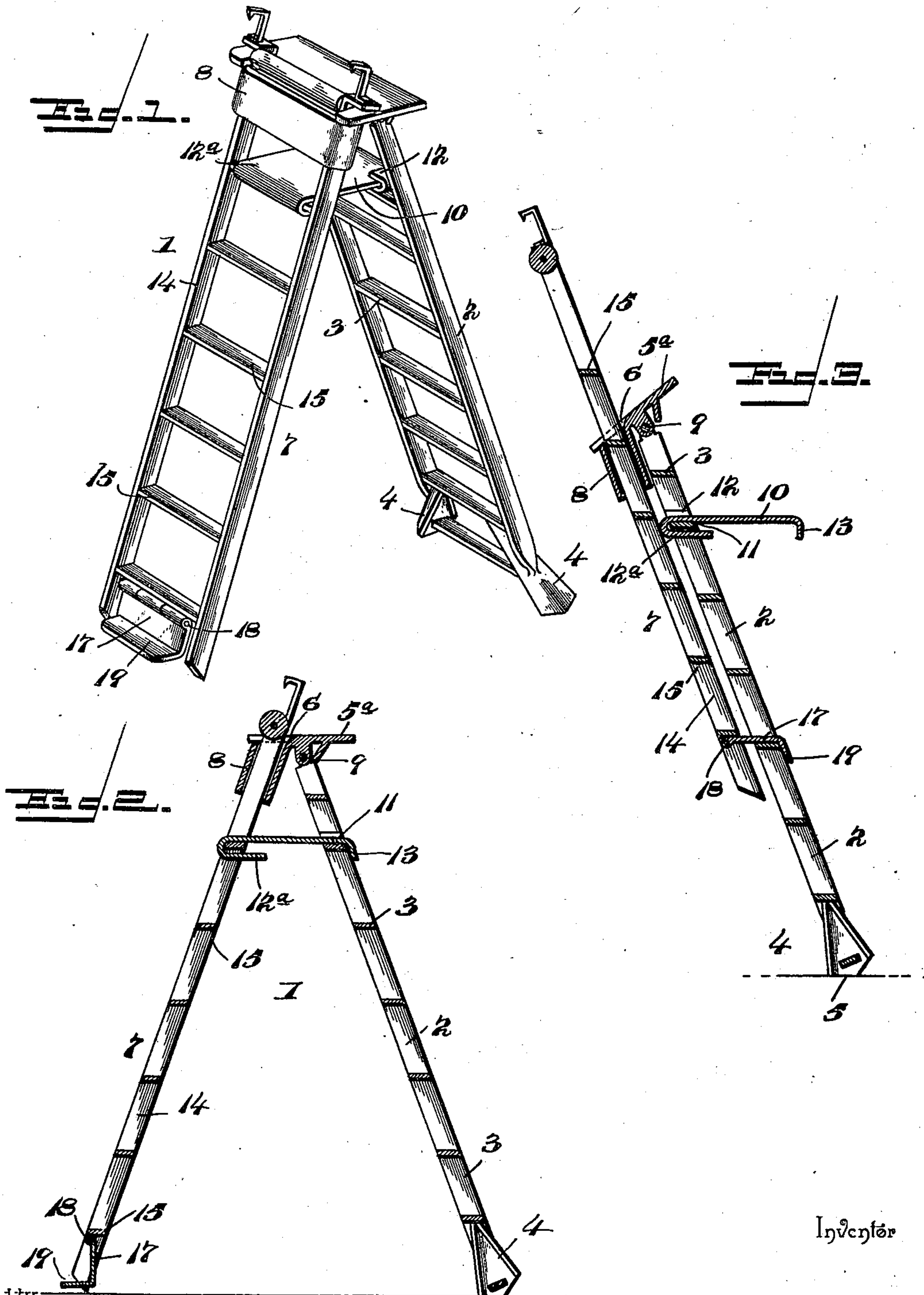


(No Model.)

E. CARDARELLI.  
STEP AND EXTENSION LADDER.

No. 548,111.

Patented Oct. 15, 1895.



Inventor

Witnesses

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# UNITED STATES PATENT OFFICE.

EMILIO CARDARELLI, OF SUMTER, SOUTH CAROLINA, ASSIGNOR TO THE  
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## STEP AND EXTENSION LADDER.

**SPECIFICATION** forming part of Letters Patent No. 548,111, dated October 15, 1895.

Application filed March 31, 1894. Renewed April 8, 1895. Serial No. 545,011. (No model.)

*To all whom it may concern:*

Be it known that I, EMILIO CARDARELLI, a citizen of the United States, residing at Sumter, in the county of Sumter and State of South Carolina, have invented a new and useful Combined Step and Extension Ladder, of which the following is a specification.

The invention relates to improvements in combined step and extension ladders.

10 The object of the present invention is to improve the construction of combined step and extension ladders and to provide an exceedingly simple and inexpensive one which may be readily arranged to form a step-ladder and quickly adjusted to provide an extension-ladder of the desired length.

15 The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

20 In the drawings, Figure 1 is a perspective view of a combined step and extension ladder constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a longitudinal sectional view, the parts being arranged to form an extension-ladder.

25 Like numerals of reference indicate corresponding parts in all the figures of the drawings.

30 1 designates a step-ladder section composed of opposite longitudinal side bars 2 and connecting rungs or steps 3, arranged at intervals to form a ladder. The lower ends of the side bars 2 are preferably provided with enlarged divergent foot-pieces 4, having oppositely-beveled lower edges 5, forming a central point on each foot-piece, to prevent any liability of the ladder accidentally slipping.

35 The step-ladder section has its top piece or shelf 5<sup>a</sup> recessed at the rear edge at 6 to receive an extension-ladder section 7, which forms a brace or support when the parts are arranged to form a step-ladder, as illustrated in Figs. 1 and 2 of the accompanying drawings. The extension-ladder section is slid-  
40 ingly arranged in a substantially rectangular keeper or loop 8, which is connected at its inner side by a hinged joint 9 to the top of the step-ladder section adjacent to the recess 6.

The hinged loop or keeper 8 permits the extension-ladder section to move longitudinally on the step-ladder section to form an extension-ladder or to swing outward to provide a step-ladder, and the extension-ladder section is retained in an inclined position to form a brace for the step-ladder section by a sliding connecting-piece 10, arranged in an opening or way 11 of a cross-piece 12 and provided at its rear end with a hook 12<sup>a</sup> to engage the adjacent step or rung of the extension-ladder section. The front end of the connecting-piece 10 is provided with a depending flange 13, forming a stop to limit the rearward movement of the connecting-piece.

45 The extension-ladder section is composed of similar side bars 14 and connecting rungs or steps 15, and the connecting-piece 10, which prevents the two sections from swinging apart too far, is adapted to serve as a shelf for supporting a bucket or the like when the parts are arranged to form an extension-ladder. The connecting-piece 10 is rigid and is adapted to form a projecting arm to hold the step-ladder section away from a wall or the like a sufficient distance to enable the extension-ladder section to be readily adjusted longitudinally to form the desired length of ladder without coming in contact with the wall.

50 Any suitable locking device may be employed for securing the connecting-piece in its extended position to prevent it from sliding in its way when placed against a wall.

55 The extension-ladder section is secured in its longitudinal adjustment by a swinging catch 17, hinged to the lower face of one of the steps 15 at the outer or rear edge at 18, and it is provided at its free end with a lip or flange 19. The swinging catch is adapted to readily pass the rungs or steps of the step-ladder section in moving or sliding the extension-ladder section upward, and it is adapted to engage over the upper face of a rung or step of the step-ladder section, thereby securely fastening the parts in their desired adjustment. The lip or flange 19 prevents any liability of the catch becoming accidentally disengaged from the step or rung of the step-ladder section.

60 The top piece 5<sup>a</sup> may be carried by the loop



or keeper 8 or be rigid with the step-ladder section, as desired.

The top piece of the extension-ladder section is designed to be provided with a roller  
5 and a hook to enable it to pass readily over the surface of a wall in adjusting the ladder and to engage a wall and to facilitate extending the ladder.

It will be seen that the combination step  
10 and extension ladder is simple and comparatively inexpensive in construction and is capable of being readily arranged to form either a step or extension ladder. It will also be apparent that the adjustable connecting-  
15 piece, which prevents the two sections of the latter from separating when the parts are arranged to form a step-ladder, is adapted to serve as a supporting-shelf when the parts are used as an extension-ladder and to form  
20 a guard or arm for holding the upper portion of the step-ladder section away from a wall in adjusting the extension-ladder section.

Changes in the form, proportion, and the minor details of construction may be resorted  
25 to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

1. In a combined step and extension ladder,  
30 der, the combination of a step-ladder section, a top piece or shelf hinged to the upper end of the step-ladder section and provided with a guide or keeper, an extension-ladder section slidingly arranged in the keeper or guide and  
35 adapted to swing outward on the hinge of the top piece or shelf, and means for securing the extension-ladder section, substantially as described.

2. In a combined step and extension ladder,  
40 der, the combination of a step ladder section, a guard or keeper arranged at the top of the step ladder section and hingedly connected therewith, the extension ladder section and a connecting piece slidingly mounted on the  
45 step ladder section in suitable ways thereof said connecting piece being provided at its

front end with a stop and having at its rear end a hook to engage the extension ladder section, substantially as described.

3. In a combined step and extension ladder, 50 the combination of a step ladder section, an extension ladder section hingedly connected therewith and slidingly mounted thereon, a cross-piece secured to the step ladder section and provided with an opening, and a combined supporting shelf and connecting piece 55 arranged in the opening of the cross-piece and provided at its front end with a stop and at its rear end with a hook, substantially as and for the purpose described. 60

4. In a combined step and extension ladder, the combination of a step-ladder section, a top piece or shelf hinged to the upper end of the step-ladder section and provided with a guide or keeper, an extension-ladder section 65 slidingly arranged in the keeper or guide and adapted to swing outward on the hinge of the top piece or shelf, and a stop-catch mounted on one of the steps of the extension-ladder section and arranged to engage the steps of 70 the step-ladder section, substantially as described.

5. In a combined step and extension ladder, the combination of a step ladder section, a keeper or guide arranged at the top thereof 75 and hingedly connected therewith, an extension ladder section arranged in the keeper or guide, and a swinging catch hingedly connected with one of the steps of the extension ladder section and arranged on the lower face 80 of said step and provided at its free end with a depending flange or lip and adapted to engage over the steps of the step ladder section, substantially as described.

In testimony that I claim the foregoing as 85 my own I have hereto affixed my signature in the presence of two witnesses.

EMILIO CARDARELLI.

Witnesses:

J. H. SIGGERS,

GEO. C. SHOEMAKER.