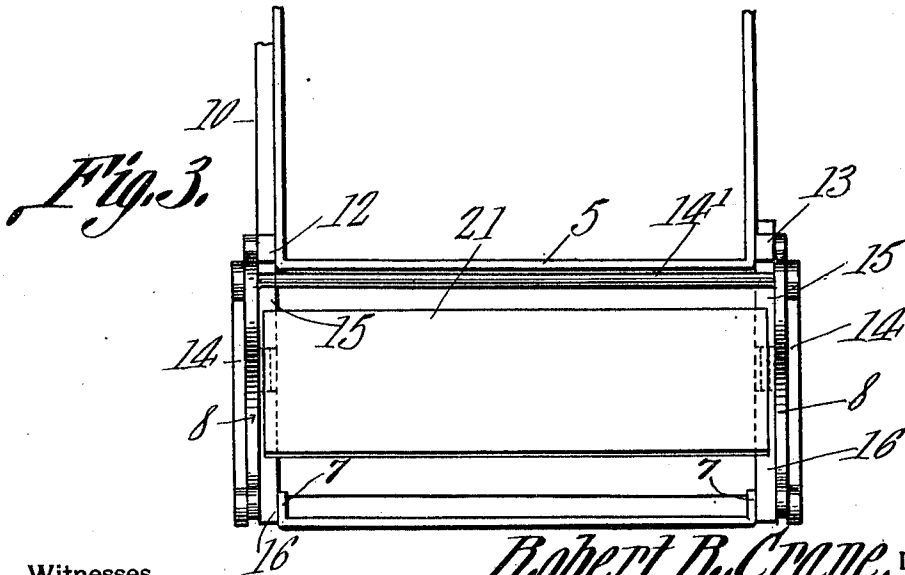
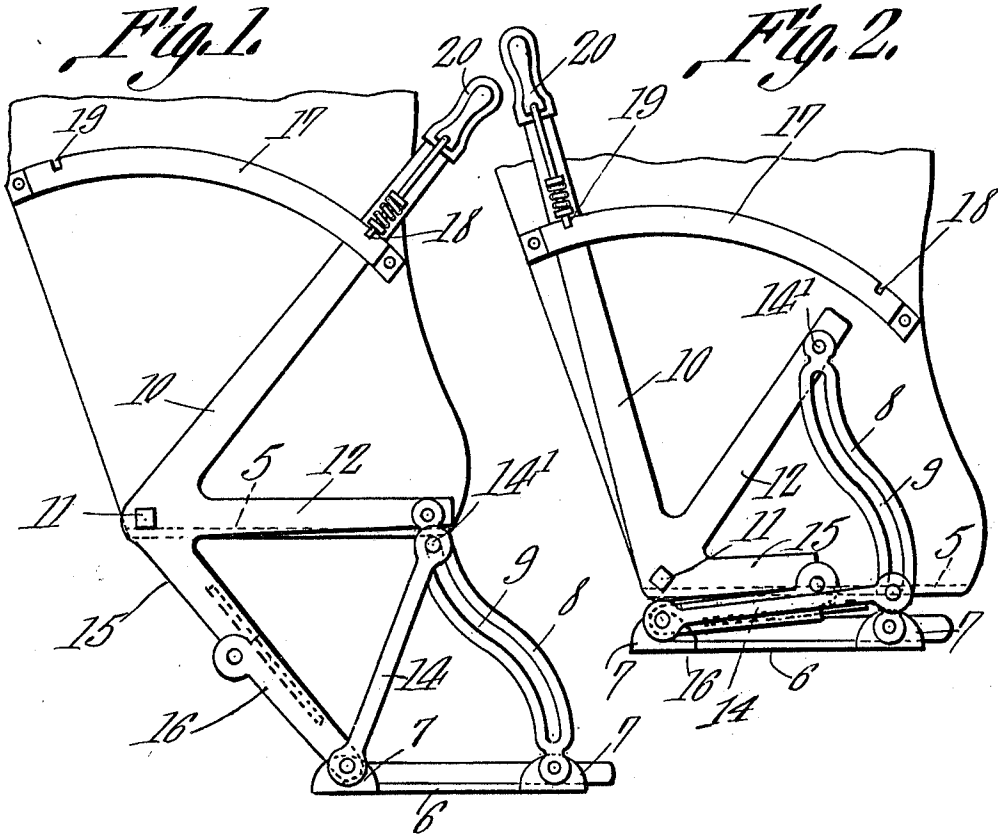


R. R. CRANE.
CAR STEP.

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978,563.

Patented Dec. 13, 1910.



Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT R. CRANE, OF MENOMINEE, MICHIGAN.

CAR-STEP.

978,563.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed August 31, 1910. Serial No. 579,863.

To all whom it may concern:

Be it known that I, ROBERT R. CRANE, a citizen of the United States, residing at Menominee, in the county of Menominee and State of Michigan, have invented a new and useful Car-Step, of which the following is a specification.

It is the object of the present invention to provide an improved supplemental car step and the invention relates more particularly to a step of this class which is preferably mounted in position beneath the lower main step and may be lowered to afford a foot hold or elevated or folded to position entirely beneath said main step, and the primary aim of the invention is to so construct the means for extending and retracting or folding the supplemental step and its riser that the members connected with the step and riser will not be liable to "stick" when the operating lever of such mechanism is rocked to extend or retract the step.

With the above and other objects in view, the invention consists in the general construction and arrangement of parts shown in the accompanying drawings, in which,

Figure 1 is a view in side elevation of the device embodying the present invention, the supplemental step being shown in lowered or extended position. Fig. 2 is a similar view but showing the supplemental step and its riser elevated. Fig. 3 is a front elevation showing the supplemental step and its riser lowered.

In the drawings, the lowermost one of the main steps is indicated by the reference numeral 5 and the supplemental step is indicated by the reference numeral 6. At each corner, the supplemental step 6 is formed or provided with an upstanding ear 7 and pivotally connected to the ears 7 at the forward corners of the step are bars 8 which are irregularly curved for a purpose which will presently be made apparent and are formed throughout substantially their entire length each with a slot 9. A lever 10 is pivoted for rocking movement as at 11 at one side of the main step 5 at a point substantially at the rear corner thereof and this lever has integral with it a forwardly projecting arm 12. The forward end of the arm 12 terminates at a point substantially coincident with the forward corner of the step 5 corresponding to the corner at which the lever is piv-

oted and to the said forward end of the arm 12 is pivoted the upper end of the adjacent bar 8. The pivot 11 for the lever is in the nature of a square rock shaft and at its opposite end the rock shaft is provided with an arm 13 corresponding to the arm 12 and to the forward end of which is pivoted the upper end of the other bar 8 it being understood that the front of the step 6 is in this manner supported. The rear of the step 6 is supported, in part, by rods 14 one pivoted at each forward corner of the step 5, the rods being pivoted at their lower ends one to each ear 7 at the rear corners of the supplemental step 6, the rods being consequently inclined downwardly rearwardly.

The lever 10 and the arm 13 are each provided with a downwardly forwardly projecting arm indicated by the numeral 15 and constituting one arm of a toggle joint of which the other arm is indicated by the numeral 16, this latter arm having rule joint connection with the arm 15 and being pivoted at its lower end to the respective ear 7 at the rear corner of the step 6. The lever 10 works in an arcuate guide formed with a notch 18 and a notch 19 and upon the lever is a hand operated pawl 20 designed to cooperate with the notches 18 and 19. As illustrated in the drawings, when the lever is rocked forwardly until its pawl 20 comes into engagement with the notch 18, the arms 12 and 13 are swung downwardly thereby opening the toggle joints or in other words bringing their arms into alinement and lowering the bars 8, the pivot 14' for the rods 14 working in the slots in the said bars 8 and the curvature of each slot conforming to the direction of movement of the step 6 between its folded and extended positions. It will at this point be further understood that by swinging the lever 10 in this manner upward pull will be exerted upon the bars 8 thereby elevating the front of the step 6 and the arms 15 and 16 will move upon their connecting pivots and the toggle joints will be folded to the position shown in Fig. 2 of the drawings thereby elevating the riser of the step.

The riser for the step 6 is in the form of a plate indicated by the numeral 21 and this plate is secured at each end to the arms 16 and is supported by and between these arms, it being folded with the arms to assume a

position between the steps 5 and 6 when the step 6 is folded to the position shown in Fig. 2 of the drawings.

What is claimed is:—

- 5 1. In a device of the class described, the combination with a main step, of a supplemental step, rods pivoted to the main step at the forward corners thereof and to the supplemental step at the rear corners thereof, an operating lever, an arm projecting
10 from the lever, a bar pivoted to the arm and to the forward corners of the supplemental step and formed with a slot receiving the pivot between the respective rods and forward corners of the main step and a toggle
15 connecting the lever and the rear corners of the supplemental step, one arm of the toggle being rigid with respect to the lever.
- 20 2. In a device of the class described, the combination with a main step, of a supple-

mental step, rods pivoted to the main step at the forward corners thereof and to the supplemental step at the rear corners thereof, an operating lever, an arm projecting
25 from the lever, a bar pivoted to the arm and to the forward corners of the supplemental step and formed with a slot receiving the pivot between the respective rods and forward corners of the main step and a toggle
30 connecting the lever and the rear corners of the supplemental step, one arm of the toggle being rigid with respect to the lever, and a riser supported by and between the other arms of the toggle.

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

ROBERT R. CRANE.

Witnesses:

C. E. PETERSON,
W. G. BARTLETT.