

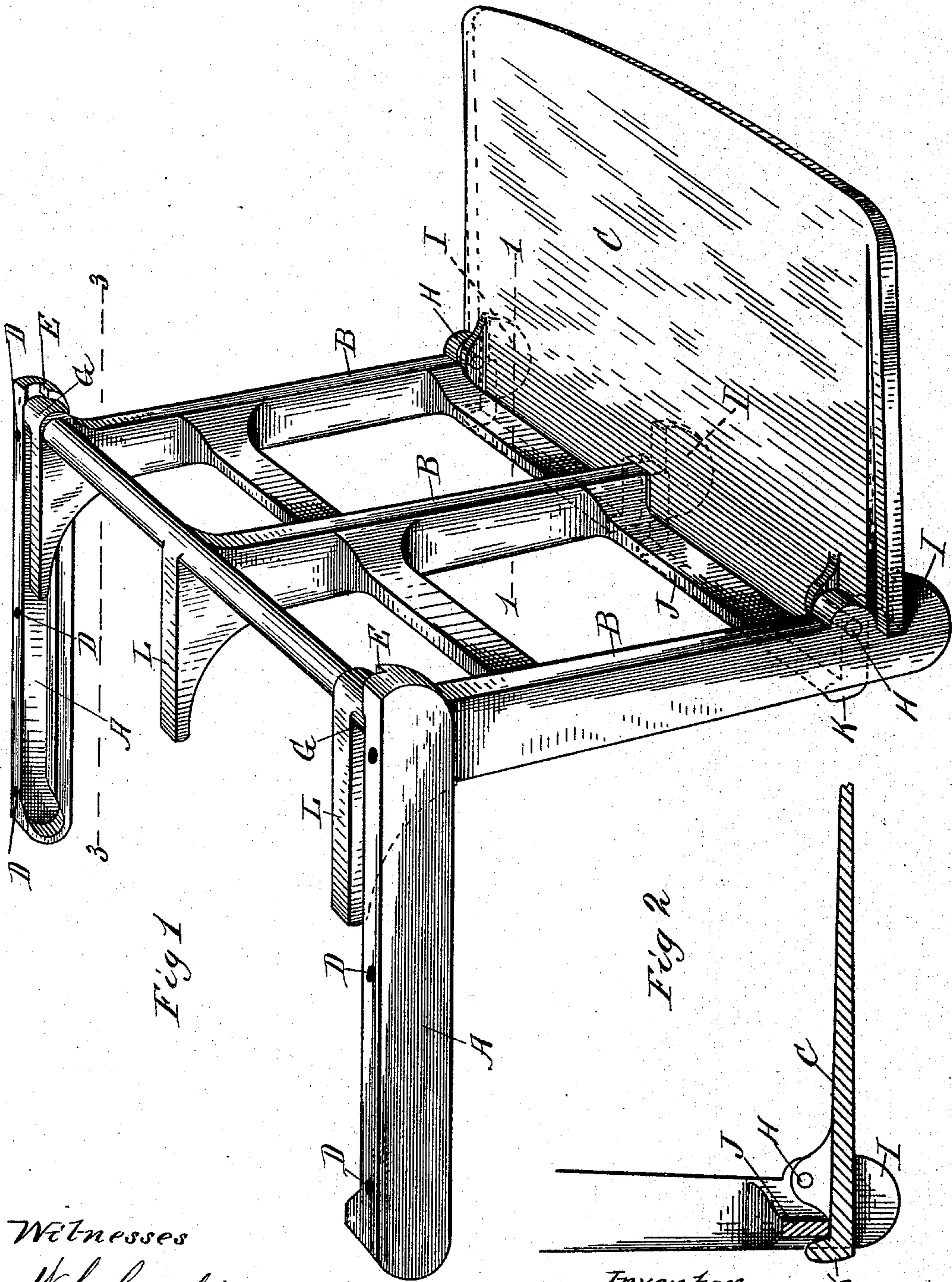
(No Model.)

2 Sheets—Sheet 1.

A. B. ALLEN.
STEP FOR RAILWAY CARS.

No. 413,312.

Patented Oct. 22, 1889.



Witnesses

W. C. Corlies
A. M. Best.

Inventor
A. B. Allen

By *C. C. Mather*
Attys

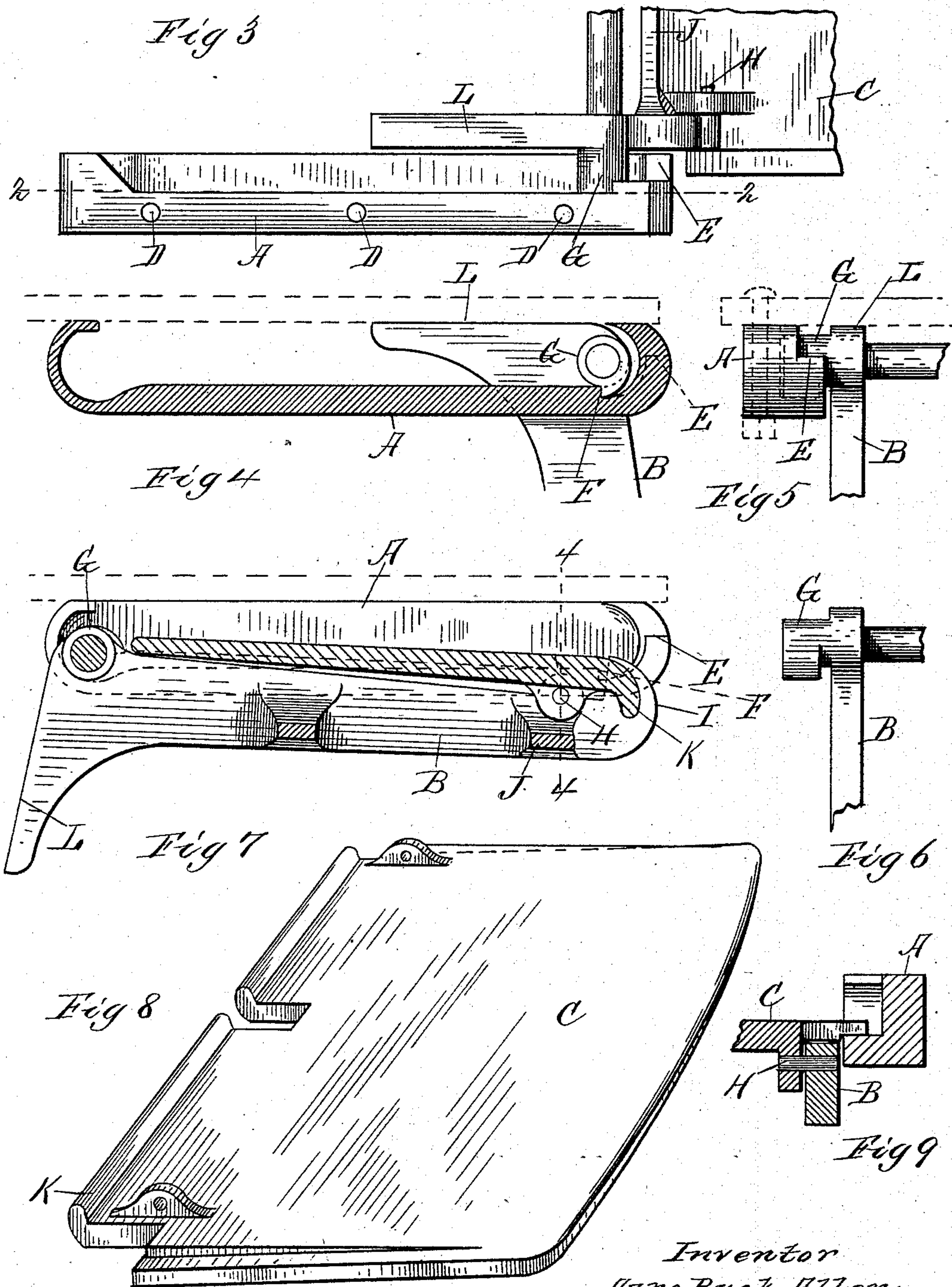
(No Model.)

2 Sheets—Sheet 2.

A. B. ALLEN.
STEP FOR RAILWAY CARS.

No. 413,312.

Patented Oct. 22, 1889.



Witnesses } *W. C. Collins*
 A. M. Best.

Inventor
Alro Buck Allen

By Coburn Thacher
Attys

UNITED STATES PATENT OFFICE.

AZRO BUCK ALLEN, OF SANFORD, FLORIDA.

STEP FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 413,312, dated October 22, 1889.

Application filed December 29, 1888. Serial No. 294,942. (No model.)

To all whom it may concern:

Be it known that I, AZRO BUCK ALLEN, a citizen of the United States, residing at Sanford, in the county of Orange and State of Florida, have invented an Improvement in Steps to Railroad-Cars and other Vehicles, of which the following is a specification.

My invention relates to the improvement to steps to railroad-cars and other vehicles, an addition of one or more folding steps being bolted or otherwise attached thereto, which, when in use, forms a continuous series and obviates the necessity of using movable appliances for the ingress and egress of persons traveling therein, thereby conducing materially to their comfort and convenience, and also reducing the chances of accidents to nil, or, at least, a minimum. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a perspective view of the additional folding steps let down for use; Fig. 2, a detail section on the line 1 1 of Fig. 1; Fig. 3, a detail plan of the support at one end of the steps; Fig. 4, a section of the same, taken on the line 2 2 of Fig. 3; Fig. 5, a detail end or front elevation of the parts shown in Fig. 4; Fig. 6, a detail elevation of the upper end of one of the step supports or posts detached from Fig. 5; Fig. 7, a cross-section of the steps, showing the step folded up and pushed back under the platform, taken on the same line as 2 2 of Fig. 3; Fig. 8, a perspective view of the step detached; and Fig. 9 a detail section of the locking device.

Similar letters refer to similar parts throughout the two views.

In Fig. 1, letters A A are cleats or guideways to be attached to stationary step or steps for holding or carrying the said addition of step or steps when open ready for use, or when folded and closed up.

D D D D D D are holes for bolting the cleats or guideways A A to the under side of the stationary step or steps.

F is a shoulder to be used as a stop, as is hereinafter more fully explained.

B is the riser, with pivot-joint G at the top to work on a rim in the cleats or guideways A A, and having shoulder at F to hold it in place while in use. E is another shoulder,

the use of which is hereinafter more fully explained.

L L L are arms or supports resting against under side of stationary step or steps when in use, and serve to hold riser B nearly perpendicular.

I I I are lips supporting step C and resisting downward pressure.

J is a bar, also supporting step C and resisting upward pressure.

C is a step hinged at H H and resting on lips I I I, with flange K resting upward against bar J.

H H are rivets holding step C in place when in use and folded and carrying lower end of riser B when folded. Lips I I I, bar J, and arms or supports L L L all serve to resist a downward pressure on step C.

E is a stop to flange of step C and pivot G. Fig. 7 shows step as folded when not in use, step C and riser B, both folded and in horizontal position, resting in cleats or guideways A A, supposed as underneath stationary step or steps, (not shown, except as indicated by dotted lines in Figs. 4, 5, and 7,) and also shows holes D D D for bolting cleats or guideways to stationary step or steps, lips I and K, shoulder F, hinge H, cleat or guideway A, steps C, riser B, with arm or support L, all corresponding to Fig. 1, but in the places they will severally take when the said addition is folded and pushed under the stationary step or steps. Stop E prevents step or steps from being drawn out of groove in cleats or guideways A A by motion of car or vehicle. To open the said addition, pull out until pivot-joint G is stopped by E, press down riser B and steps C until arms or supports L L L press against under part of stationary step or steps, and let fall step C. To close same, fold step C against riser B, raise both until horizontal, and then push them back until even or flush with front edge of stationary step or steps. (Not shown on drawings.)

I am aware that prior to my invention folding steps have been made with a single joint and folding on the top of stationary step or steps. I therefore do not claim such a combination, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In folding steps, the step-platform C, in combination with the supports II in front of the pivot, and the bar J, arranged above the platforms back of the pivot, to also serve as
5 a stop to the downward movement of the platforms, substantially as set forth.

2. In a folding step or steps, the combination of a pivoted joint with a stop E, shoulder F, and arms or supports L L L, as specifically described.

3. The combination, in a folding step or steps, of the two hinged joints H H and pivoted joint G, allowing such folding step or steps to be folded and placed at the under side of any stationary step or steps, all substantially as set forth.

AZRO BUCK ALLEN.

Witnesses:

ALBERT McDONALD THRASHER,
WILLIAM HENRY MARONLEY.