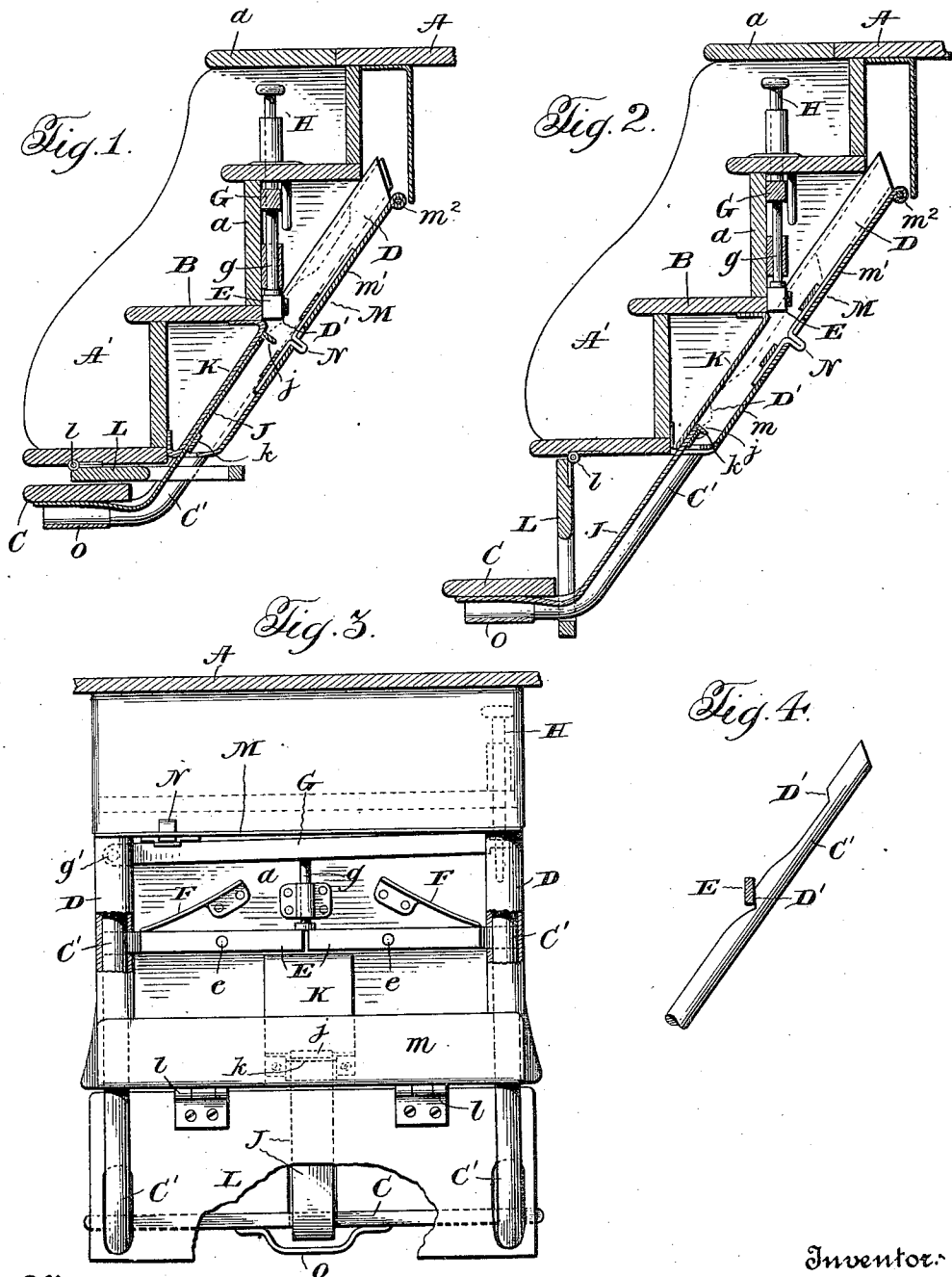


C. H. STARK.
EXTENSIBLE STEP.
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1,017,116.

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Witnesses:
James Hutchinson
Geo. Riley.

Inventor:
Charles H. Stark,
By *Nicholas* Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. STARK, OF STRASBURG, VIRGINIA.

EXTENSIBLE STEP.

1,017,116.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES H. STARK, a citizen of the United States, residing at Strasburg, in the county of Shenandoah and State of Virginia, have invented certain new and useful Improvements in Extensible Steps, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to improvements in extensible steps designed for employment on railroads, and though capable of use in other connections is primarily designed for employment on railway cars.

15 It is a well recognized fact that in passenger coaches as now commonly in use the steps leading from the ordinary platform terminate at a point a considerable distance above the ground so that in ascending or alighting from the same much inconvenience and embarrassment is frequently occasioned thereby. It has, however, been found necessary to terminate the steps at a substantial elevation, as stated, to insure safety in traveling by providing ample clearance or space below the steps to avoid contact with obstructions in the course of travel of the train.

20 The present invention is designed to overcome the objections above noted, while meeting the necessary demands of railway service and to these ends the invention consists in the provision of an improved extensible step adapted when not in use to be effectually supported and retained in an elevated position to provide the clearance stated, but capable of ready and immediate lowering to constitute the bottom step at a point adjacent to the ground when the train is at rest permitting entrance and discharge of passengers.

25 A convenient embodiment of the invention comprises in combination with the usual fixed series of steps, an additional extensible step provided with supporting means at the opposite ends thereof, fastening devices for each of said supporting means, and means for simultaneously releasing said fastening devices to permit the step to automatically fall from its elevated or inactive position into proper relation with the associated fixed steps.

30 The invention also contemplates the provision of a simple device capable of being actuated by the foot of the operator to secure the proper extension of the supplement-

tal step, and further, means for properly housing or concealing the operating parts to protect the same against damage and from the accumulation of dirt, ice or snow which might impair the proper actuation thereof.

35 The improved details in the construction and arrangement of the several parts of my device will be clear from the detailed description hereinafter contained when read in connection with the accompanying drawings forming part hereof and wherein the above stated embodiment of the invention is shown for the purpose of illustration.

40 In considering this specific device, it will be obvious to those skilled in the art that the invention is capable of embodiment in still other forms and arrangements without departing from the spirit thereof.

45 In the drawings: Figure 1 is a vertical sectional view showing the extensible step in its inactive or elevated position, Fig. 2 is a similar view showing the step lowered into its active position, Fig. 3 is a rear elevation with the hinged back wall or door opened, and Fig. 4 is a detail view showing the engagement of one of the means for locking the extensible step in its elevated position.

50 Referring more specifically to the drawings wherein like reference character designate corresponding parts in the several views, A designates the usual platform of a passenger coach, B the customary fixed or stationary steps and C the supplemental or extensible step adapted in its inactive position to occupy an elevated position immediately below the lowermost fixed step and in its active position to be thrust downwardly and outwardly into a position adjacent to the ground.

55 C' C' are supporting rods or arms at the ends of the step B adapted to slide in complementary guides D formed on the side A' at the back thereof as shown.

60 The supporting rods C' C' are provided at their lower ends with transversely extending portions which are connected to the step C, such transversely extending portions constituting extensions projecting rearwardly from the step. These rods or arms C' are notched near their upper ends, as at D', for engagement by a pair of pivoted locking dogs E, each pivoted intermediate of its end, as at e to the rise *a* of one of the steps B. When the rods are in elevated po-

sition the dogs engage the notches and retain them in place, the operation being automatic through the instrumentality of springs F bearing against the outer ends of the dogs, as clearly shown in Fig. 3.

To release the locking dogs and permit the extensible step to automatically assume its active position I mount centrally upon the rise *a* a vertically slidable pin or member *g* adapted at its lower end to abut the inner ends or extensions of the locking dogs, and at its upper end to bear beneath an operating lever pivoted at one end, as at *g'* to the rise *a* near the upper edge of the same, and at its opposite end carrying a foot piece H extending upwardly through and to a substantial distance above the upper step B near the end thereof so as to occupy not only an inconspicuous position, but to offer no substantial obstruction on the step itself. The foot-piece is normally covered by the usual foldable platform member *a*.

From the description as thus far herein set forth, it will be apparent that by simply depressing the foot piece H the long lever G engaged thereby will be depressed to correspondingly depress the pin *g* to simultaneously lower the free ends of the dogs against the pressure of their retaining springs and thus free the dogs from the lower notched portions of the supporting rods or arms, permitting the same to slide downwardly and outwardly by gravity to swing the extensible step in its active position when the upper notches D' will be engaged by the rods, thus assisting in supporting the step.

To support the step in its active position I provide a centrally arranged supporting bracket J rigidly fastened at its lower end to the central portion of the extensible step and at its upper end having a detachable offset as at *j* to engage the upper edge of an eye or loop *k* of a plate K, secured at the back of the steps A. As a still further support I provide a foldable rest L hinged at its upper edge, as at *l* to the forward edge of the tread portion of the lowermost step B, and at its opposite ends being slotted to accommodate the supporting rods or arms of the extensible step. When the extensible step is in active position the bottom walls of the slots engage the transversely extending portions of the rods or arms to support the ends of the extensible step from the stationary step thereabove, but when the extensible step is elevated the foldable rise swings backward beneath the lowermost step B as clearly illustrated, the slots permitting sufficient play of the supporting arms or rods to enable this operation.

To protect the mechanism from damage by extraneous or flying objects during the operation of the train and to insure against

impairment of the parts in icy or snowy weather, said parts are completely housed by providing a back wall M for the steps, the lower portion *m* being stationary, while the upper portion *m'* is hinged along its upper edge as at *m²* so that it may open to permit access to the interior of the casing, this hinged portion or door being normally located in closed condition through the medium of a gravity latch N carried thereby and engaging behind the lower fixed portion *m*.

A hand-piece O beneath the step C prevents deflection of the same when resting on a station platform and insures space for the hand in elevating the step prior to starting the train.

I claim:—

1. The combination with stationary steps, of a casing member secured to said stationary steps and spaced therefrom to form a chamber therebetween, said casing member being formed in part to constitute a door, an extensible step provided with a portion working in said chamber, and controlling means for holding said extensible step in an elevated position mounted on the underside of the stationary steps within said chamber, and accessible from the door in said casing member.

2. The combination with stationary steps, of an extensible step operatively associated therewith, and a support for the extensible step when in active position comprising a bracket carried thereby having an offset portion, and a plate mounted on the stationary steps having a portion adapted to be engaged by said offset, substantially as described.

3. The combination with stationary steps, of an extensible step operatively associated therewith, and rigid means for supporting the extensible step in active position at its ends and at an intermediate portion thereof, substantially as described.

4. The combination with stationary steps, of an extensible step operatively associated therewith, an arm carrying the extensible step, means engaging said arm to hold the step in inactive position, and means for supporting the step in active position comprising a foldable rise engaging the lowermost stationary step and slotted to embrace said arm and engage the same in its lowermost position, but permitting said rise to be folded when the step is folded into inactive position.

5. The combination with stationary steps, of an extensible step operatively associated therewith, supporting arms at the opposite edges of said extensible step, and means for locking the step in elevated position comprising a pivoted dog adapted to engage one of said arms, means for automatically engaging said dog, and means for releasing

said dog comprising a lever having a foot portion occupying a position adjacent to the uppermost stationary step.

6. The combination with stationary steps, 5 of an extensible step operatively associated therewith, supporting arms secured to said extensible step and slidably mounted beneath said stationary steps, said supporting arms being provided with notches therein, 10 transversely extending pivoted dogs secured to the rear side of one of the risers of the stationary steps and adapted to cooperate with the notches in the arms of said extensible step to hold the same in elevated position, 15 means for causing the dogs to automatically engage the arms, and means for simultaneously releasing the dogs.

7. The combination with stationary steps, 20 of an extensible step operatively associated therewith, supporting arms at the opposite ends of said extensible step, means for locking the step in elevated position comprising pivoted dogs adapted to engage said arms, means for causing the dogs to automatically 25 engage the arms, and means for simultaneously releasing the dogs, said means comprising a lever having a foot piece occupying a position adjacent to the uppermost stationary step.

30 8. The combination with stationary steps, of an extensible step operatively associated therewith, supporting arms at the opposite

ends of said extensible step, means for locking the step in elevated position comprising 35 pivoted dogs adapted to engage said arms, means for causing the dogs to automatically engage the arms, means for simultaneously releasing the dogs, said means comprising 40 a lever having a foot piece occupying a position adjacent to the uppermost stationary step, and a connecting element between said lever and the free portions of the dogs.

9. The combination with stationary steps, 45 of an extensible step operatively associated therewith, supporting arms at the opposite ends of said extensible step, automatically acting devices adapted to engage both of 50 said arms to lock them in raised and lowered position, and means for simultaneously releasing said locking devices.

10. The combination with stationary 55 steps, of an extensible step operatively associated therewith and provided with an extension, a folding riser pivoted to the lowermost stationary step and provided with a 60 portion adapted to underlie the extension of said extensible step when in its lowermost position to support the same.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. STARK.

Witnesses:

JAS. E. HUTCHINSON,
JOS. H. MILANS.