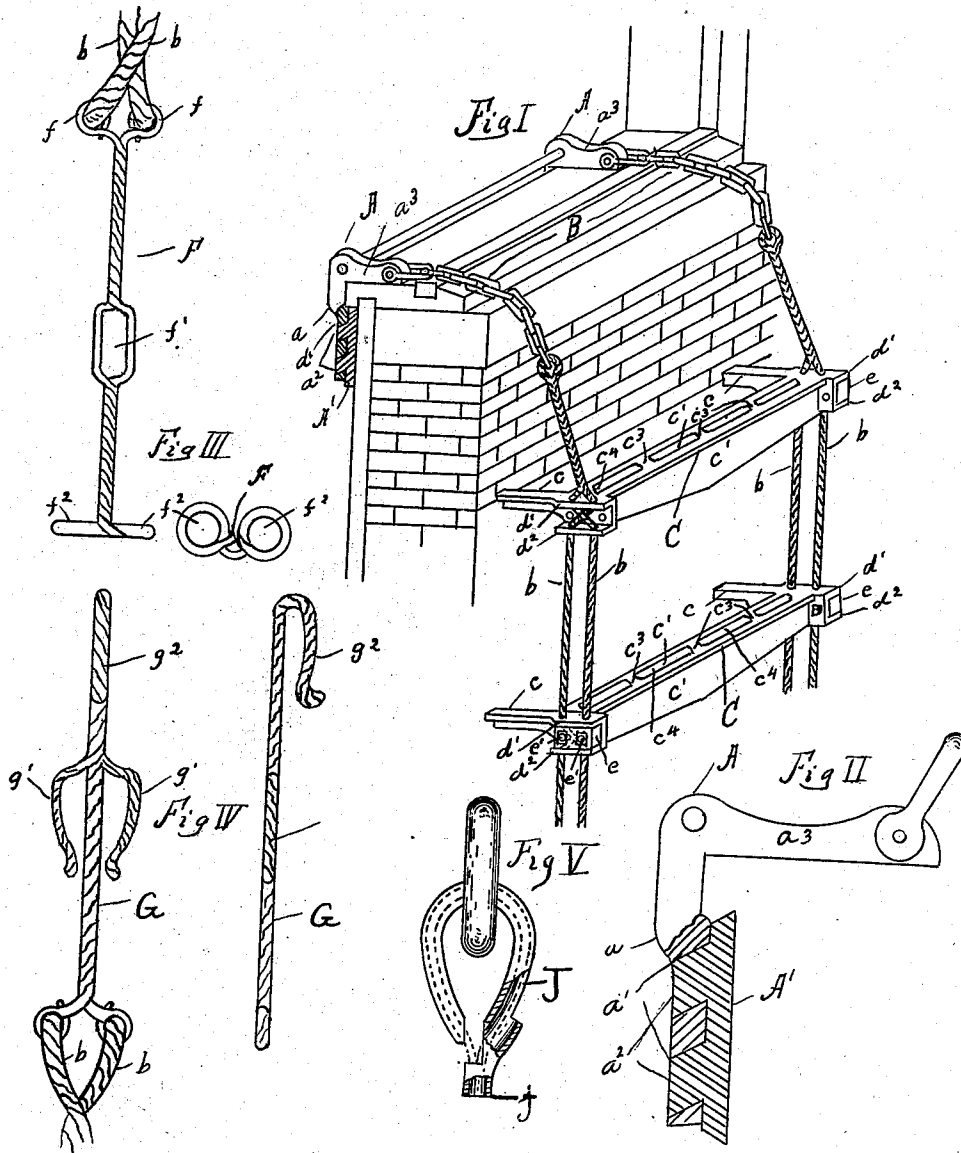


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FIRE ESCAPE LADDER.  
APPLICATION FILED MAY 31, 1907.

899,552.

Patented Sept. 29, 1908.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE LADDER.

No. 899,552.

Specification of Letters Patent.

Patented Sept. 29, 1908.

Application filed May 31, 1907. Serial No. 376,658.

*To all whom it may concern:*

Be it known that I, MARY J. McARTHUR, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Fire-Escape Ladders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to fire escape ladders, and has reference to that type which may be easily and quickly secured in position, or stored.

The object of my invention is to provide a fire-escape ladder which is light and hence easily portable, and also one which readily accommodates itself to any position when required, and also a ladder which when secured in position is firmly held, and while light, the steps thereof are rigidly held in their predetermined position relative to the suspending cables at either end thereof.

A still further object of my invention is to provide means whereby the ladder or escape may be formed in sections which are united firmly at their contiguous ends by means of coupling hooks or ties, so constructed as to prevent disengagement of the coupling.

My invention consists in the details of construction and assemblage of parts, all of which will be hereinafter fully set forth and claimed.

In the drawings Figure I, is an isometric view illustrating the manner in which the escape is secured in position on the window sill, also the construction of the steps of the escape; and furthermore illustrating the manner in which the steps are secured at their respective ends to the suspending cables. Fig. II is a view in side elevation, partly in section of the sill engaging hook, and the lock from which the cables are suspended, showing the same engaged. Fig. III illustrates one portion of the coupling which may be secured to the lower end of one section of the ladder, but which may be secured to the upper end of another section. To the right of this figure is shown a view of the lower end of this portion of the coupling. Fig. IV illustrates in front and side elevation the other member of the coupling which is adapted to engage the portion illustrated in Fig. III. Fig. V. illustrates the eye which is

attached to the upper ends of the section where it engages with the chain.

A A represent the hooks which are formed with an engaging end  $a$ , which is provided with one or more orifices  $a'$ , said member being inclined from the inner face of the member  $a$ , downwardly and inwardly, and adapted to engage the downwardly and inwardly projecting lugs,  $a^2$  which fit snugly in the orifices in the member  $a$ , and interlock therewith. The lugs  $a$  are secured to or form part of a plate  $A'$  which in turn is secured in proper position so that the member  $a$ , may properly engage with the lugs, and the member  $a^3$  rests upon a ledge, be the same a window-sill or other support. At the end of the member  $a^3$  I prefer to secure a short length of chain such as B, which in turn is secured to the cables  $b, b$ , at either end of the steps. The cables  $b, b$ , however may be directly secured to the arm  $a^3$ .

In forming the steps of the ladder I provide them with inwardly projecting arms  $c, c$ , at their respective ends, and for the purpose of attaining strength and lightness, I form them with horizontal and vertical flanges in the shape of angle irons.

The steps C are formed with a flat upper face as shown in Fig. I, which rests upon and is supported by two vertical flanges  $c', c'$ , which are in turn truss-shaped. The upper face of the step is formed with cross braces  $c^3, c^3$ , of suitable number for uniting the flanges  $c', c'$ . This provides openings such as  $c^4, c^4$ , at the upper surface of the steps, which makes the surface more or less uneven, to provide a firm foot-hold. Thus a structure is attained which is light, strong and secure, and while the features may seem immaterial, they are never-the-less essential in a device which is employed under great stress of excitement.

At the respective ends of the steps C, I provide box-shaped recesses comprising an endwardly extending flange  $d^2$  and an upper endwardly extending flange  $d'$ . Both flanges are provided with holes for the reception of cables  $b, b$ , which are crossed as illustrated in Fig. I., the holes being formed preferably diagonal so as to accommodate the cables and to allow them to be pulled taut and crossed upon each other as illustrated on the upper step in Fig. I, where the clamping block  $e$ , is removed.

In order to hold the cables more firmly in

the ends of the steps, the clamping block *e*, is secured in the box-shaped orifice tightly against the cables by means of a suitable fastening such as bolts *e'*, *e'*, this method of  
 5 securing the steps, preventing either an upward or downward movement of the steps in relation to the cables, and facilitating and accomplishing an easy adjustment of the steps.

10 Inasmuch as different lengths of sections may be required for the several uses to which the ladder may be put, I may form the ladder in sections which may be coupled together by means of the coupling hook  
 15 illustrated in Figs. III, and IV. The hook is formed of two members, one *F*, may be secured to the lower end of the respective cables, and the member *G*, may be secured to the upper end of the sections, or vice versa.

20 This coupling, which can not become disengaged under ordinary circumstances, is formed as follows: At the upper end of the section *F*, are two eyes *f*, *f*, to which the cables *b*, *b*, are secured. Midway of this I  
 25 provide an oblong opening *f'*, adapted to receive the hook *g*<sup>2</sup> of the section *G*. At the lower end of the section *F*, I provide two loops *f*<sup>2</sup>, *f*<sup>2</sup>, constructed and disposed so as to receive the hooks *g'*, *g'*, located intermediate  
 30 the ends of the section *G*. At the end of the section *G*, two eyes are provided for the attachment of the cables *b*, *b*, it being understood that couplings are provided at the respective ends of the steps on the cable. At  
 35 the upper end of the first section of the ladder I provide an eye, such as is illustrated in Fig. V, for the engagement of the lower end of the chain *B*, which has the usual neck portion *j*, and run-way *J*.

40 In setting forth this invention I have shown and described it as I consider it best adapted to perform its several functions, but I do not hence wish to be limited to these details as they may be modified and still the  
 45 main objects of the invention be attained.

What I claim is—

1. A fire-escape of the type set forth having a securing means at the upper ends of the

respective cables, said means comprising a member adapted to be secured in position, 50 said member being provided with one or more downwardly inclined lugs, a hook member provided with one or more orifices for the reception of said lugs, and another member at an angle to the former member to which 55 the upper end of the respective cables are attached.

2. A fire-escape comprising steps supported at their respective ends by two cables spread apart, said cables being crossed at the 60 ends of the steps with means clamping said crossed portion of the cables to the ends of the steps.

3. A coupling for fire-escapes comprising two members, one of said members being 65 provided with an opening intermediate the ends thereof, and with two open loops at its ends, the other member being provided with a hook at one end, and also provided intermediate of its end with oppositely disposed 70 hooks for engaging the loops at the end of its co-acting member, both of said members being provided with means for attachment to the suspending members of the escape.

4. A fire-escape of the type set forth comprising two steps, two spaced cables engaging 75 the ends of said steps, said cables passing through upper and lower flanges at the ends of the steps and crossed upon each other in combination with said flanges, and means 80 clamping the crossed portion of the cables to the ends of the steps.

5. An attaching device for fire-escapes comprising an angular hook-shaped member, one arm of which is adapted to be secured to 85 the upper end of the suspended cable, the other arm being provided with inclined orifices adapted to engage the lugs of the plate, in combination with said lugs and plate.

Signed at Cleveland in the county of Cuyahoga and State of Ohio, this 28th day of May 1907.

MARY J. McARTHUR.

Witnesses:

E. B. DONNELLY,  
 W. T. DONNELLY.