(No Model.)

F. FORSTER.

MOVABLE STEP.

No. 482,573. Patented Sept. 13, 1892.

Fig. 1.

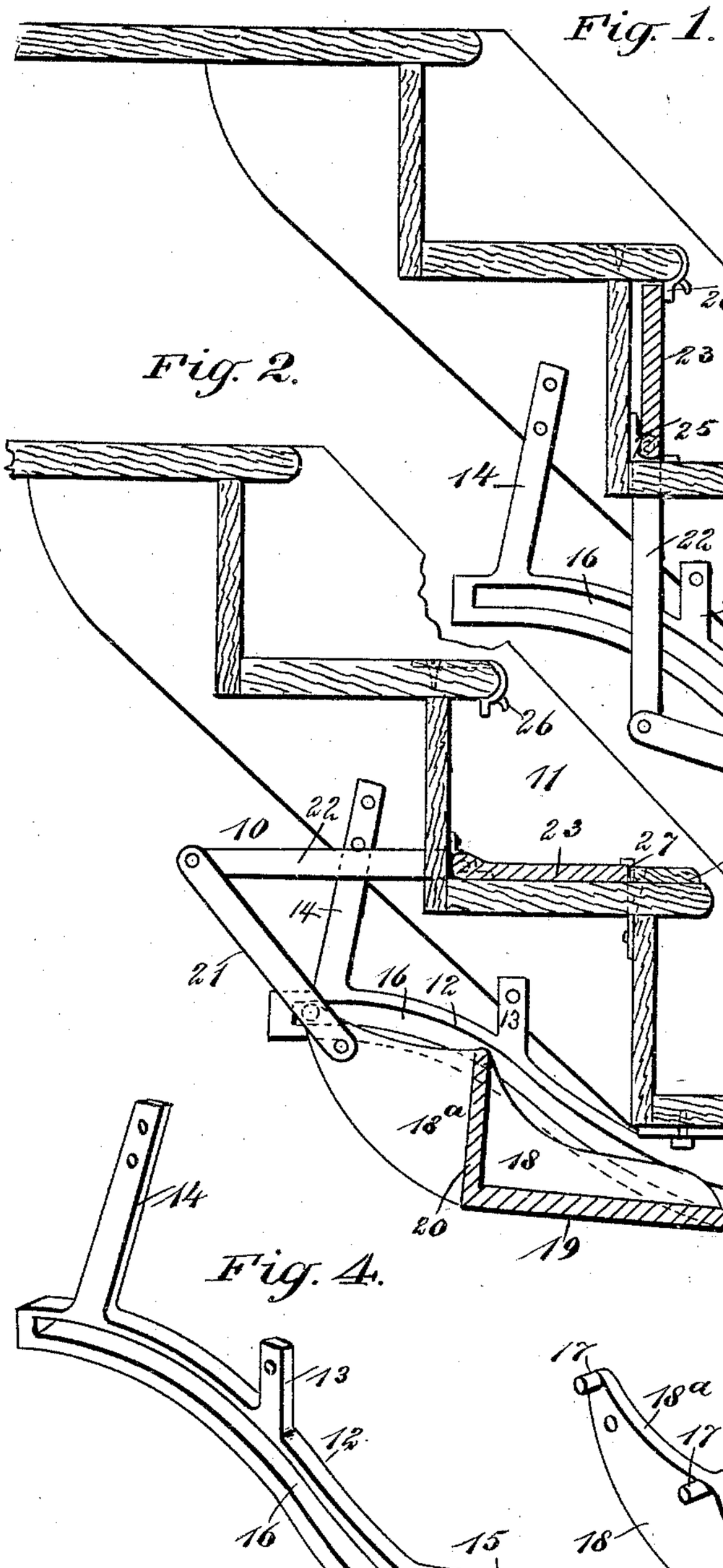


Fig. 3.

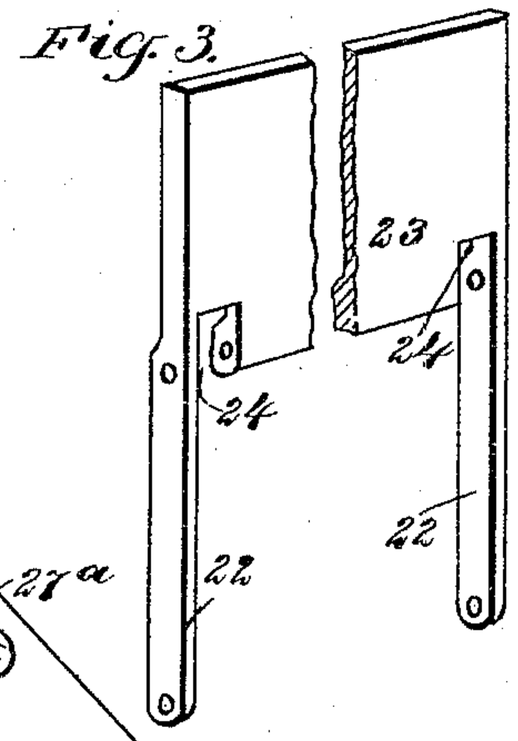
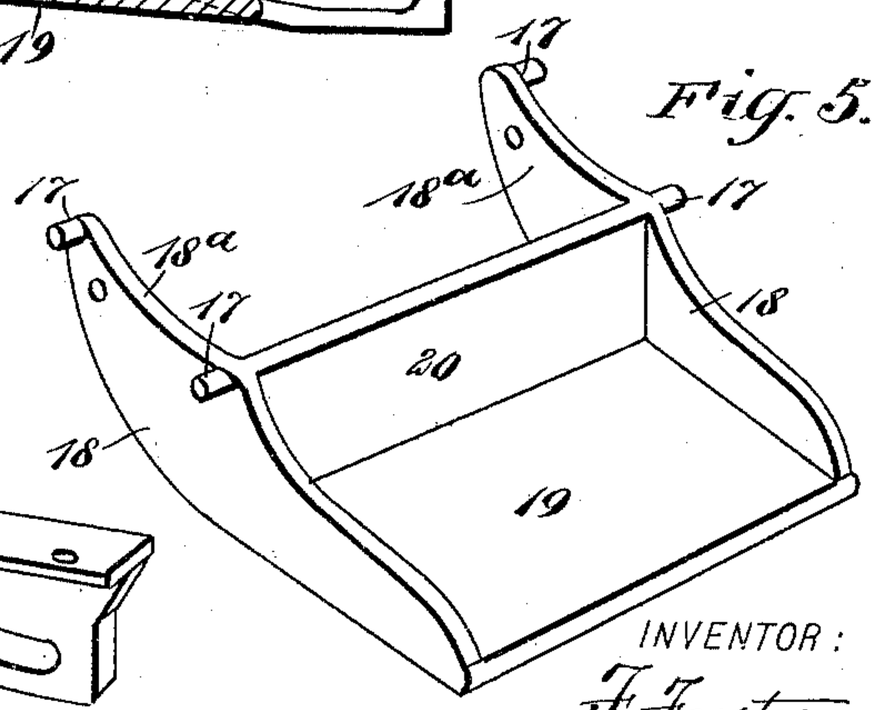


Fig. 2.

Fig. 4.

Fig. 5.



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FRANK FORSTER, OF ETIWANDA, CALIFORNIA.

MOVABLE STEP.

SPECIFICATION forming part of Letters Patent No. 482,573, dated September 13, 1892.

Application filed January 2, 1892. Serial No. 416,835. (No model.)

To all whom it may concern:

Be it known that I, FRANK FORSTER, of Etiwanda, in the county of San Bernardino and State of California, have invented a new and Improved Movable Step, of which the following is a full, clear, and exact description.

My invention relates to improvements in movable steps for railway-cars. As usually constructed the steps of railway-cars do not extend very near the ground on account of the liability of the steps striking some obstruction on the road, and consequently it is difficult getting in and out of the cars.

The object of my invention is to produce a simple form of movable step, which may be easily secured to the usual steps of a car and which may be operated so as to drop beneath the lower stationary step of the car, thus increasing the length of the flight of steps, and which may be pushed out of the way and held there when not in use, so that there will be no danger of its coming in contact with any obstruction on the road.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter more fully described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the car-steps with the movable step attached thereto, the latter step being in position for use; Fig. 2, a similar view, but with the movable step pushed up out of the way. Fig. 3 is a broken detail perspective view of the levers and connecting-plate for operating the movable step. Fig. 4 is a detail perspective view of one of the step-supporting brackets, and Fig. 5 is a detail perspective view of the movable step.

The car-steps 10 are of the usual kind and may be of any ordinary construction, and secured to the side pieces 11 of the steps near their lower ends are the brackets 12, the lower ends of which are thickened and extend to the bottom of the stationary steps, and these brackets are curved upward, so as to conform approximately to the inclination of the steps 10 and are provided with upwardly-extending arms 13 and 14 of different lengths, which arms enable the brackets to be securely fastened to the side pieces. The brackets 12 are also provided near their lower ends and on the top sides with plates 15, which are formed integrally with the brackets and are adapted to be secured to the under side of the lowest of the steps 10. The brackets 12 have slots 16 extending throughout nearly their entire length, which slots serve as tracks and guides for the studs 17, which project laterally from the side pieces 18 of the movable step 19. This step 19 is provided with a riser 20 of the usual kind, and the side pieces are prolonged rearward, as shown at 18^a, so as to provide for the easy operation of the step. It will be noticed that there are four of the studs 17, there being a pair on each side of the movable step, and the studs are adapted to run in the slots 16 and will hold the movable step so that it will not tip when stepped upon.

The side pieces 18 of the movable step are pivotally connected by connecting rods or links 21, which are pivoted to the prolonged ends 18^a of the side pieces with the levers or arms 22, which extend downward beneath the steps 10 on opposite sides of the same, the arms extending upward through slots in one of said steps, and the arms are connected at the top by a plate 23, which plate corresponds in length to the width of the steps 10 and is adapted to rest snugly against the tread of one of the steps when the movable step is up out of the way and against the riser of the same when the movable step is down and in position. The plate 23 is recessed at its inner corners and adjacent to the arms 22, as shown at 24, which recesses are adapted to receive the hinge-blocks 25, to which the arms are pivoted, and the blocks 25 are firmly secured in the corners of one of the steps 10.

On the edge of the tread above the plate 23 is a common form of spring-catch 26, which is adapted to hold the plate in a raised position, as shown in Fig. 1, and near the front edge of the tread of the step on which the plate is pivoted is a spring-catch 27, which is adapted to hold the plate flat against the tread of the step. A suitable abutment 27^a is also secured to the step, so as to be opposite the plate when the latter is tipped down into the position shown in Fig. 2.

The operation of the step is as follows: When the step is to be used, the plate 23 is tipped up, as shown in Fig. 1, and held in a vertical position by the spring-catch 26. When the plate is thrown up, as described, the arms or levers 22 will swing downward and forward, thus pushing forward the movable step 19 and bringing it beneath the lower end of the steps 10, so that it forms, practically, a continuation of said steps. When the train is started, the step 19 is pushed inward and upward, and the plate 23 will be swung downward so as to rest flat upon the tread of the step to which it is pivoted, and it is held in this position by the catch 27.

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

1. The combination, with the stationary car-steps, of curved slotted brackets secured to the under side of the steps, a movable step held to slide in the brackets, and a fastening device to secure the step, substantially as described.

2. The combination, with the stationary car-steps, of curved slotted brackets secured to the side pieces of the steps on the under side of the latter, a movable step having studs held to slide in the brackets and a fastening device to secure the step, substantially as described.

3. The combination, with the car-steps, of curved brackets secured to the under side of the steps, a movable step held to slide in the said brackets, and a plate pivoted on the steps and pivotally connected with the movable step, substantially as described.

4. The combination, with the stationary car-steps, of slotted brackets secured to the side pieces of the steps on the under side of the latter, a movable step having studs held to slide in the brackets, levers pivotally connected with the steps and extending upward through the stationary steps, said levers being connected by a cross-plate at the top, and fastening devices to hold the plate in a raised or lowered position, substantially as described.

5. The combination, with the stationary car-steps, of slotted brackets secured to the side pieces of the steps on the under side of the latter, a movable step having stops adapted to slide in the brackets, swinging levers extending upward through the stationary steps, said levers being connected at the top by a cross-plate and connected at their lower ends with the movable step by means of connecting-rods, and spring-catches adapted to hold the cross-plate in a raised or lowered position, substantially as described.

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