No. 639,480. Patented Dec. 19, 1899.

E. WINSTON.

FIRE ESCAPE.

(Application filed Apr. 24, 1899.)

(No Model.)

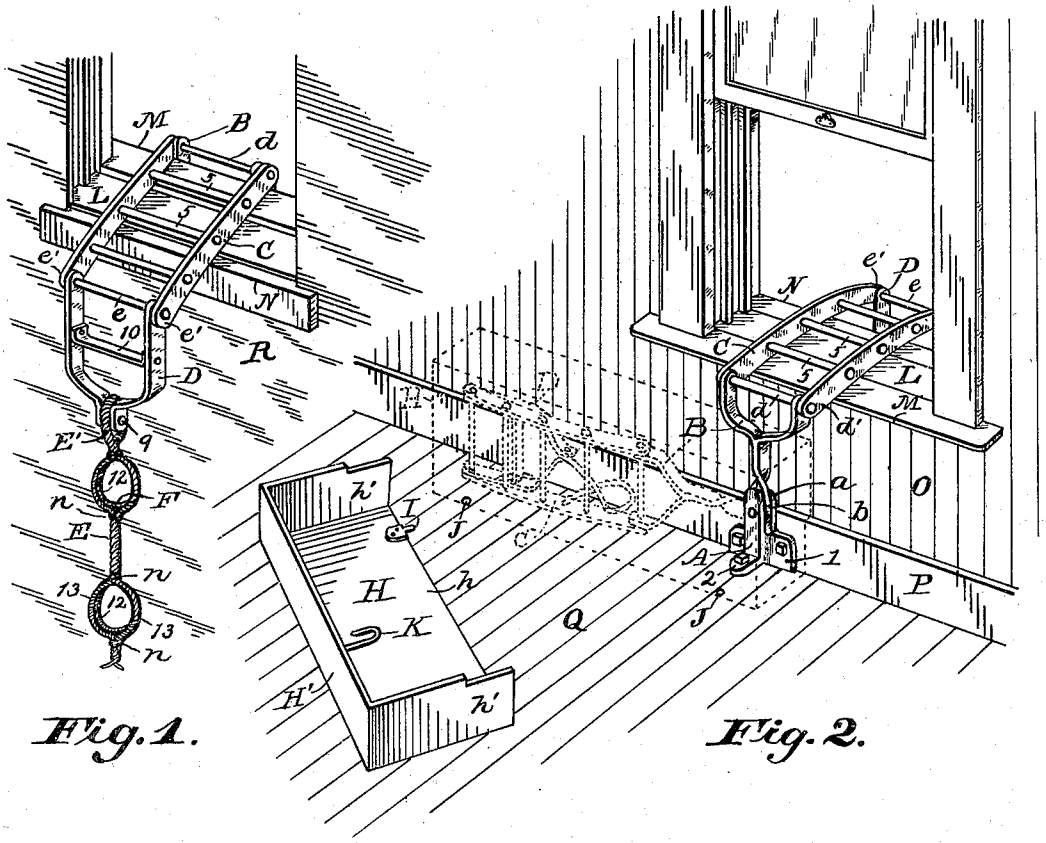


Fig. 1.

Fig. 2.

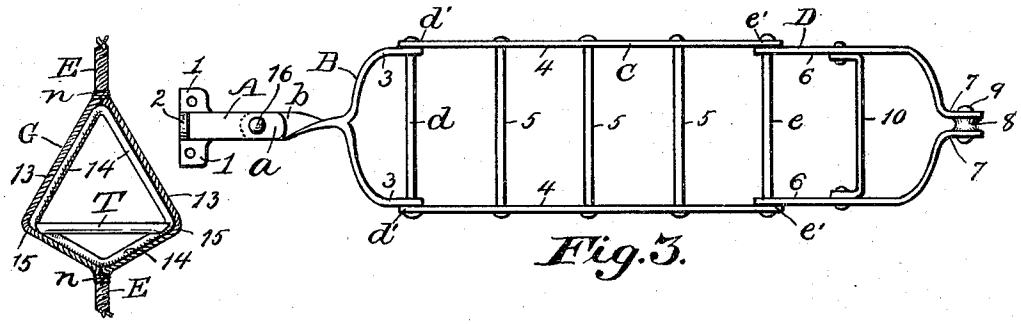


Fig. 4.

Fig. 3.

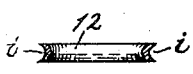


Fig. 5.

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FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 639,480, dated December 19, 1899.

Application filed April 24, 1899. Serial No. 714,246. (No model.)

To all whom it may concern:

Be it known that I, ELLEN WINSTON, a citizen of the United States, residing at Glendale, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Fire-Escapes; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of devices, commonly known as "fire-escapes," which are designed to be placed in buildings permanently, but of the type which are in a measure portable; and it consists in apparatus which is pivotally secured to the building within a room adjacent to the window-opening and comprising connecting jointed parts adapted to be folded into convenient space for storage and also adapted to be unfolded and extended through the window-opening to the outside thereof and a flexible ladder extending from the jointed parts to the ground at the outside of the building.

The invention consists, further, in a casing whereby the device is inclosed when not in use; and it consists, still further, in the novel manner in which the ladder is constructed and in the parts and combination and arrangement of parts hereinafter more fully described and claimed.

My object is to provide a convenient fire-escape of this character which may be so constructed and applied as to be at all times ready for use and complete in itself without involving the necessity of connecting any of the parts thereof when required in an emergency and which may also be cheaply constructed and safe in use, so as to render it desirable and of the greatest utility in the saving of life where a conflagration occurs in large populated buildings. All this is attained in my invention, which is, furthermore, durable and economical in use.

Referring to the drawings accompanying, in which similar letters and figures of reference in the several views designate like parts, Figure 1 represents a fragmentary portion of the outside of a building in perspective, illustrating my invention as it appears projected through the window ready for use; Fig. 2, a perspective fragmentary view of the interior of a room of such building, showing my invention in position for use and also showing in dotted lines the position it would assume when folded away when not in use dotted lines also indicating the position of the case when covering the fire-escape, the case being represented as lying upon the floor out of the way of those who might be making use of the escaping devices; Fig. 3, a top plan view of the connected jointed portions of the escape; Fig. 4, a front elevation of a portion of the ladder as constructed to provide that both feet may rest upon the same level; Fig. 5, a transverse horizontal sectional view of a thimble used in the formation of the ladder.

In practically carrying out my invention I provide a base member A, which is suitably secured to the floor, or to the floor and to the wall together, adjacent to and below the window-opening in the room. To the base an arm B is hinged or pivoted so that it may swing from a horizontal position parallel with the wall O to a vertical position, and the base and this arm together are of suitable length so that the free end of the arm extends slightly above the sill M or bottom of the window-opening. Another arm C is hinged or pivoted at one end to the free end of the arm B, so that it may stand either in a vertical position or lie horizontally through the window-opening across the sills and extend to the outside thereof and beyond a suitable distance to clear the outside face of the wall of the building, and to the free end of this section C is a third arm D, hinged or connected so that it may depend parallel with the outside of the wall and so that it may also fold over against the arm C. At the free end of the arm D a flexible ladder is connected, of suitable length to extend to the ground. From the foregoing it will be understood that the arms D and C may be folded together and the two also be folded down against the arm B and base A, if desired, or they may be extended against the inside of the wall upon the floor in the position shown in dotted lines in Fig. 2 and the flexible ladder coiled upon or about them. The advantage of extending

the device somewhat, as shown, obviates the necessity of occupying much space as measured outward from the wall. The base A may be secured somewhat at one side of the center of the window, so that when the device is not in use most of the space in front of the window is unobstructed. A suitable case H is provided for inclosing and retaining the apparatus when not in use and is so arranged that when an emergency arises it may be hastily thrown from its position, instantly exposing the whole apparatus, which is thus ready to be grasped and made use of without delay. This inclosing case may be designed as a lounge or couch and suitably upholstered, so that its appearance would be ornamental rather than unsightly, or it might be constructed so as to imitate a radiator-casing, and it would be advantageous if it were plainly marked at the front, so as to indicate that it contained a fire-escape, or the front could be made of open scrollwork, so that the fire-escape would be visible.

The foregoing description briefly designates the essential features embodied in my apparatus; but in order to render the manner of constructing the same more clearly in detail and to set forth the particular manner in which I preferably form and combine the several parts, which, however, may be varied somewhat within the scope of this invention, they are further described below.

The base A has ears 1 1, provided with bolt-holes, whereby to secure it to the baseboard P or to the wall O with lag-screws or other suitable bolts, and the foot 2 extends forwardly upon the floor, to which it is suitably secured by a lag-screw or other bolt. The base rises to a suitable height and has a jaw *a* at the upper end, the opening in which is preferably parallel with the wall. The arm B has a lower end *b*, adapted to fit freely in the jaw *a*, each of which has a pivot-hole, and they are secured together by means of a rivet 16. This construction is to prevent the arm B from tilting over from the wall. The upper end of the arm B is preferably bifurcated, having the ends 3 perforated. The arm C is preferably formed of two parallel bars 4 4, rigidly coupled together by transverse bars 5 of suitable number, which are riveted at their outer ends. The side bars 4 4 are preferably curved or arched, so that the ends thereof are somewhat depressed below the center as they lie across the bottom of the window-opening, clearing the parts between the inner and outer sills. The ends *d' d'* of the side bars are hinged or pivoted to the ends 3 3 of the arm B by means of a riveted rod *d*, and the opposite ends *e' e'* are similarly hinged to the perforated ends 6 6 of the arm D by means of a rod *e*. The opposite ends 7 7 of the bars 6 6 are bent so as to nearly approach each other, between which is inserted a thimble 8, and the whole secured together by means of a rivet 9. About midway between the thimble 8 and the rod *e* is a step 10, having its ends riveted to the side pieces 6 6. These connected parts are all made, preferably, of wrought-iron, so that the danger from fracture is eliminated. The several parts are designed to provide the maximum strength with the minimum amount of weight, as the bars or rungs 5 may be made of tubing, and the side bars 4 may be also made of tubing flattened. Obviously the shape of the several parts may be modified slightly, as the ends *d' d'* might be bent in to join the arm B, which could be connected thereto as a single blade instead of being bifurcated. The arm C might also be composed of but a single bar; but it would have the objection that it might shift its position and create distrust when in use, and I therefore construct it substantially as shown for the purpose of providing a stable foundation and also to provide ample means by which one may secure a hold as he passes over it in approaching the ladder at the outside, the weight of which has a tendency to retain all parts in the window-opening firmly in position. Preferably the inner end of the arm C rests somewhat higher than the outer end, as illustrated more clearly in Fig. 1, so that the descent is more easily accomplished. In this case the arm B is drawn against the edge M of the window-sill. Normally it merely clears the same. The outer sill N provides a firm support, while the curvature is such that preferably there should be no bearing upon the middle portion L of the window-casing. When in proper position and the arm C suitably designed relatively to the thickness of the wall, the arm D should be a suitable distance from the outer face R of the wall, so that there would be no interference in descending, but yet that the wall could be reached by the hand or foot of a person upon the ladder.

The ladder E is preferably made of asbestos or permissibly of Manila rope, and its upper end E' is turned over the thimble 8 and securely spliced. At suitable points throughout its length it is provided with thimbles 12, forming steps inserted between the strands 13 13 as linings, which are secured therein by means of suitable binding-rings or by twine *n*. The thimbles are also retained by reason of their peculiar formation, being composed of thin iron which is semicircular in cross-section, so that when formed they provide an exterior groove *i*, in which the parted strands of rope are embedded. These thimbles are preferably somewhat narrow at the top and spread out at the bottom, so that the foot may be easily inserted and withdrawn. They also provide convenient handholds through which the arm may be extended when desired. In some cases I provide a step G of somewhat triangular form, having a lining 14, which has a groove or channel at the outside, in which the strands 13 13 are embedded. At the widest portion 15 15 I insert a straight horizontal bar T, which is secured therein and of sufficient length and strength to provide that both feet

of a person may rest thereon. This in some cases is desirable, and whether either form of step is constructed one may descend the ladder without the use of his hands, as one or both arms may be extended around the ladder and carry a person down with them. Therefore should a timid or weak person be alone in the room and place the fire-escape in position, which is sufficiently light to be accomplished by any one, a fireman could ascend the same from below and carry the person down in safety.

The case H is formed, essentially, of a front *h*, two ends *h' h'*, and a top or lid H', the latter being either secured to the body or hinged thereto, the latter method being preferable, so that the body may be first set up and the ladder then coiled in position and the top then turned over afterward. The bottom of the front *h* is provided with dowels I, which enter apertures J in the floor Q, retaining the case in position, but permitting the same to be hurriedly thrown over on the floor. Other suitable dowels or hooks may also be provided that would not interfere with the ready removal of the case. I preferably attach a hook K to the cover, to which the free end of the ladder may be connected, so that when the case is drawn away there can be no confusion in finding the end of the rope free to be thrown out of the window-opening.

Obviously I may connect the flexible ladder directly to the ends *e' e'* of the horizontal arm C instead of interposing the arm D in the form shown, as, in fact, the arm D may be considered as in effect a part of the ladder, but is preferably constructed as shown, so as to provide a more firm footing for a person when preparing to descend, and thus inspire confidence while one is gradually approaching the necessarily less stable ladder proper.

The practical use of my invention will be understood from the foregoing description but it may be pointed out that it may be prepared for use by the most unskilled person and even under excitement, as the manner of doing so would be obvious, it being only necessary to take the free end of the rope ladder and pass it out of the window until all paid out, then raise the free end of the connected folded arms from the floor to a vertical position, when the weight of the suspended ladder will tend to draw the arms through the window-opening, where they must fall in a proper position for use and cannot be accidentally displaced.

This apparatus is adapted to be placed in each room, or it may be so distributed that one may serve all rooms from the ground to the top floor above each other at intervals across the front of a building, another may serve all floors from the ground up to the floor next to the top in another tier, and another may serve those from the ground up to the floor second from the top in still another tier, and so on, so that on each floor there will be an apparatus for every three or four rooms at least, and if all were put to use there could be a ladder at the outside of every window of the floors nearer the ground. The expense, however, would not be oppressive if one escape were placed in every outside room or bed-chamber, and it will be seen that withal it is not unsightly in appearance.

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

1. A fire-escape comprising a fibrous rope composed of multiple strands parted and spread apart at intervals and metallic thimbles inserted between the parted strands, and a binder at each side of each thimble whereby the thimble is retained and the strands prevented from further parting.

2. A fire-escape comprising a fibrous rope in which are steps or foot-rests formed by means of metallic thimbles each provided with a horizontal bar secured therein and secured between parted strands of the rope.

3. A fire-escape apparatus comprising a fibrous-rope ladder in which are steps formed by means of metallic thimbles secured between parted strands of the rope, jointed supporting-arms for the rope, and a base member to which the jointed arms are pivoted so as to swing radially parallel with the wall to the floor and whereby the arms are prevented from swinging inward from the wall.

4. A fire-escape apparatus comprising a base member provided with an upright portion and an axial pin set therein at an approximate right angle to the wall below a window-opening, an arm connected to such pin so as to swing parallel with the adjacent wall, a fibrous-rope ladder provided with steps formed by means of thimbles inserted between parted strands thereof, and jointed arms connected to such rope ladder and to such swinging arm.

5. In a fire-escape, the combination of a base secured to the floor below a window-opening and provided with a vertical jaw having its opening parallel to the adjacent wall; a vertical arm pivoted at one end in the jaw so as to swing over parallel to said wall only and horizontally to the floor, and having its free end bifurcated; a horizontal arm composed of two parallel bars and transverse connecting-bars, and pivoted at one end to the vertical arm and adapted to extend over and beyond the window-sill at the outside of the wall; a flexible ladder, operatively connected at one end to the free end of the horizontal arm whereby to descend from the window; and a concealing-case mounted to cover such arms and such ladder when collected upon the floor.

6. In a fire-escape, the combination of the supporting-arms, the fibrous rope composed of multiple strands parted and spread at intervals, and the thimbles each having a pe-

ripheral groove and inserted between the parted strands, and a binder at each side of each thimble whereby the thimble is retained and the strands are prevented from further parting.

7. In a fire-escape, the combination with a building, of the base of the fire-escape suitably secured and provided with the pivotal pin set at a substantially right angle to the adjacent wall, the vertical arm pivoted to such pin so as to swing laterally to the floor parallel to such wall, the horizontal arm pivoted to such vertical arm, and the flexible ladder connected to such horizontal arm, substantially as set forth.

8. In a fire-escape, the combination with a building having windows in the walls thereof, of the base of the fire-escape secured beneath a window-opening and at one side of the center thereof, the vertical arm so pivoted to such base as to swing laterally parallel to the adjacent wall and be prevented from swinging in a direction therefrom, the horizontal arm pivoted to such vertical arm, the depending arm provided with the rigid step and pivoted to such horizontal arm, the flexible ladder provided with the inserted thimbles and connected to such depending arm, and the case providing a removable covering for such arms and such ladder when folded upon the floor, substantially as set forth.

9. In a fire-escape, the combination of the base provided with the pivotal pin set transversely with the adjacent wall, the vertical arm provided with the bifurcated upper end and pivoted at the lower end to such pivotal pin, the horizontal arm comprising a pair of parallel bars and connecting transverse bars and pivoted to such vertical arm, the depending arm provided with the rigid steps and pivoted to such horizontal arm, and the flexible non-combustible ladder connected to such depending arm and provided with the thimbles inserted between parted strands thereof, substantially as set forth.

10. In a fire-escape, the combination of the base, the connected vertical arm, the connected horizontal arm, the flexible ladder, and an independently-formed case adapted to be secured removably to cover such escape when folded and provided with a hook whereby the free end of such ladder may be rendered accessible, substantially as set forth.

11. In a fire-escape, the combination of the base; the connected vertical arm; the connected horizontal arm; the flexible ladder comprising a fibrous rope provided with foot-rests formed by means of metallic thimbles or their equivalent device inserted between parted strands of the rope and retained thereby, substantially as set forth.

12. In a fire-escape, the combination of the base, the connected vertical arm, the connected horizontal arm, the connected depending arm, and the flexible ladder comprising a fibrous rope provided with foot-rests formed by parted strands thereof and lined with metallic thimbles provided each with a horizontal bar at the lower portion thereof, substantially as set forth.

13. In a fire-escape, the combination of the base A provided with the jaw *a*, the arm B having the bifurcated ends 3, 3, and pivoted in said jaw, the arm C pivoted to said arm B, the arm D pivoted to said arm C, the rope E provided with the inserted thimbles, and the independent case H adapted to be secured detachably over such escape apparatus, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ELLEN WINSTON.

Witnesses:
FLORIEN GIAUQUE,
CATHARINE HICKEY.