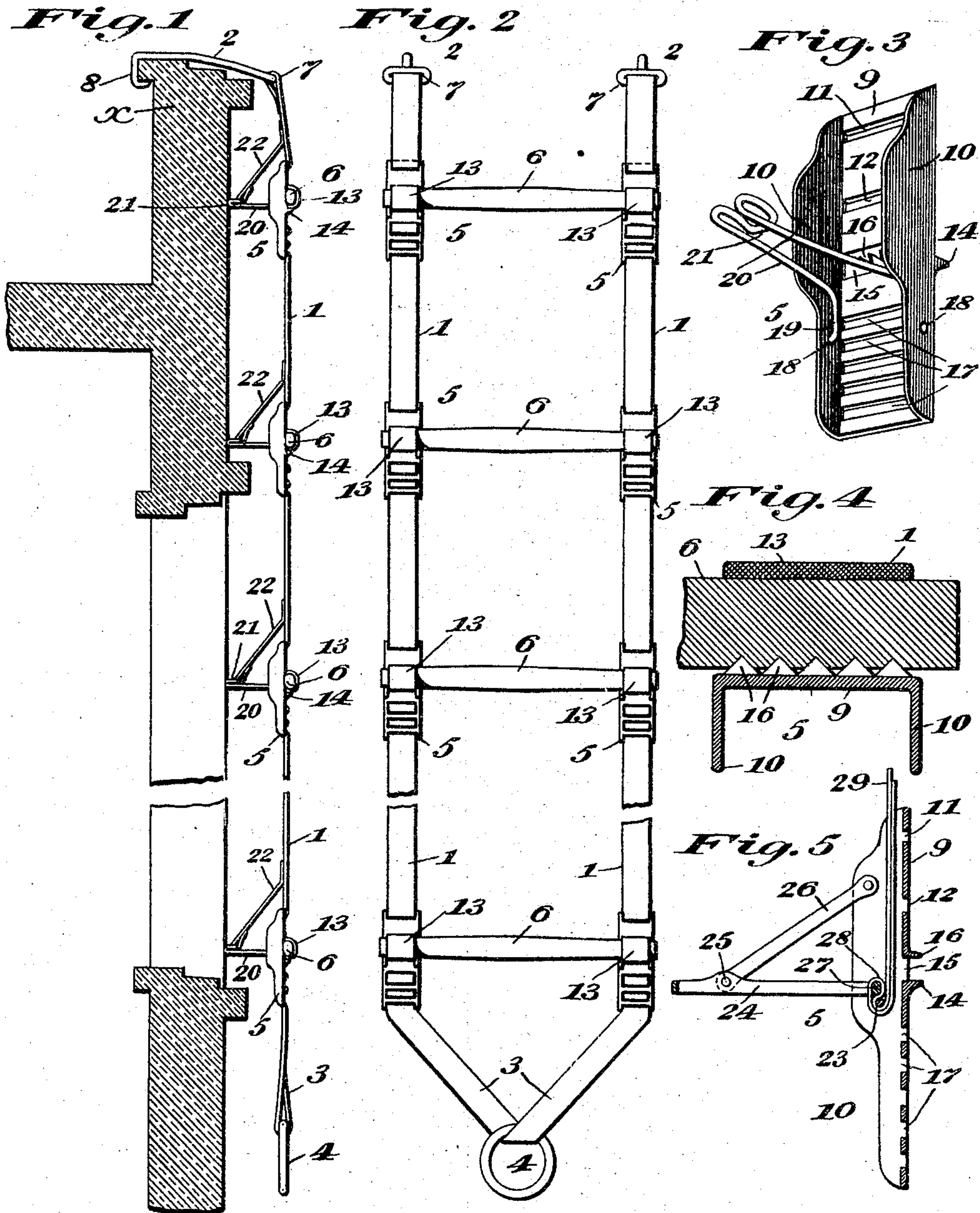


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I. BIHL.
FIRE ESCAPE.
APPLICATION FILED NOV. 21, 1904.



Witnesses

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FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 782,539, dated February 14, 1905.

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To all whom it may concern:

Be it known that I, IGNATZ BIHL, a citizen of the United States of America, and a resident of Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to certain improvements in fire-escapes, and particularly in that class of such devices which are constructed in the form of flexible ladders adapted to be attached at a window or the like and lowered along the outside of the building to form a means for descent of persons from the upper floors thereof; and the object of the invention is to provide a device of this general character of a simple and inexpensive nature and of a light and strong construction which shall be capable of being compactly rolled or folded, so as to occupy as little space as possible when not in use.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved fire-escape whereby certain important advantages are attained and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is a partial section taken through the wall of a building and showing a fire-escape constructed according to my invention attached at a window-sill and lowered along the outside of the building in position for use. Fig. 2 is a fragmentary face view of the improved fire-escape. Fig. 3 is a perspective view showing detached one of the coupling members by means of which the rungs of the device are connected with the flexible side portions or stiles. Fig. 4 is an enlarged sectional view taken transversely through the coupling member and showing the serrated projections thereon for engagement with the end of a rung. Fig. 5 is a vertical section taken lengthwise through a modified form of the connecting member.

As shown in the views, the improved fire-

escape is provided with flexible side portions or stiles 1 1, which are preferably formed from woven tapes or webbings of suitable strength and the upper ends of which stiles or side portions I provide with hook-like attaching members 2 2, which have transversely-extended slotted portions 7, through which are passed the looped ends of the tapes or webbings, the opposite ends of said parts 2 being provided with downwardly-extended hooks 8, which are adapted for engagement under the window sill or ledge commonly present, as indicated at *x* in Fig. 1. In Figs. 1 and 2 I have shown an integral connection 3 between the lower ends of the tapes or webbings 1 1, and on said connection 3 is held a ring 4, which after the fire-escape has been attached at the window-sill, as indicated at *x*, and has been lowered along the outside of the building may be grasped by a person at the ground-level or may be slipped over a projection in order that the device may be held from swaying, so that the descent of persons will be facilitated.

At intervals along the flexible stiles or side portions 1 1 are arranged connecting members 5 5, which serve to hold to said stiles or side portions 1 1 the extremities of the rungs 6 6, which are extended transversely between the stiles after the fashion of the rungs of an ordinary ladder. As shown in Figs. 1 to 4, the members 5 are made in the form of metallic slides having flattened front portions 9, at opposite sides of which are rearwardly-extended flanges 10 10. The upper part of the front wall 9 of each slide or member 5 is provided with transverse slots 11 and 12, spaced apart and adapted for the passage of one of the tapes or webbings, said tape or webbing being first passed through the slot 11 from the front to the rear face of the part 9 and being afterward passed through the lower slot 12 from the rear to the front face of the slide, after which said tape or webbing is formed into a loop or bight 13, which extends around the front surface of one extremity of a rung 6, a slotted opening 15, below the opening 16, serving for the passage of said tape or webbing through the part 9 of the slide or member to the inner side thereof after the loop 13 has been produced.

16 indicates a series of serrations or teeth

integral upon the front wall 9 of the slide or member above the slotted opening 15 and in position for engagement in the rear surface of the extremity of the rung 6, which is held within the loop 13, as above described, so that the rung is held against endwise movement, whereby it might be slipped out from said loop, and on the front surface of the slide or member below the slotted opening 15 is produced a forwardly-directed shelf or bracket 14, upon which the loop 13, with the extremity of the rung 6 held within it, is securely supported, as indicated in Fig. 1 of the drawings.

Below the shelf or bracket 14 the front wall 9 of the slide or member 5 is provided with a plurality of slotted openings 17, through which the tape or webbing 1 is adapted to be threaded after passage through the slotted opening 15, so as to afford a secure means for preventing the slide or member from slipping upon the tape or webbing.

In order to hold the flexible ladder constructed as above described at a distance away from the wall of the building sufficient to permit a person descending to readily step upon the several rungs, I provide each member or slide 5 with a spacing device which, as shown in Figs. 1 and 3, is formed of a wire of suitable strength, the ends of which are passed through openings in the opposite flanges 10 of the slide or member, as shown at 18, to afford pivotal connection of the spacing device with the slide. From its pivotal extremities the two arms or side portions of the spacing device are carried upward, as shown at 19, parallel with the front wall 9 of the slide, and above said upwardly-extended portions 9 said arms are bent rearwardly at right angles from the front wall of the slide, as indicated at 20, the central portion of the wire of which the spacing device is formed being bent to form a tie-piece 21, transversely extended between said arms 20 and adapted to receive the lower end of an operating-tape 22, the upper end of which is stitched or otherwise secured to the tape or webbing 1 above the slide or member 5.

When the improved fire-escape constructed as above described is not required for use, it may be compactly rolled or folded, so as to occupy comparatively little space, the pivotally-mounted spacing devices upon the several members 5 being capable of being folded downward along the rear faces of the members when the connections 22 and tapes or webbings 1 are relaxed. When the device is required for use, the hooks 8 will be engaged with a window-sill or other suitable projection, so as to securely hold the upper end of the device, after which the flexible ladder is lowered from the window, and as the tapes or webbings 1 fall to a vertical position the connections 22 of the spacing devices will be drawn upon to automatically swing said spacing devices rearwardly in position for engagement with the wall of the building to hold the

rungs 6 spaced away in position to conveniently receive the feet of persons descending.

In Fig. 5 I have shown a modified form of the spacing device. In this view 23 indicates a rod extended transversely between the flanges 10, and 24 indicates the movable part of the spacing device, the rear end of which is supported, as seen at 25, upon the lower ends of links 26, pivoted to the flange 10 at their upper parts. The part 24 has a forward cross-bar 27, over which is passed the looped central portion of the operating-tape 28, said tape being passed downwardly around the pin 23 and thence upward, as indicated at 29, for connection with the tape or webbing 1 above the slide 5. In this construction when the device is not in use the connection 28 will be relaxed to permit the part 24 to be folded flush against the rear side of the member 5; but when the device is in use the strain exerted by the tapes or webbings 1 upon the connections 28 will serve to move the parts 24 to horizontal positions, as shown in Fig. 5, in which position said parts will engage the wall and hold the ladder spaced away from the same.

From the above description it will be seen that the improved fire-escape constructed according to my invention is of an extremely simple and inexpensive nature and is especially well adapted for use, and it will also be obvious from the above description that the device is capable of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of the device herein set forth in carrying out my invention in practice.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A device of the character described comprising flexible stiles, slides having openings through which the stiles are passed to produce loops, serrations on the slides between the openings and within said loops and rungs having end portions held within the loop and with which said serrations are engaged.

2. A device of the character described comprising flexible stiles, slides having at their upper ends openings through which the stiles are passed to produce loops and having shoulders below said loops, and rungs extended between the stiles with end portions held in said loops and rested on said projections, the lower ends of the slides having parallel openings through which the flexible stiles are threaded to hold the slides against movement.

3. A device of the character described comprising flexible stiles, slides having front plates provided with openings through which the stiles are passed to produce loops, said slides being also provided with flanges extended along their opposite sides, rungs extended

between the stiles with end portions held in said loops and spacing devices comprising parts pivotally held to the flanges of the slides and having connections attached to the stiles
5 for holding said parts in operative position, the said parts being also adapted to be swung pivotally into folded position flush upon the slides.

4. A device of the character described comprising flexible stiles, slides having projections and rungs extended between the stiles with end portions adapted to be rested above the projections on said slides, each of the slides
10 being provided with a plurality of openings both below and above said projection, through which openings one of the stiles is passed to hold the slide against movement along the stile

and to produce a loop within which one end portion of a rung is held.

5. A device of the character described comprising flexible stiles, slides held to said stiles
20 and having openings through which the stiles are passed to produce loops, rungs extended between the stiles with end portions held within said loops and devices carried by the slides
25 and engaged with the end portions of the rungs to hold the same within the loops.

Signed at Cincinnati, Ohio, this 16th day of November, 1904.

IGNATZ BIHL.

Witnesses:

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