of the operating-lever.

It will be observed that when the movable step is folded it lies close up under the permanent steps and between the projecting ends of the side pieces thereof, whereby it will be

out of the way and not liable to injury by contact with objects near the track or on the station-platforms. It will also be observed that the strong bars *g* will, by reason of the supporting-rollers, slide up and down with but a minimum of friction, and when these bars are down they form an exceedingly rigid support for the extended step because of the arrangement of the brackets and stop-lugs on the bars. When the step is extended, the arms *l* and links *n*, as well as links *b*, will also take up some of the strain of any weight that may be placed on the extended step; but the greater part of the strain will be brought upon the bars *g* and their lugs *j* and through the medium of the strong brackets will be imparted to the permanent steps, the lugs serving not only to restrict the downward movement of the bars, but also to transmit the strain to the brackets, and thereby relieve the journals of the rollers. Another essential feature lies in the peculiar devices for operating the rock-shaft *k*. These devices are exceedingly simple and reliable.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with the permanent steps, rigid brackets extending rearward and downward therefrom, these brackets being bifurcated and provided with rollers, a movable step and means for lowering and raising it, and rigid bars projecting upward from said

step and working through said brackets and on said rollers, said bars being provided with upward-extending stops *j* adapted to abut against the upper faces of the brackets when the movable step is down and thereby limit the movement of the movable step and relieve said rollers of strain, substantially as set forth.

2. The combination of the permanent steps, a movable step, guiding and supporting arms connected thereto and to the permanent steps, a rock-shaft journaled in the permanent step and connected to the movable step, a radial arm carried by this rock-shaft at one end, a hand-lever pivoted upon the outer face of said arm at a point near the rock-shaft and provided with a lug working through an opening in said arm, said hand-lever having its handle end extending radially beyond the outer end of said arm, means carried by said arm for resiliently pressing the handle end of said lever toward the face of said arm, and a segment carried by the permanent steps and provided with notches to receive a lug on said lever, as and for the purposes set forth.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 20th day of June, 1898.

THOMAS MAXON.

Witnesses:

RUFUS SWITZER,
E. A. BENNETT.