No. 827,240. PATENTED JULY 31, 1906.

C. C. HUMMEL.

CAR STEP.

APPLICATION FILED FEB. 8, 1906.

2 SHEETS—SHEET 1.

FIG. 1

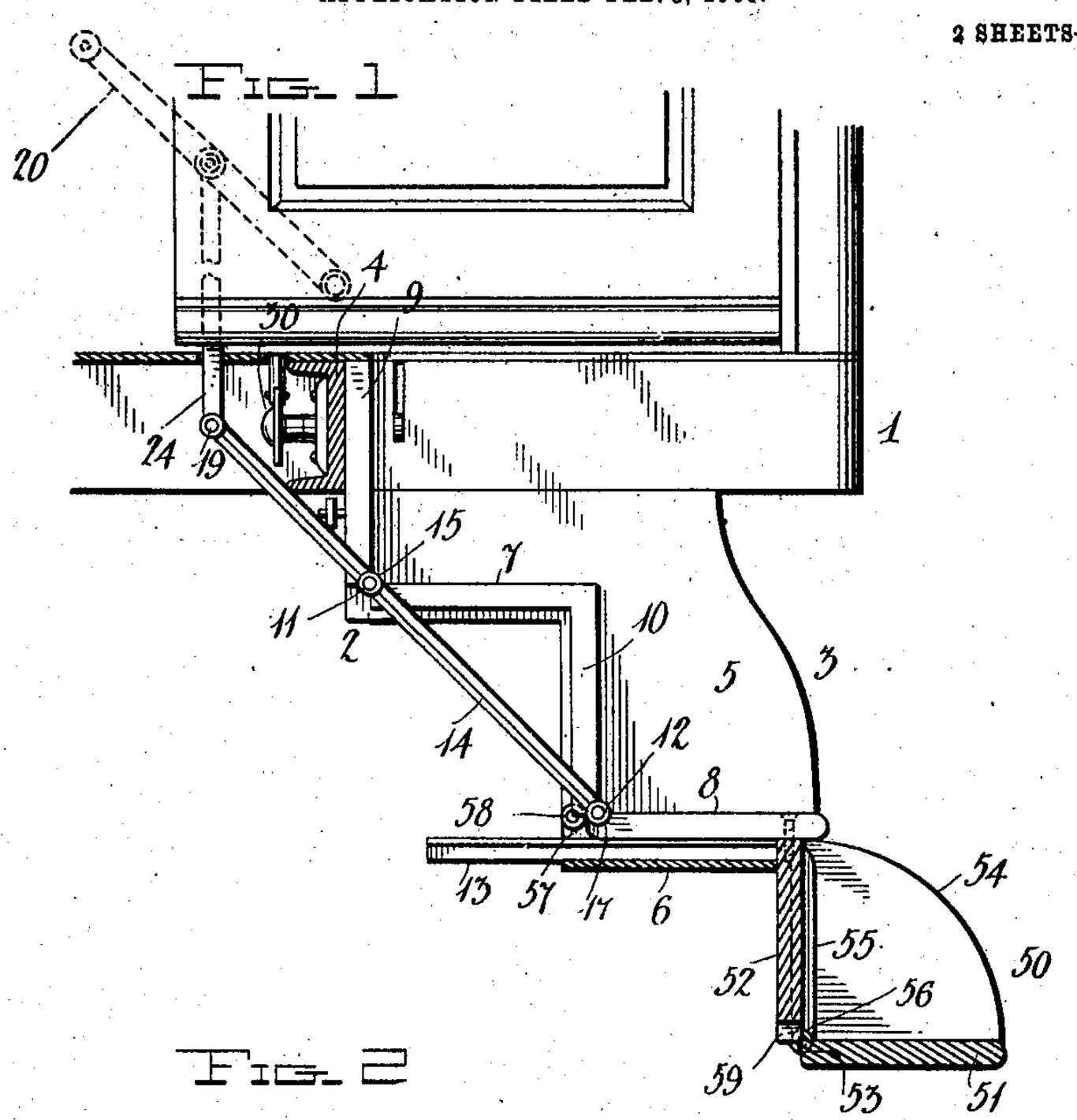
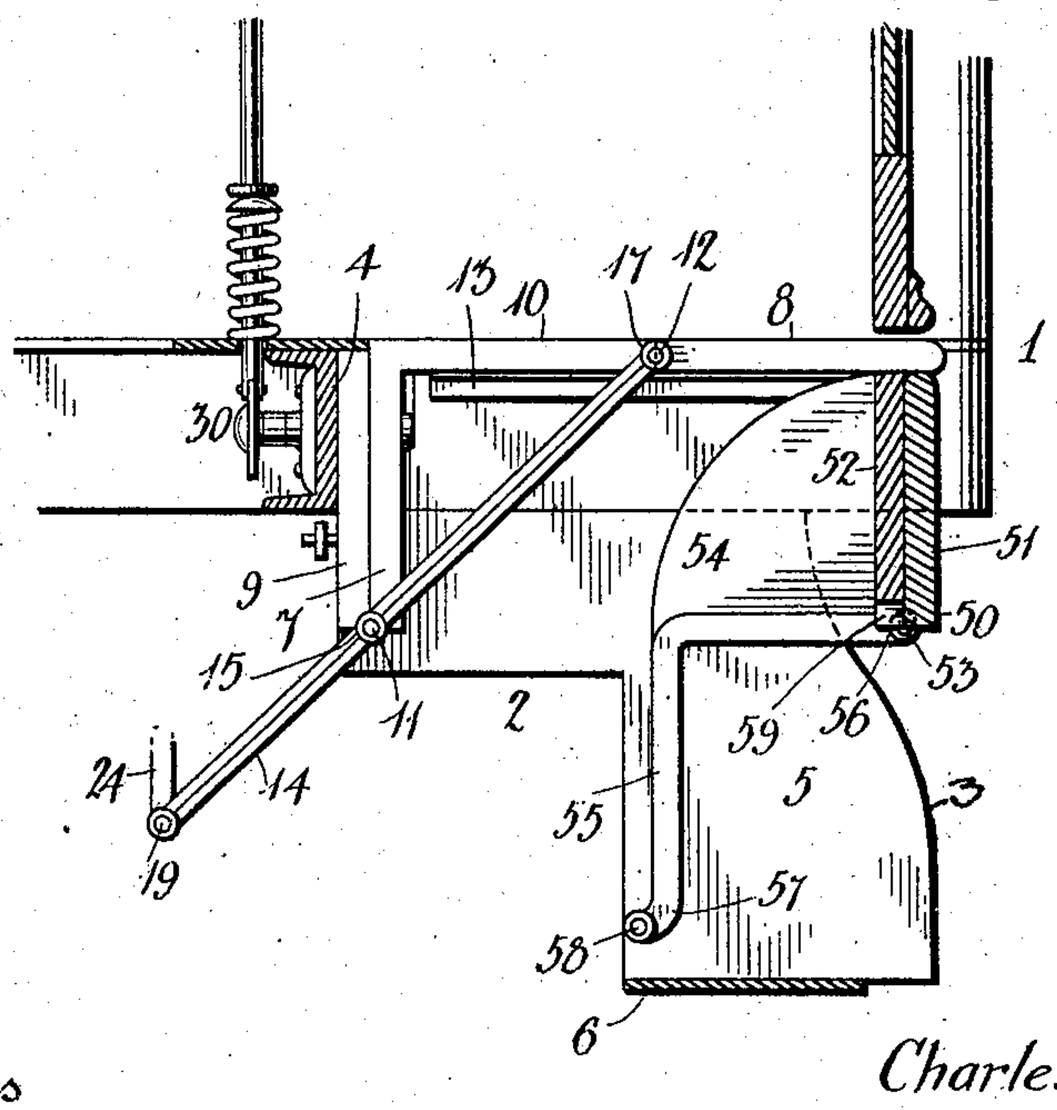


FIG. 2



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2 SHEETS—SHEET 2.

Fig. 3

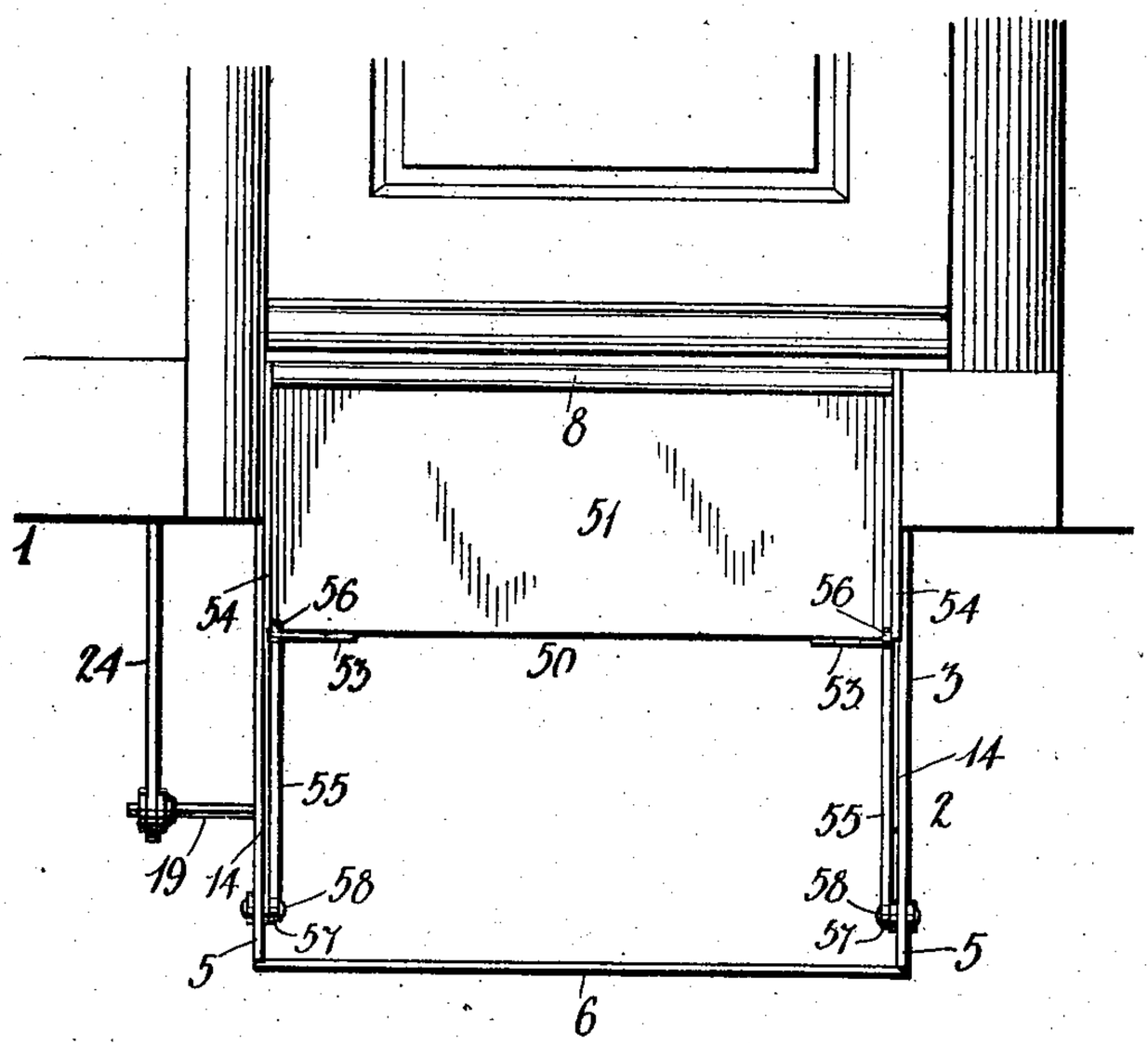
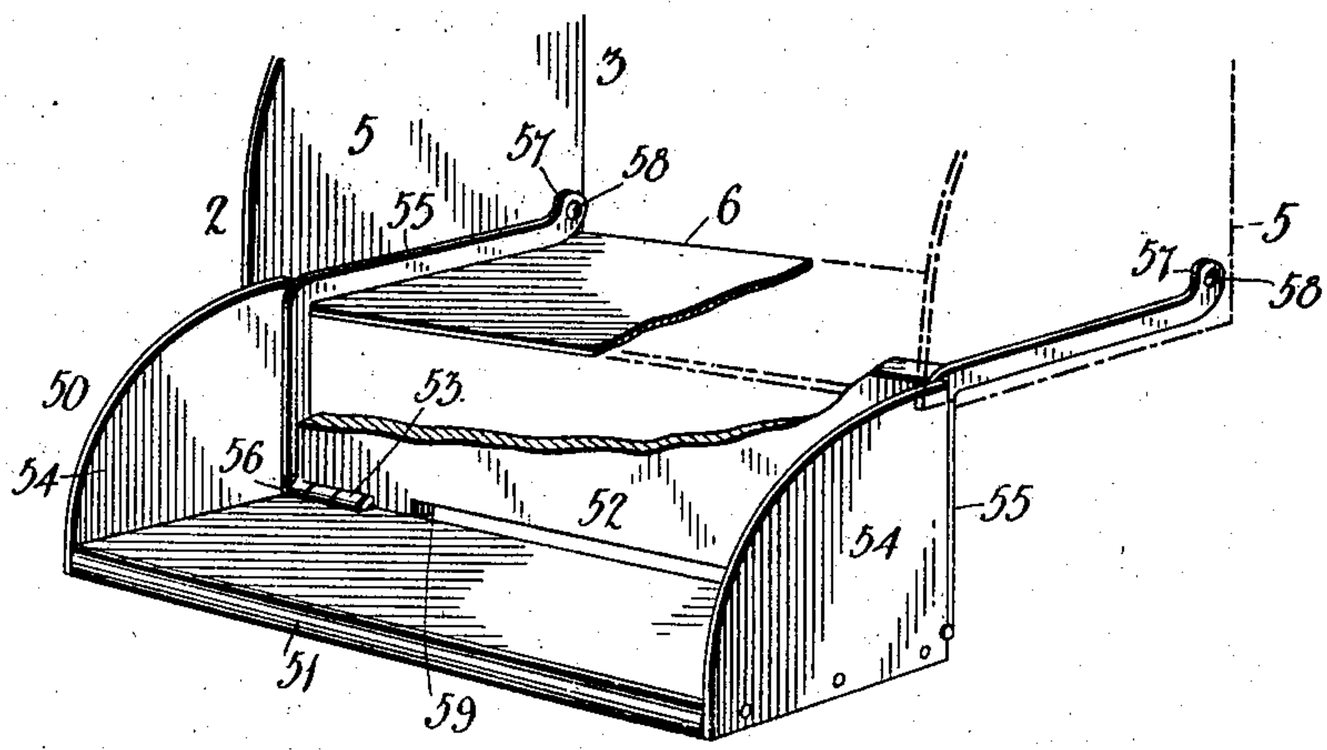


Fig. 4



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CAR-STEP.

No. 827,240. Specification of Letters Patent. Patented July 31, 1906.

Application filed February 8, 1906. Serial No. 300,115.

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.

This invention relates to improvements in steps for the platforms of railway-cars, street-cars, and the like, and more particularly to improvements upon the car-step set forth in Patent No. 792,215, granted to me June 13, 1905.

The object of the present invention is to provide folding steps of this character, with a third or lower step, which will be of simple, durable, and compact construction and safe and convenient in use.

With the above and other objects in view the invention consists of certain novel features of construction, combination and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical transverse sectional view through my improved folding car-steps in their lowered position. Fig. 2 is a similar view through the same in their closed or folded position. Fig. 3 is a front view of the steps in the position shown in Fig. 2, and Fig. 4 is a detail view of the third or lowermost step and its connected parts.

Referring to the drawings by numeral, 1 denotes a portion 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 and close the usual opening occupied by the steps when in their lowered or open position. With the exception of the third or lowermost step the steps 2 and the operating devices therefor are the same as set forth in my patent previously referred to. They are mounted in a frame 3, which depends from a channel-beam 4, disposed beneath the platform 1. The frame 3 comprises parallel side pieces or plates 5, which are connected by a bottom piece or plate 6. The steps 2 consist of two treads 7 8 and two risers 9 10. The uppermost riser 9 is secured to the beam 4, and the second riser 10 is fixed to the outer edge of the tread 7 in a right-angular position. The tread 7 is connected by a hinge 11 to the bottom of the riser 9, so that the former is adapted to fold up against the latter and bring the riser 10 in a horizontal position in the plane of the platform 1, as shown in Fig. 2. The tread 8 is hingedly connected to the riser 10, as at 12, and has secured upon its under side the rearwardly-projecting stops 13, which are adapted to engage and rest upon the bottom 6 when the steps are in their lowered position in order to limit their downward movement and support the tread 8 in a horizontal position. Said stops 13 are also adapted to engage the under face of the riser 10 when the steps are in their elevated or folded position, so as to support the tread 8 in a horizontal position in the plane of the platform 1, as clearly shown in Fig. 2. The steps are actuated by levers 14, which are pivoted at 15 to the sides 5 of the frame 3 in alinement with the hinges 11. The lower ends of said levers are pivotally connected at 17 to the rear of the tread 8 in alinement with said hinges 12. The upper or free ends of the levers are connected by a rod or bar 19, which has one of its ends pivotally connected to one end of a link 24. The latter has its opposite end similarly connected to an operating hand-lever 20, which is suitably mounted upon the end of the car or other support. It will be seen that when the hand-lever 20 is operated the levers 14 will be shifted to either of their two positions shown in Figs. 1 and 2, so that the steps will be either opened or closed. Any other suitable operating device may be provided. The steps may be retained in their elevated or closed position (shown in Fig. 3) by any suitable means; but I preferably employ the pivoted catch 30, the construction and operation of which will be readily understood upon reference to my patent previously referred to.

My improvements to the above-described steps consist in a third or lowermost step 50, which is pivotally supported from the second step 8 and is adapted to be raised or lowered when the steps 2 are actuated. The step 50 consists of a tread 51 and a riser 52. The latter is secured to the under side of the tread 8 in a right-angular position, and when the steps are opened or lowered, as in Fig. 1, it is adapted to bear against the forward edge of the bottom 6 of the frame 3. The tread 51 is hingedly connected to the riser 52, as shown at 53, and has secured upon its ends

segmental-shaped plates 54, to which are secured substantially right-angularly shaped links or levers 55. The latter have their ends 56 pivoted concentric with the hinge 53 and their curved or bent opposite ends 57 pivoted at 58 to the side plates 5 of the frame 3, as clearly shown in Fig. 2 of the drawings. Owing to the shape of the links 55 and the arrangement of their pivots and the hinge 53, it will be seen that when the steps are in their lowered or open position, as in Fig. 1, the said links and their attaching-plates 54 will support the step 51 in a horizontal position and that when the steps are folded, as in Fig. 2, the links 55 by reason of their pivotal connection with the frame 3 at 58 will swing the tread 51 up against the riser 52 as the latter is carried upwardly by the tread 8, to which it is rigidly secured. It will be noted that this third or lowermost step is of simple, durable, and compact construction and that it is much safer and convenient than other devices of this character.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages 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 the invention as defined by the appended claims.

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

1. In combination with a pivoted step, means to raise and lower the same and means to support said step when lowered, a supplementary step having its riser fixed to and depending from the tread of the first-mentioned step and its tread pivotally connected to said riser, a fixed support, and a link pivoted to said support and connected to said supplementary step to turn the tread of the latter upwardly and dispose the same parallel with the riser of the said supplementary step when the first-mentioned step is raised.

2. The combination with a support or frame having sides and a bottom, a swinging step adapted to be supported horizontally upon said bottom, means for operating said step, a second step pivotally supported from the first-mentioned step, and links pivoted upon said support and connected to the second-mentioned step, substantially as described and for the purpose set forth.

3. In combination with a supporting device, a pivotally-mounted step, a lever having a pivot concentric with that of said step, a second step pivotally connected to the first-mentioned step and adapted when lowered to rest upon said supporting device, a third step pivotally connected to the second-mentioned step, and an operating connection connected to the last-mentioned step and pivotally connected to said supporting device, substantially as shown and described.

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

CHARLES C. HUMMEL.

Witnesses:
B. F. SCHOLLENBERGER,
H. C. LAUBACH.