

R. W. LOMAX.
FOLDING CAR STEP.
APPLICATION FILED MAY 12, 1910.

976,195.

Patented Nov. 22, 1910.

2 SHEETS-SHEET 1.

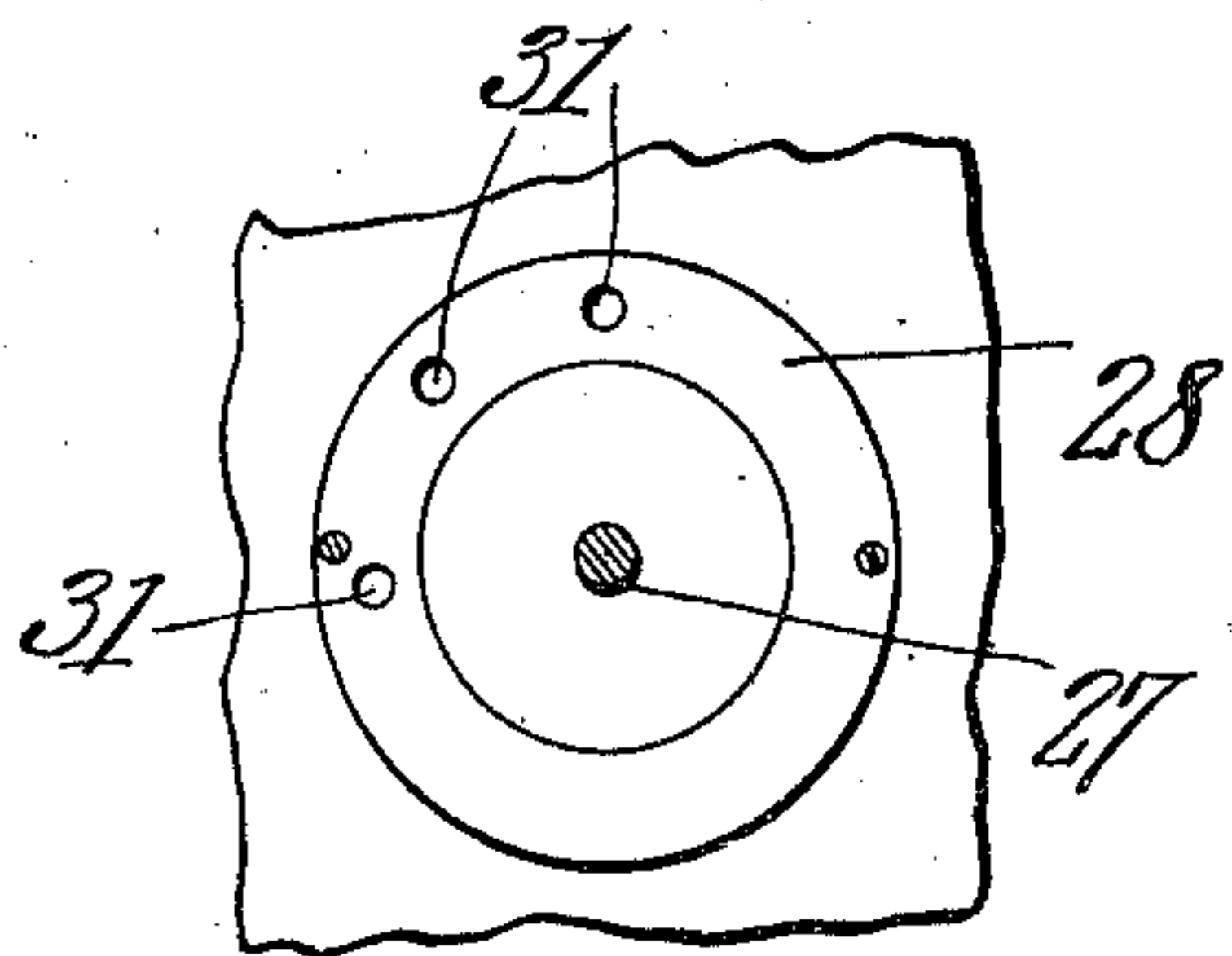
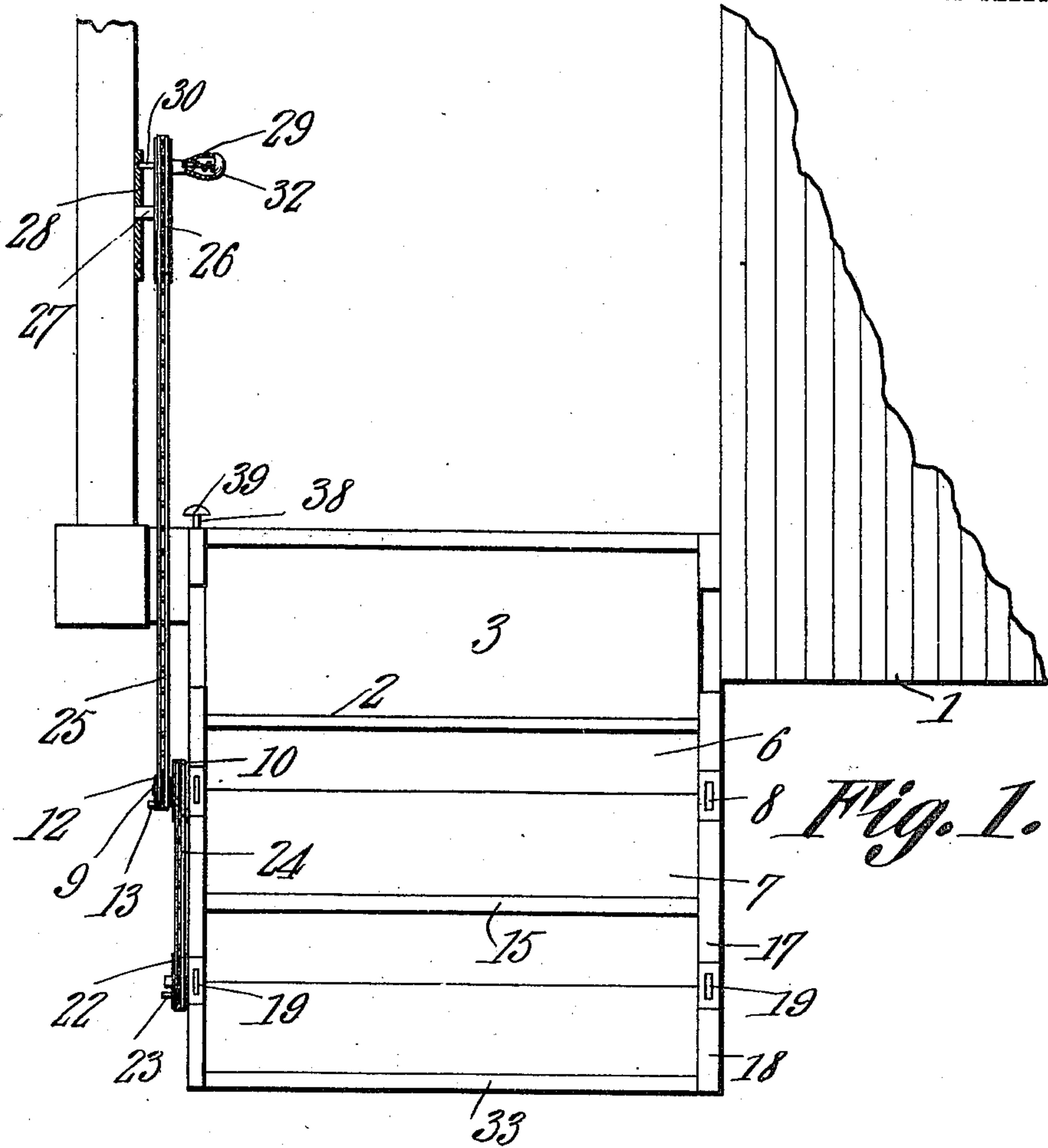


Fig. 4.

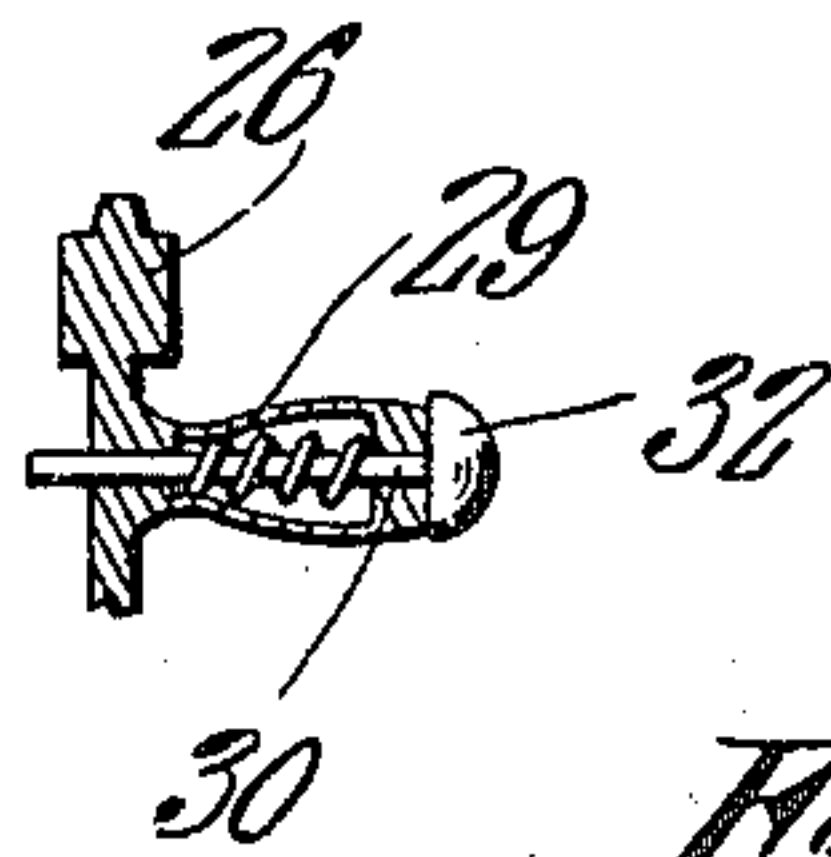


Fig. 5.

Witnesses

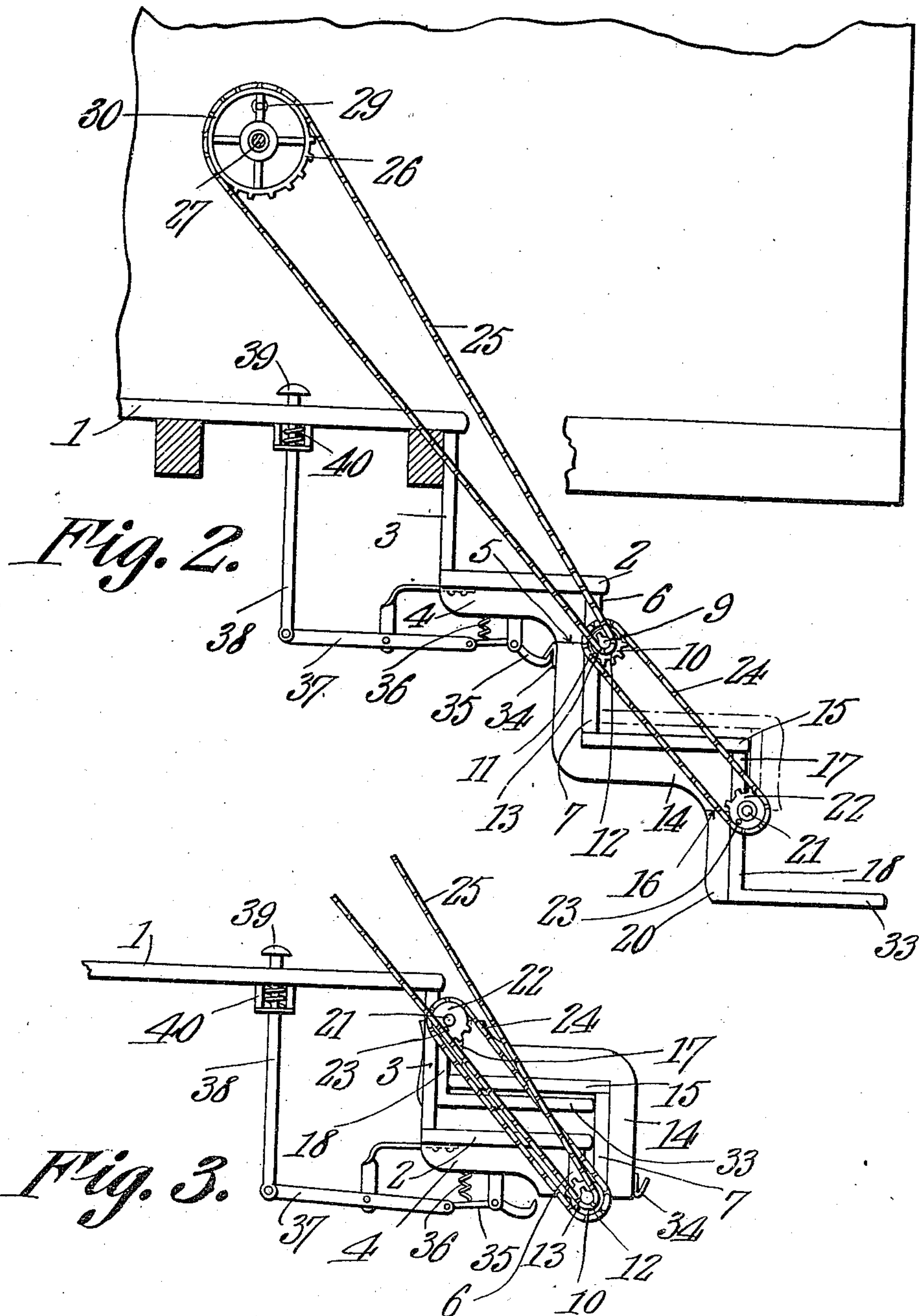
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UNITED STATES PATENT OFFICE.

ROGER W. LOMAX, OF LYNCHBURG, VIRGINIA.

FOLDING CAR-STEP.

976,195.

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To all whom it may concern:

Be it known that I, ROGER W. LOMAX, a citizen of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, have invented a new and useful Folding Car-Step, of which the following is a specification.

This invention relates to car steps and one of its objects is to provide a series of steps hingedly connected, there being means upon the car whereby said steps can be successively folded so that one or more of them can be left in position for use, this being particularly desirable where the car is adapted to stop at platforms of different heights.

Another object is to provide a folding step one of the members of which can be used as the lowest tread both when the steps are extended and when they are partly folded.

A still further object is to provide novel means whereby the members of the step structure can be successively moved by actuating a single drive element.

Another object is to provide means for preventing the intermediate step section from swinging to its folded position until after the lower section has been folded.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings—Figure 1 is a front elevation of folding steps constructed in accordance with the present invention. Fig. 2 is a side elevation of said steps and of the actuating mechanism provided therefor the shaft of the drive sprocket being shown in section. Fig. 3 is a side elevation of the steps and showing the sections folded together. Fig. 4 is an elevation of the folding plate used in connection with the drive sprocket. Fig. 5 is a section through a portion of said sprocket and showing the locking pin combined with the handle thereon.

Referring to the figures by characters of reference 1 designates the car structure and a stationary step tread 2 is supported below this structure by a riser 3, there being a reinforcing member 4 secured to the bottom surface of the tread 2 and forming a square

shoulder 5 for the purpose hereinafter set forth. A sectional riser is located below the tread 2 and consists of a stationary upper section 6 secured to the reinforces 4 and a lower movable section 7 which is hingedly connected to the section 6, as indicated at 8, there being a stud 9 projecting from one of the hinges 8 and constituting a bearing for a sprocket wheel 10. This wheel has a semi-circular slot 11 formed therein and another sprocket 12 is formed on or secured to the sprocket 10 and rotates therewith. The lower riser section 7 has a lug 13 extending laterally from it and which projects into the slot 11, this lug being located in the lower end of said slot when the riser section 7 is in vertical alinement with the section 6. One or more reinforces 14 are secured to the back face of the riser section 7 and extend forwardly so as to support an intermediate step tread 15. These reinforces 14 are designed to bear upwardly against the shoulder or shoulders 5 when the tread 15 is parallel with the tread 2. All of the reinforces 14 also form square shoulders 16 at their lower ends. A lower riser is arranged below the tread 15 and is formed of an upper section 17 and a lower section 18, said upper section being secured to the reinforces 14 and the lower section 18 being hingedly connected to the section 17 as indicated at 19. One or more reinforces 20 are secured to the back face of the section 18 and are adapted to bear upwardly against the shoulder 16 when the two sections 17 and 18 are in alinement. A stud 21 extends from one of the hinges 19 and constitutes the bearing of a sprocket wheel 22, this wheel being secured to the section 18 in any suitable manner as by means of a pin 23 extending through the sprocket and into the section 18.

A chain 24 is mounted on the sprockets 10 and 22 and another chain 25 is mounted on the sprocket 12 and extends upwardly to and partly around a drive sprocket 26. This last mentioned sprocket is journaled upon a stud 27 extending from the center of a holding plate 28 and a grip or handle 29 is extended from one face of the sprocket 26. This handle has a spring pressed locking pin 30 slidably mounted within it and one end of which is adapted to be seated in any one of a series of openings 31 formed in

the plate 28. A button 32 or the like may be secured to the outer end of the pin 30 so as to facilitate the manipulation thereof. The plate 28 is to be secured to the car structure 1 in any suitable manner.

It is to be understood that when the parts are in their normal positions, the treads 2 and 15 are parallel with a tread 33 extending from the lower riser section 18. The lug 13 is also located within the lower end portion of the slot 11. By rotating the sprocket 26 the chain 25 will cause sprockets 12 and 10 to rotate upon the stud 9 until the stud 13 is contacted by the other end wall of the slot 11. During this rotation of the gears 10 and 12 the chain 34 will cause the sprocket 22 to rotate 180 degrees and as this sprocket is secured to the riser section 18, it will be apparent that the bottom tread 33 will be swung upwardly onto the intermediate tread 15 as indicated by dotted lines in Fig. 2. With the parts thus located, the step can still be used, the exposed face of the tread 33, and which was formerly the bottom surface of said tread, being thus brought into position for use as the wear surface. Continued rotation of the sprocket 26 will cause sprocket 10 to swing the lug 13 and the riser section 7 upon the hinges 8, thus bringing the two treads 15 and 33 into position above the tread 2, as shown in Fig. 3. When the tread 33 is in any one of the three positions described, to-wit, its normal or lowermost position, its intermediate position on the tread 15, and its highest position upon the tread 2, the gear 26 can be locked against further rotation by springing the pin 30 into the adjoining opening 31 in plate 28. Should the slot 11 become clogged with cinders or other foreign substances that would tend to prevent the gear 10 from moving independently of the lug 13, the tread 15 would be swung upwardly before the tread 33 has been folded thereonto unless some means should be employed for locking the riser section 7 against swinging movement until the tread 33 has been folded. A keeper 34 has, therefore, been secured to one of the reinforces 14 so as to be engaged by a catch 35 when the section 7 is in alignment with the section 6. This catch has a spring 36 for holding it normally in engagement with the keeper and a lever 37 is supported back of the section 6 and is pivotally connected to the catch 35. This lever may be actuated by a rod 38 extending through the car structure and having a knob or foot plate 39 upon its upper end. A spring 40 may be employed for holding this knob or foot plate normally elevated above the floor of the structure 1. By providing this locking means the section 7 can be securely held against movement until the tread 33 has been folded onto the tread 15 and then, by depressing the rod 38, the section 7 can be

unlocked and the two treads 33 and 15 thus folded onto the tread 2 in the manner hereinbefore described.

It is to be understood of course that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as defined in the appended claims.

What is claimed is:—

1. A device of the class described including hingedly connected treads, an actuating device, and means operated thereby for successively folding the treads together. 75
2. A device of the class described including treads, sectional risers interposed therebetween, the sections of each riser being hingedly connected, each riser section being fixedly attached to one of the treads, an operating device, and means actuated thereby for successively folding the treads and riser sections together. 80
3. A device of the class described including hingedly connected treads, an actuating device, and separate revoluble means operated thereby for successively folding said treads together. 85
4. A device of the class described including treads, sectional risers interposed therebetween, the sections of each riser being hingedly connected, cooperating reinforcing devices upon the risers for holding the sections thereof in alinement when the treads are lowered, and revoluble means for successively elevating the treads and folding them one upon the other. 90
5. A device of the class described including an upper fixed tread, an intermediate movable tread, and a lower movable tread, all of said treads being hingedly connected, revoluble means for successively elevating the movable treads and folding them together and onto the stationary tread, and means for locking the intermediate tread against movement. 100
6. A device of the class described including a stationary tread, an intermediate tread hingedly connected thereto, a lower tread hingedly connected to the intermediate tread, an actuating device, and separate revoluble means operated thereby for successively folding the lower tread onto the intermediate tread and the said folded treads onto the stationary tread. 110
7. A device of the class described including a stationary tread, an intermediate movable tread, a lower movable tread, risers connecting the said treads, each riser consisting of hingedly connected sections, an actuating device, and separate revoluble means operated thereby for successively swinging the movable treads and folding them one upon the other and upon the stationary tread. 120
8. A device of the class described including a stationary tread, an intermediate mov- 125

able tread, a lower movable tread, risers connecting the treads, each riser consisting of hingedly connected sections, revoluble means for successively folding the said treads and riser sections together, and means for locking the intermediate tread against movement, said means including a keeper, a catch engaging the keeper, and actuating means connected to the catch.

10 9. A device of the class described including an upper stationary tread, an intermediate movable tread, a lower tread, risers connecting the treads, each riser consisting of hingedly connected sections, a wheel secured to the lower riser section of the lower tread, a projection upon the lower riser section of the intermediate tread, a

sprocket mounted for rotation upon the riser of the intermediate tread, there being a slot within said sprocket and in which the projection is mounted, means for transmitting motion from said sprocket to the wheel upon the lower riser and means for rotating the slotted sprocket, said sprocket being adapted, during the completion of its rotation to fold the sections of the intermediate riser together. 20 25

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

ROGER W. LOMAX.

Witnesses:

FRANK B. OCHSENREITER,
C. E. DOYLE.