E. C. PATERSON.
FOLDABLE STAIR FOR SLEEPING CAR BERTHS.
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Fig. 1.
To all whom it may concern:

Be it known that I, ELIZABETH C. PATTERSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Foldable Stairs for Sleeping-Car Berths; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is a semi-portable foldable stairway or ladder, and its object is to provide a simple and convenient means of access to and egress from the upper berths of sleeping cars, boats, etc.

The invention in brief consists in a novel adjustable foldable stairway or ladder adapted to be used in sleeping cars and state-rooms of vessels as hereinafter described, whereby the occupant of an upper berth can ascend and descend at will without requiring the assistance of a porter, and without disturbing other passengers.

The invention is especially designed for use by ladies, children and feeble or elderly persons who have to occupy upper berths and who do not wish to be dependent upon the help of porters or stewards in getting into or out of their berths.

In the accompanying drawings I have illustrated a practical form of apparatus embodying the invention, and will describe the same more fully with reference thereto, and summarize in the claims the essential features and combinations of parts of the invention for which protection is desired.

In said drawings—Figure 1 represents a front view of parts of adjacent sections of a sleeping car provided with my invention and showing the same in position for use in full lines and closed in dotted lines. Fig. 2 is a view showing the steps open in full lines and folded in dotted lines. Fig. 3 shows the stairway closed, and the upper part removed, leaving the car in condition for ordinary day service. Fig. 4 is a detail perspective view of the detachable post and parts connected therewith, folded.

I will explain the invention as applied to ordinary Pullman sleeping cars.

As shown in the drawings S designates the end frame of two adjacent Pullman car seats, or sections, which may be of ordinary construction. To the outer wall of this end frame is foldably attached a series of steps 1, four being shown, which are arranged one above the other; and each step is preferably hinged to the frame S by any suitable means, as indicated at 3 in the drawings, so that the steps may be folded vertically flatwise against the face of the frame S as shown in Fig. 3, or may be turned outward to horizontal position as shown in Figs. 1 and 2.

The steps may be supported in lowered position by a standard 5, which is preferably pivotally connected to the outer end of each step, preferably by means of a hinge plate 3 having its outer end bifurcated and pivoted to the standard 5 by means of a screw or bolts, as 3; said hinge plates being fastened to the under sides of the steps in any suitable manner.

I propose to make the steps of sheet metal to economize space and secure strength; but they may be made of any suitable desired material.

The steps 1 only extend to the top of the frame S and in order that a person may enter the upper berth easily, it is necessary that an additional step or steps be provided; and for this purpose I provide the support 3 with an extension post 4, which may be hollow, and is preferably made of metal and has its lower end removably fitted into the upper end of the standard 3, and may be detachably engaged therewith by means of a bayonet slot and pin joint, as indicated at 4 in the drawings. To this post 4 is pivoted one or more steps 5, only one being shown. This step 5 is preferably made of metal and may have ears 5' on its outer end connected by a bolt 5" to the post 4, as indicated in the drawings; and the inner end of this step is adapted to be detachably engaged with a device attached to the inner partition P, such as is used in sleeping cars to separate adjacent berths, and which may be of ordinary construction. A convenient connection between the step and this partition, is shown in the drawings, and comprises a plate 5" hinged to the inner end of the step 5 as indicated at 5" and adapted to engage a retainer or socket piece 5' to the partition P by which this step will be firmly held in place when engaged therewith. To the upper end of the post 4 is attached a hand rail 6 which is preferably hinged thereto by a bolt 6", and the inner end of this hand rail may be detachably attached to the partition P in any suitable manner. I pre-
fer, to insure rigidity, to attach the inner end of the rail to the partition by means of links pivot to the inner end of the rail as at 6, said links being adapted to fit against opposite sides of the partition and having downwardly extending lugs adapted to engage correspondingly slotted straps or retainers 6 attached to the opposite sides of the partition P as shown.

When the parts are adjusted as shown in full lines in Figs. 1 and 2, the steps are in operative position, and the upper end of the post is firmly braced against lateral movement, and a person desiring to get into and out of a berth can easily ascend or descend the stairway.

The steps 1 are preferably graduated in length, the lowest step being the widest, thus permitting easier ascent or descent, see Figs. 1 and 2. The lower lower steps 1 are pivoted to the end frame S of the seat A and the vertical standard 3. The upper step 5 and bar 6 are pivoted to the post 4 and clamped to the berth partition P and this allows the stair to fold up as a whole as indicated in dotted lines in Figs. 1 and 2. When the steps are lowered as shown in Fig. 1, if there is not sufficient room for a portly person to pass, he can grasp the standard 3 and raise it up and pass by. During the day the post 4, with the attached step 5 and hand rail 6, may be detached from the partition plate and from the standard and folded as indicated in Fig. 4, and may be stowed with the partition in one of the closed upper berths, as usual in Pullman cars. The lower steps 1 can be folded up and against the end frame S and held in such position by a catch 1, as indicated in Fig. 3; or by other suitable means, so that the apparatus is out of the way. If desired, the parts of the apparatus attached to the frame S might be inclosed when folded. This however is a mere matter of finish of the car, and has nothing to do with the present invention, and therefore is not illustrated.

After the berths are made up, the porter should lower the steps 1 to the position indicated in Fig. 1, attach the post 4 to the standard and connect the step 5 and end rail 6 to the partition, as indicated in Fig. 2; he can then fold the entire apparatus up against the side frame and berth as indicated in dotted lines in Figs. 1 and 2.

When a party wishes to ascend to an upper berth all there is to do is to pull the standard outward and the steps will drop to the lowered position, and he or she can ascend, and when in the berth he can, by pulling upon the upper end of the post 4, fold the steps up against the end frame as indicated in dotted lines in Fig. 2, and out of the way of persons traversing the passageway; and when he wishes to descend, he can readily lower the steps while in the berth without having to call for assistance from the porter or others.

The whole apparatus is made of metal, preferably of steel, giving the maximum strength with the minimum weight; the tread surface of the steps can be covered with rubber, or any other non-slip material. There are no sharp corners or protruberances to tear clothing, or injure passengers, and one stairway will answer for two adjacent berths.

What I claim is:

1. Foldable steps for the purpose described, comprising a series of steps hinged attached to a support, an extension post detachably attached above the steps, and an additional step hinged attached to said post and adapted to be detachably engaged with a support above the steps.

2. Foldable steps for the purpose described, comprising a series of steps attached to a support, an extension support detachably mounted above the steps, an additional step attached to said post above said steps, and a hand rail attached to the upper end of said post.

3. In combination with an end frame of Pullman car berths and the like, a series of steps foldably connected with said frame, a detachable post above said steps, and a step pivotally attached to said post and having its free end adapted to detachably engage a retainer on the berth partition above the steps.

4. In combination with a frame, a series of steps connected with said frame, a detachable post above said steps, a step attached to said post and having its free end adapted to detachably engage a support above the steps and detachably attached to the partition.

5. Foldable steps for the purpose described, comprising a series of steps attached to a support, a standard connected to each of said steps and adapted to support them in horizontal position, an extension post attached to the top of said standard and a step attached to said post and adapted to be detachably engaged with a support above the other steps.

6. Foldable steps for the purpose described, comprising a series of steps hingedly attached to a support, a standard hingedly connected to the free ends of said steps and adapted to support them in horizontal position, an extension post detachably attached to the top of said standard, and an additional step hingedly attached to said post and adapted to be detachably engaged with a support above the hinged steps.

7. Foldable steps for the purpose described, comprising a series of steps attached to a support, a standard connected to the
outer ends of said steps and adapted to support them in horizontal position, an extension post attached to the top of said standard, an additional step attached to said post above the hinged steps, and a hand rail attached to the upper end of said post above the steps.

8. Foldable steps for the purpose described, comprising a series of steps attached to a support, a standard connected to the free ends of said steps and adapted to support them in horizontal position, an extension post attached to the top of said standard, a step attached to said post engaged with a support above the series of steps, and an end rail attached to the said post and to the support above the steps.

9. In combination with a frame, a series of steps foldably connected with said frame, a standard pivotally connected with said steps adapted to support them when in a lowered position, a post attached to the upper end of said standard, and a step attached to said post and having its free end detachably engaged with a retainer on a suitable support above the steps.

10. In combination with a frame of Pullman car berths and the like, a series of steps connected with said frame, a standard connected with said steps adapted to support them in horizontal position, a post attached to the upper end of said standard, and a step attached to said post and having its free end adapted to detachably engage a retainer on the berth partition above the steps.

11. In combination with a frame, a series of steps connected with said frame, a standard connected with said steps adapted to support them when in a lowered position, a post on the upper end of said standard, a step attached to said post and having its free end adapted to detachably engage a suitable support above the steps, and an end rail attached to the said post and detachably attached to the support above the steps.

12. In combination with an end frame of Pullman car berths and the like, a series of steps connected with said frame, a standard connected with said steps adapted to support them in horizontal position, a post on the upper end of said standard, a step attached to said post and having its free end adapted to detachably engage a retainer on the berth partition above the steps, and an end rail attached to the upper end of said post and detachably attached to the support above the steps.

13. Foldable steps for the purpose described, comprising a series of steps hingedly attached to a support, a standard hingedly connected to the free ends of said steps and adapted to support them in horizontal position, an extension post detachably attached to the top of said standard, an additional step hingedly attached to said post and adapted to be detachably engaged with a support above the hinged steps, and an end rail hingedly attached to the upper end of said post and detachably attached to the support above the steps.

14. In combination with an end frame of Pullman car berths and the like, a series of steps foldably connected with said frame, a standard pivotally connected with said steps adapted to support them when in a lowered position, a post detachably attached to the upper end of said standard, a step pivotally attached to said post and having its free end adapted to detachably engage a retainer on the berth partition above the steps, and an end rail hingedly attached to the upper end of said post and detachably attached to the support above the steps.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

ELIZABETH C. PATERSON.
Witnesses:
WILLIAM E. GROLL,
MARY E. LOGAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."