

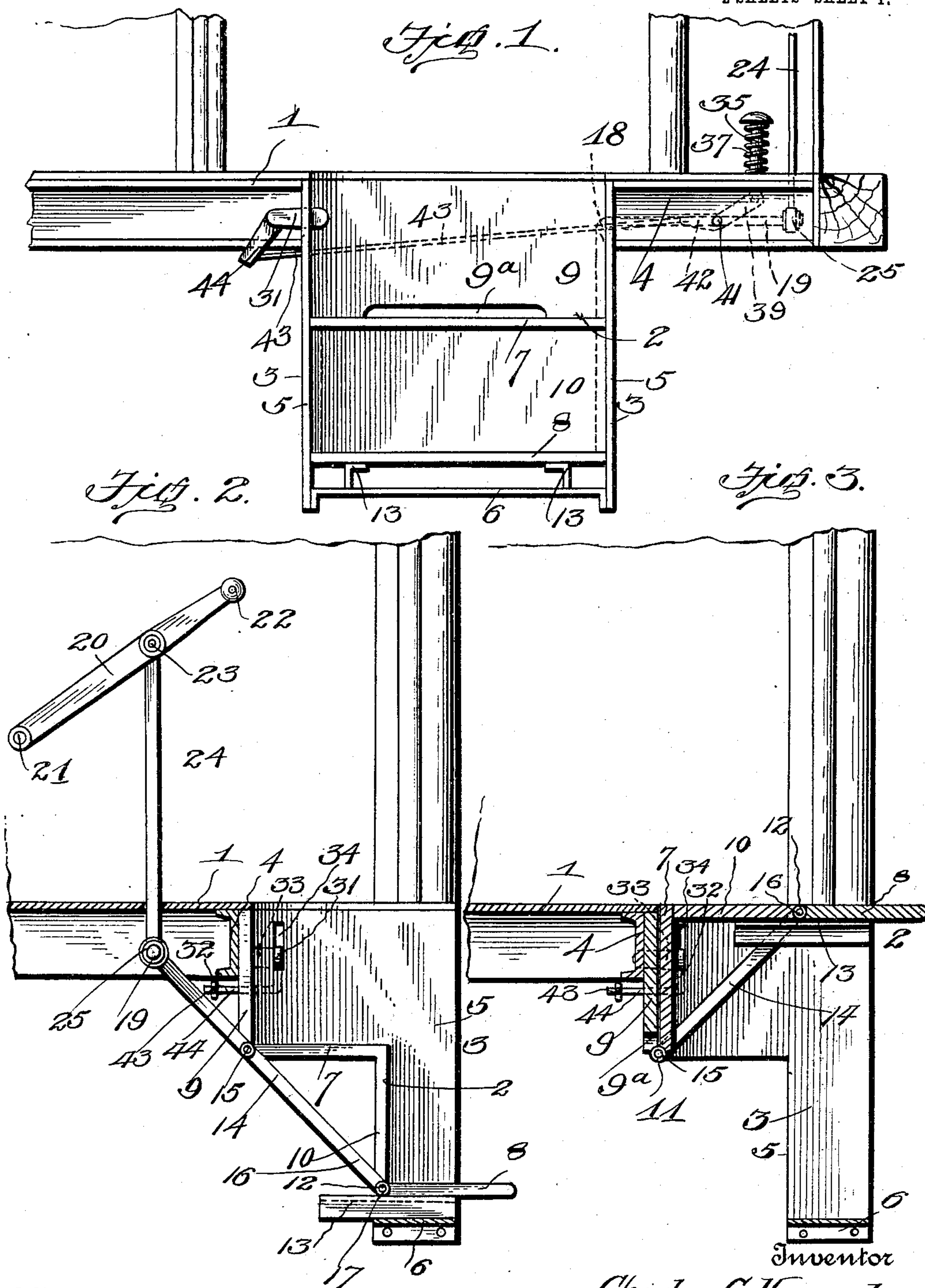
No. 792,215.

PATENTED JUNE 13, 1905.

C. C. HUMMEL.  
CAR STEP.

APPLICATION FILED FEB. 9, 1905.

2 SHEETS—SHEET 1.



Witnesses  
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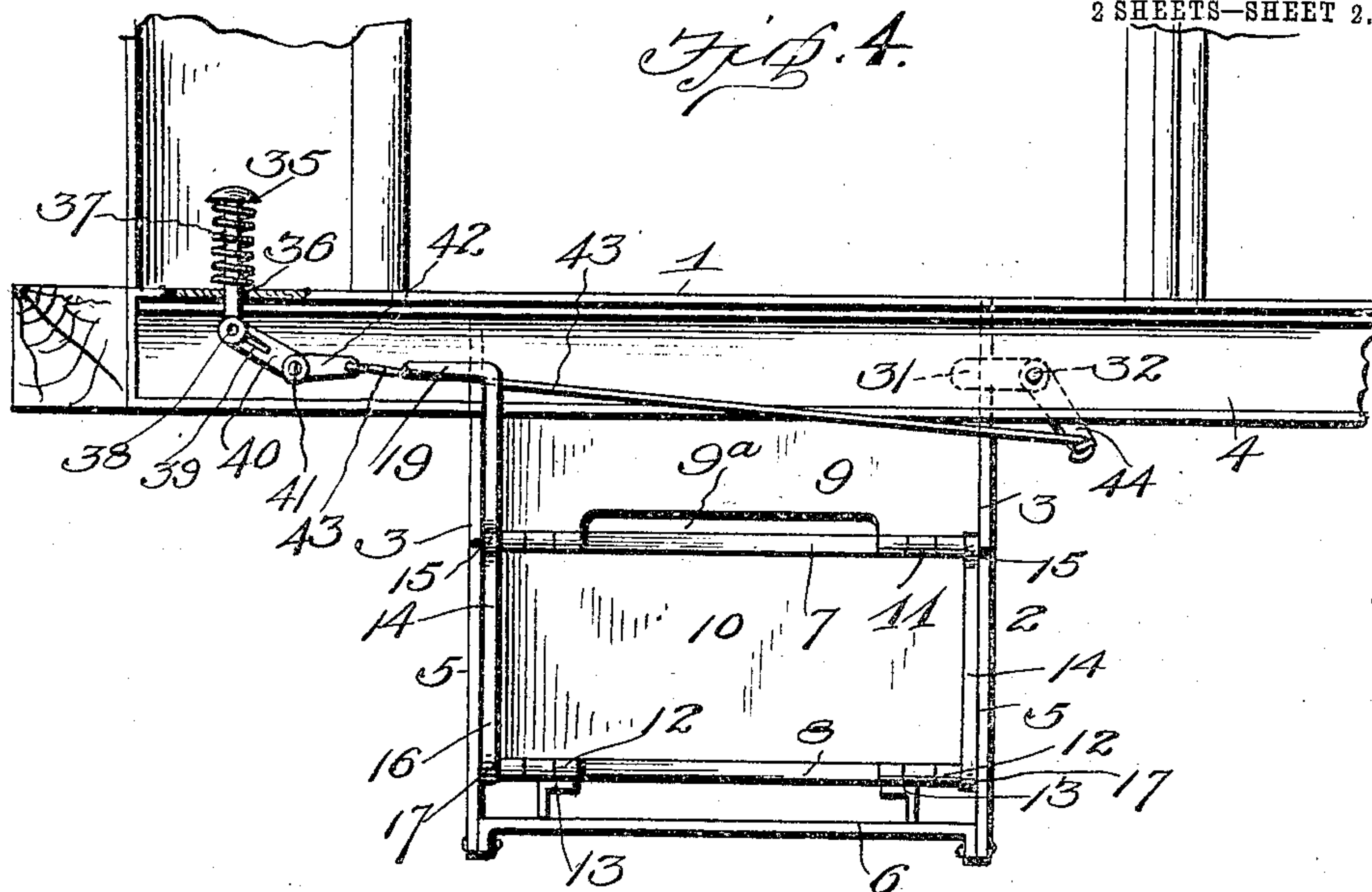
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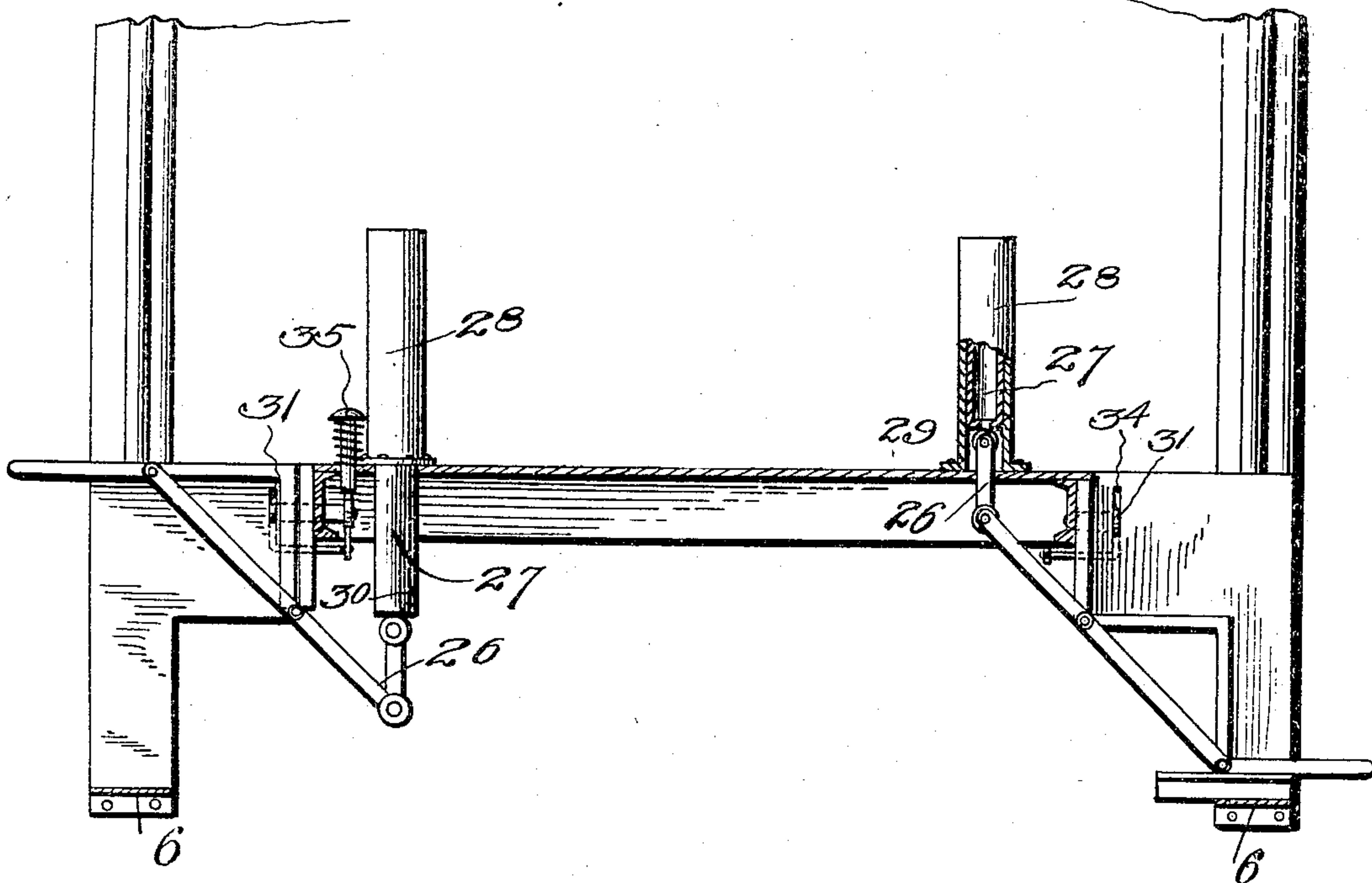
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2 SHEETS—SHEET 2.



Feb. 5.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 792,215, dated June 13, 1905.

Application filed February 9, 1905. Serial No. 244,966.

*To all whom it may concern:*

Be it known that I, CHARLES C. HUMMEL, a citizen of the United States, residing at Espy, in the county of Columbia and State of Pennsylvania, have invented certain new and useful Improvements in Car-Steps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in steps for the platforms of railway-cars, street-cars, and the like.

The object of the invention is to provide a simple, practical, and inexpensive car-step which when folded will form an extension or continuation of the car-platform to close the usual opening occupied by the steps when they are lowered or in their open position.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation of my improved steps, showing them applied to a portion of a car-platform, the steps being in their lowered or open position. Fig. 2 is a vertical transverse sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a similar view taken on the line 3 3 of Fig. 1 and showing the steps in their folded or closed position. Fig. 4 is a vertical longitudinal sectional view taken on the line 4 4 of Fig. 2, the steps being in their lowered position; and Fig. 5 is a vertical transverse sectional view through a car-platform, showing my improved steps at each end thereof, the steps on one side being folded and on the other side open, and also showing mechanism for operating said steps by means of compressed air or steam.

Referring more particularly to Figs. 1 to 4, inclusive, of the drawings, the numeral 1 denotes a portion of the platform of a railway-car or any other movable or stationary object, and 2 denotes my improved folding steps, which are adapted when folded to form an extension or continuation of the platform 1, as

shown. The steps 2 are mounted in a frame 3, which is secured to and depends from a channel-beam or other suitable support 4, which is disposed beneath the platform 1. The frame 3 comprises two parallel side pieces or plates 5, which are spaced apart and secured together by a bottom piece or plate 6, riveted or bolted to their lower ends.

In the embodiment of my invention illustrated in the drawings I have shown the steps 2 as consisting of two threads 7 and 8 and two risers 9 and 10. The upper riser 9 is secured to the channel-beam 4, and the lower riser 10 is fixed to the outer edge of the upper tread 7 in a right-angular position, as shown. The upper tread 7 is connected by a hinge 11 to the bottom of the upper riser 9, so that the former is adapted to fold up against the latter and bring the lower riser 10 into a horizontal position in the plane of the platform 1, as shown in Fig. 3 of the drawings. In order to permit the tread 7 to fold up close against the riser 9, the latter is provided along its bottom with a recess or opening 9<sup>a</sup>, which permits any objects or rubbish upon the tread 7 to fall off of the same as it is folded. The lower tread 8 is hingedly connected to the bottom of the lower riser 10, as shown at 12, and has secured upon its under side rearwardly-projecting stops 13, which are in the form of angle-plates. These stops 13 are adapted to engage and rest upon the bottom 6 of the frame 3 when the steps are in their lowered position in order to limit their downward movement and to support the lower tread in a horizontal plane. The rearwardly-projecting portions of the said stops 13 are adapted to engage the inner or under face of the riser 10 when the steps are in their folded position, so as to support the tread 8 in a horizontal position in the plane of the riser 10 and the platform 1, as shown in Fig. 3.

In order to swing or fold the steps to their open and closed positions, I provide at their ends operating-levers 14, which are pivoted, as shown at 15, to the sides 5 of the frame 3. These pivots 15 aline with the hinges 11, and the lower ends 16 of said levers are pivotally connected, as shown at 17, to the rear portion of the lower tread 8 in alinement with said



hinges 12. The upper or inner end 18 of one of the levers 14 is formed with a transversely-extending arm or end 19. The latter may be upon either of the levers 14, and hence upon either side of the steps. It will be seen that when the levers 14 are in the position shown in Fig. 2 of the drawings the steps will be in their lowered or open position and that when said levers are swung to the position shown in Fig. 3 the steps will be swung to their folded or closed position. The levers brace and assist in supporting the steps in both their opened and closed positions.

The levers 14 may be operated by hand or by power. In the first four figures of the drawings I have shown a hand-operated lever 20 for this purpose. Said lever is pivoted at one of its ends, as at 21, and has at its opposite end a handle 22. Pivoted, as at 23, intermediate the ends of said lever 20 is a link 24, which has its lower end pivoted, as at 25, to one end of the arm or end 19 of one of the said levers 14. It will be seen that when the lever 20 is swung to the positions shown in Figs. 2 and 3 the levers 14 will be moved to either open or close the steps.

In Fig. 5 is shown a mechanism for operating the levers 14 by means of compressed air or steam. As shown, the arms 19 are connected by links or rods 26 to the ends of pistons or plungers 27, which are slidably mounted in suitable cylinders or casings 28, into which compressed air, steam, or the like may be admitted for the purpose of forcing the pistons from the position shown at 29 to the position shown at 30 in Fig. 5. When the piston 27 is within the cylinder 28, the steps will be in their open position, and when said piston is forced out of said cylinder the steps will be swung to their folded position.

Any suitable means may be provided for holding or supporting the steps in their folded position but I preferably employ a swinging catch 31, which is pivoted at 32 upon a stud or post 33, which projects from the beam 4. Said catch 31 is adapted to swing in a slot or opening 34, formed in one of the sides 5 of the frame 3, and is adapted to be swung into and out of engagement with the under face of the upper tread 7, as shown. I preferably actuate said catch 31 by means of a foot-piece 35, which extends through and slides in an opening 36, formed in the platform 1. A coil-spring 37 surrounds said foot-piece between its head and the platform, so as to retain the same normally in its elevated position, and its lower end is loosely pivoted, as at 38, to one arm 39 of a lever 40, which is pivoted at 41. The other arm 42 of said lever is pivotally connected, by means of a link 43, to an arm 44, provided upon the catch 3. It will be seen that when the foot-piece 35 is depressed the link 43 will be drawn upon to swing the catch 3 out of the slot 34 and out

of engagement with the tread 7, so as to permit the steps to drop or swing to their open position.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

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

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

1. In combination with a supporting device, a pivotally-mounted step, a lever having its pivot concentric with that of said step, and a step pivotally connected to the first-mentioned step and adapted when lowered to rest on said supporting device.

2. The combination of a pivotally-mounted step, a lever connected thereto and having its fulcrum concentric with the pivot thereof, a step pivotally connected to the first-mentioned step for angular movement with reference thereto, and means to limit such angular movement.

3. A pivotally-mounted step, in combination with a lever connected thereto and having its fulcrum in line with the pivot of said step, a step pivotally connected to the first-mentioned step for angular movement with reference thereto, and a rest to limit the angular movement of and to support said step when lowered.

4. In combination with a folding step, a lever to operate the same, and fluid-pressure operating means to actuate said lever.

5. A device of the character described, comprising a suitable support or platform, a frame depending therefrom and comprising sides connected by a transverse beam, a stationary riser secured between the upper portions of said sides, a connected tread and riser hinged upon the lower portion of said stationary riser, a second tread hinged to said connected tread and riser, a stop upon said second tread adapted to engage the bottom of said frame when the steps are lowered, a lever for opening and closing said steps, a pivoted catch for engaging and holding said steps in their folded position, a spring-retracted foot-piece, and an operating connection between said foot-piece and said pivoted catch, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES C. HUMMEL.

Witnesses:

EDW. A. STECK,  
LLOYD HUMMEL.