No. 816,896. PATENTED APR. 3, 1906.

I. BIHL.

FIRE ESCAPE.

APPLICATION FILED APR. 10, 1905.

Fig. 1.

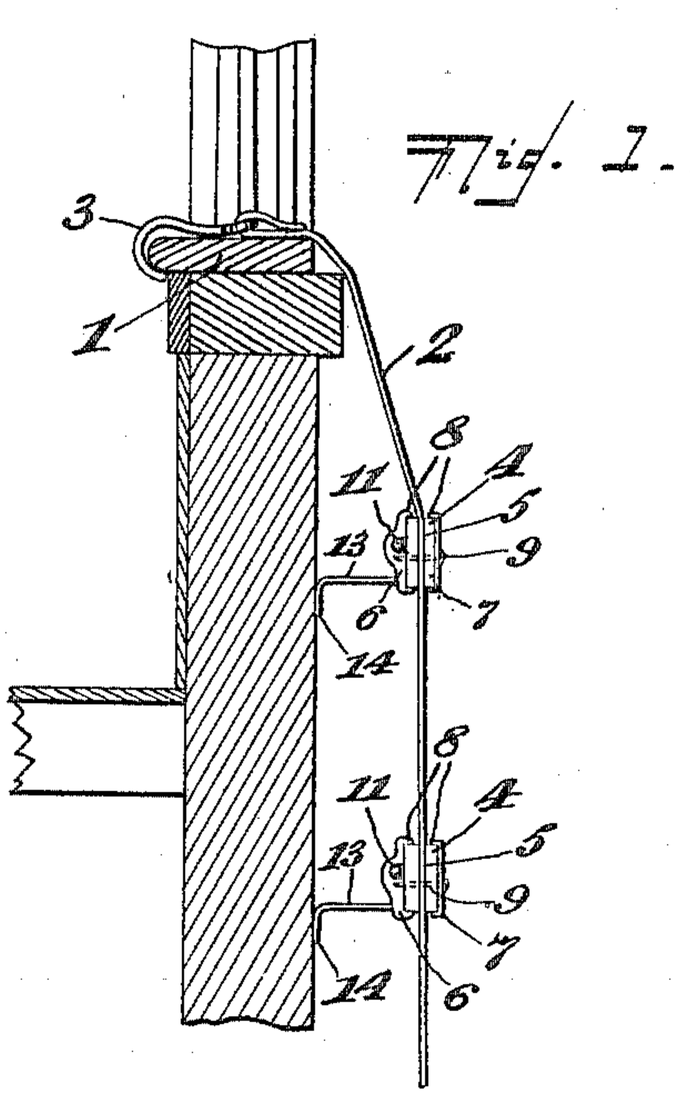


Fig. 2.

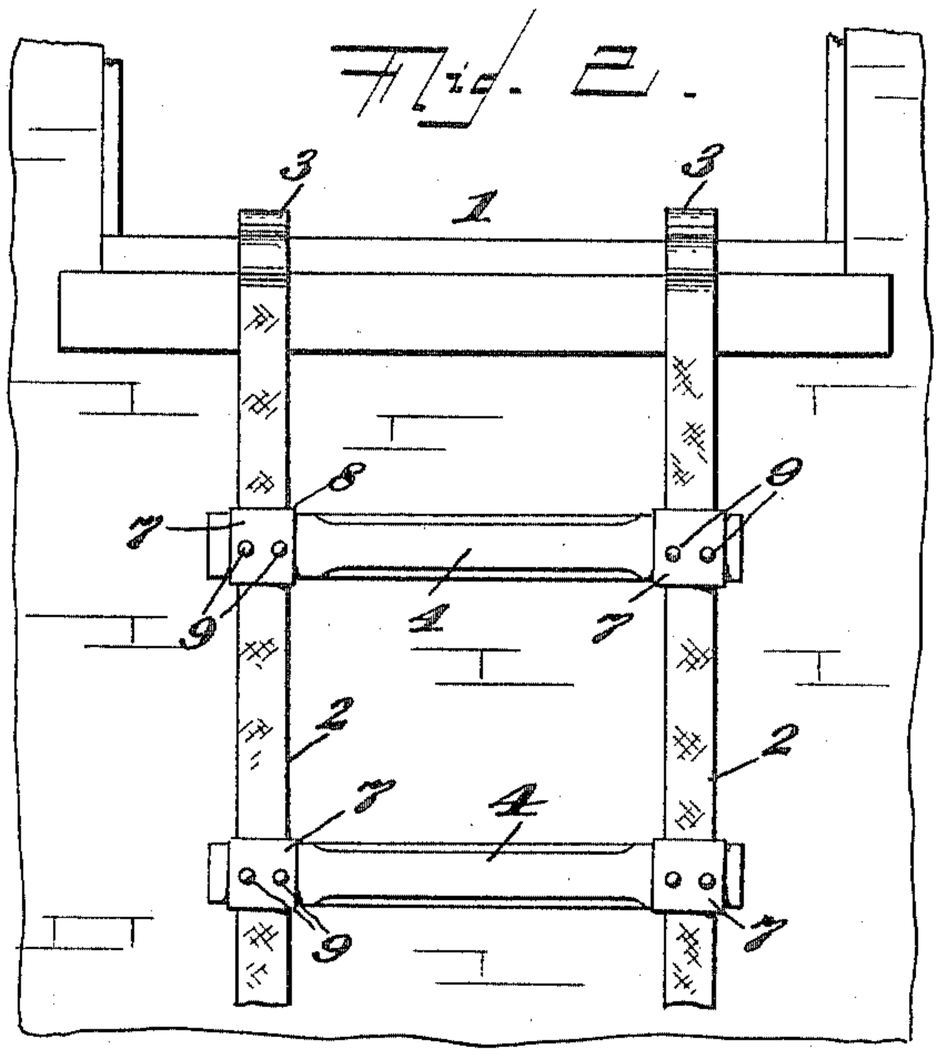


Fig. 3.

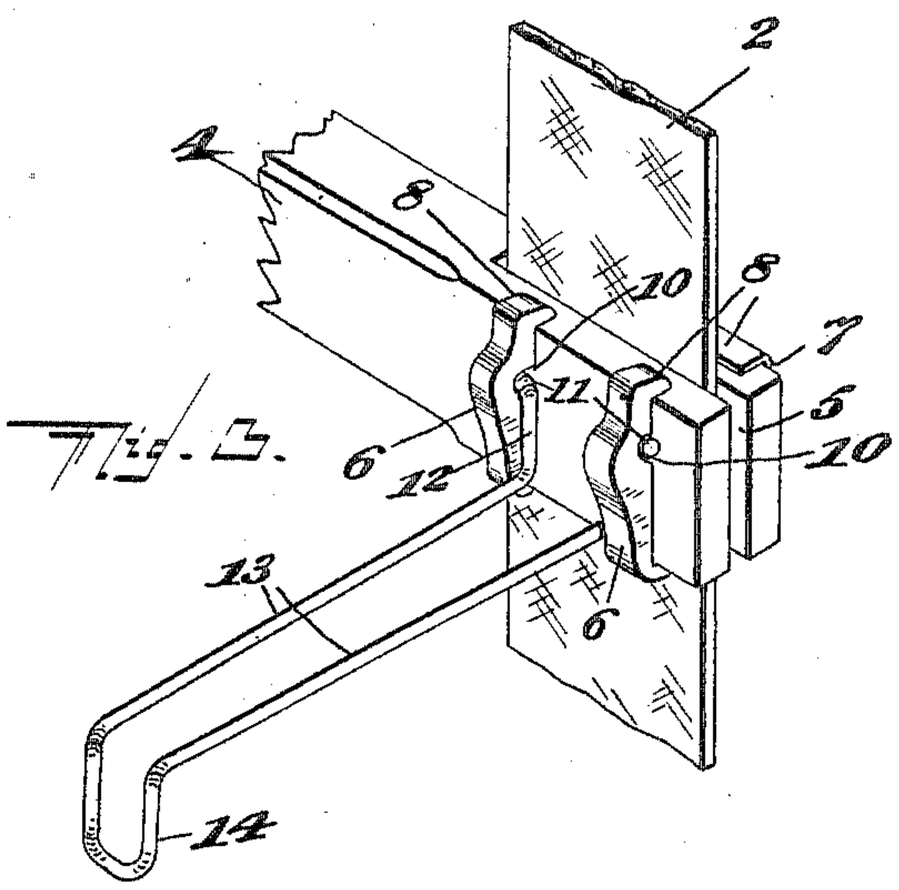


Fig. 4.

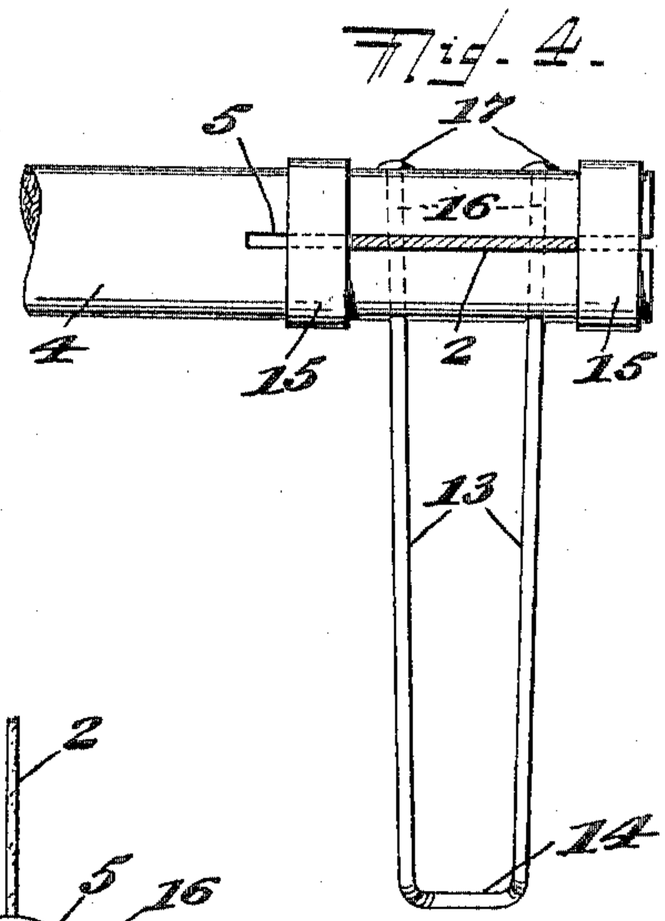
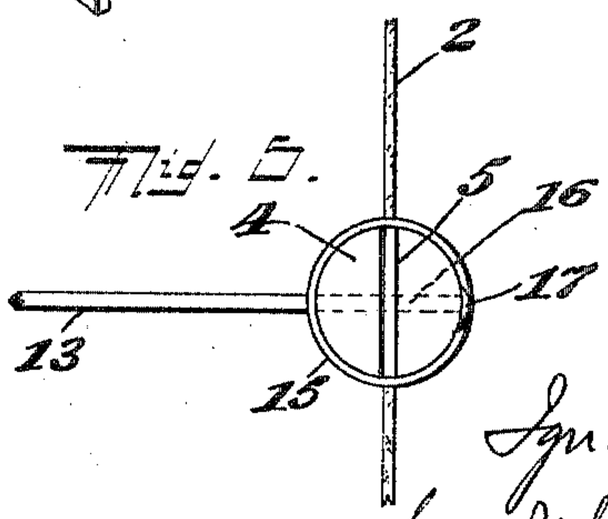


Fig. 5.



Witnesses
Arthur Kline
Simon Bihl

Inventor
Ignatz Bihl,
by John Elias Jones,
his attorney.

UNITED STATES PATENT OFFICE.

IGNATZ BIHL, OF NEWPORT, KENTUCKY.

FIRE-ESCAPE.

No. 816,896. Specification of Letters Patent. Patented April 3, 1906.

Application filed April 10, 1905. Serial No. 254,628.

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 more particularly in that class of such devices which are constructed in the form of flexible ladders adapted for attachment at a window sill or ledge in position to be lowered outside of the building and forming when in such position a means of descent for persons at the upper floors of a burning building; and the object of the present invention is to provide a device of this general character having an improved arrangement of rungs or treads, together with improved and simplified means for holding the same spaced away from the wall of the building and which while affording a safe and convenient means of escape for persons from a burning building is so constructed as to permit of being compactly folded or rolled up into a small bulk when not required for 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 rendered 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 vertically through the wall of a building at and below a window sill or ledge and showing a fire-escape constructed according to my invention applied thereto in position for use. Fig. 2 is a fragmentary face view of said building-wall and window sill or ledge and showing the upper part of the improved fire-escape applied in position for use. In both these views the lower portions of the wall and of the improved fire-escape are broken away for lack of space. Fig. 3 is a perspective detail view drawn to a larger scale and showing part of one of the rungs or treads of the improved fire-escape, together with a portion of one of the flexible stiles or sides of the device, for illustration of the means for connecting said parts and for spacing the rungs or treads from the building-wall when the device is in use. Fig. 4 is a sectional detail view showing a fragment of a modified form of fire-escape also embodying my invention; and Fig. 5 is a fragmentary side view showing the end of the rung or tread and its attaching means for connection with the flexible stile when constructed in the modified form seen in Fig. 3.

Referring first to Figs. 1 to 3, 1 indicates the window sill or ledge at one of the upper stories of the building, to which the improved fire-escape is applied for use, and 2 2 represent the two flexible stiles or side portions of the improved escape, which are preferably formed from strips of webbing or the like of suitable length to reach from the story or floor at which the device is to be attached down to the ground or street level. The flexible sides or stiles 2 2 are provided at their upper ends with hooks 3 3 or other suitable devices for engagement with the window sill or ledge 2 or other projecting part inside the building, so that when the device is in use and is lowered outside of the building-wall there will be no danger of said hooks becoming disconnected to allow persons using the escape to fall. 4 4 indicate the rungs or treads of the improved fire-escape, which are connected at their ends with the sides or stiles 2 2 and which are at suitable distances apart to accommodate the feet of persons using the escape to permit safe and convenient descent from burning buildings, and, as herein shown, said rungs or treads have at their ends kerfs or cuts 5 produced in them and through which the flat webs or strips (of which the sides or stiles 2 2 are formed) are passed. In order to hold the rungs or treads 4 4 with their kerfed or notched ends 5 5 in secure engagement with the flexible strips or webbings 2 2, I provide upon said ends of the stiles or treads 4 4 face-plates 6 and 7, the plates 7 being at the front surfaces of the rungs or treads, while the plates 6 are at the rear or back surfaces thereof. Two of the plates 6 6 are employed behind each of the front face-plates 7, such two rear plates 6 6 being spaced apart from each other, as clearly seen in Fig. 3. The rear plates 6 6 are provided with forwardly-extended pins or projections 9 9, which may be integral therewith or otherwise formed, as desired, and which are passed through the end portions of the rungs or treads 4 4 and are also passed across

the kerfs or notches therein through the portions of the flexible strips or webbings 2 2 held therein, the forward extremities of said pins or projections 9 9 being passed through the face-plates 7 and headed or otherwise secured in front thereof, as seen in Figs. 1 and 2, in such a way as to clamp the strips or webbings 2 2 securely between the forks or halves of the split or notched ends of the rungs or treads, and thereby to form a secure connection between said rungs or treads and said flexible strips or webbings 2 2. The front and rear plates 6 and 7 upon the ends of the rungs 4 4 are formed with integral projections or lips 8 8 at their upper and lower parts and adapted to overlie the upper and lower surfaces of the rungs to prevent splitting of said rungs or turning of the plates thereon, and the two rear plates 6 6 at each end of each rung or tread 4 have correspondingly-formed central enlargements wherein are produced apertures 10 10, as seen in Fig. 3, and wherein are mounted for pivotal movement outward projections or pivotal parts 11 11, produced integrally upon the two ends of a stout wire or rod which is bent to form a spacing device for engagement with the outside of the building-wall to hold the improved ladder or fire-escape spaced away from said wall, so that the feet of the persons descending by way of the ladder may be firmly and conveniently placed upon the rungs or treads. As shown in Figs. 1 to 3, these spacing devices formed of said metal wires or rods have two arms 13 13, spaced apart and directed rearwardly behind the rungs or treads 4 4, the free rear ends of said arms 13 being united by a downwardly-bent connection 14, adapted for direct engagement on the building-wall, while the opposite ends of arms 13 are bent upward parallel with each other and are arranged to pass snugly between the spaced plates 6 6 at the ends of the rungs, as seen at 12, the projecting parts 11 11, which have pivotal engagement in apertures 10 in plates 6, being integral upon the upper extremities of said upwardly-extended parts 12 12. By this arrangement it will be seen that when the spacing devices formed of arms 13 13 are in lowered position, as seen in the drawings, their parts 12 12 will engage upon the rear surfaces of rungs 4 between plates 6 6 to prevent said devices from dropping to a lower position, and in this way the arms 13 are caused to project behind the rungs at about a right angle, so that their connections 14 may engage the wall of the building to hold the ladder spaced away therefrom. When it is desired to fold the ladder or fire-escape up into a small compass, however, the spacing devices may be folded up parallel or substantially parallel with the tapes or webbings 2 2, the pivotal projections 11 11 turning in apertures 10 of plates 6 to permit the device to be compactly rolled or folded up.

In Figs. 4 and 5 a similar construction is shown, wherein, however, the spacing devices are not designed to be folded or pivotally turned relatively to the rungs. In this form of the fire-escape the notched or kerfed ends of the rungs 4 4 are made circular or rounded, and, if desired, said rungs may be so made throughout their whole lengths, said rounded ends of the rungs being designed to receive clamping rings or ferrules 15 15, which are spaced apart and are located at opposite sides of the tapes or webbings 2, passed through the kerfs or notches of said rungs. To hold the rings or ferrules 15 15 in position, they may be indented in a well-known way, and said ferrules are so spaced apart from each other to permit the arms 13 13 of the fixed spacing devices to be passed through the split or notched portions of the rungs between said ferrules or rings, as seen at 16 in dotted lines in the drawings, the forward extremities of said arms being headed or riveted, as seen at 17, to prevent them from being accidentally displaced. In this form of the device the flexibility of the tapes or webbings 2 2 may be employed to permit campact folding or rolling of the ladder or escape without requiring folding of the spacing devices relative to the rungs or treads.

From the above description of my invention it will be seen that the improved fire-escape constructed according thereto is of an extremely simple and inexpensive nature and is especially well adapted for use by reason of its strength and of the compact form in which it may be rolled or folded when not required 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 desire to be understood as limiting myself to the precise form and arrangement of the parts herein shown in carrying out my invention.

I claim—

A device of the character described comprising flexible stiles, rungs having notches through which the stiles are passed, clamping means on the ends of the rungs for holding the same in position upon the stiles and spacing devices formed of rods centrally bent to produce arms and with said stiles connected to the ends of the rungs.

Signed at Cincinnati, Ohio, this 4th day of April, 1905.

IGNATZ BIHL.

Witnesses:
SIMON BIHL,
JOHN ELIAS JONES.