

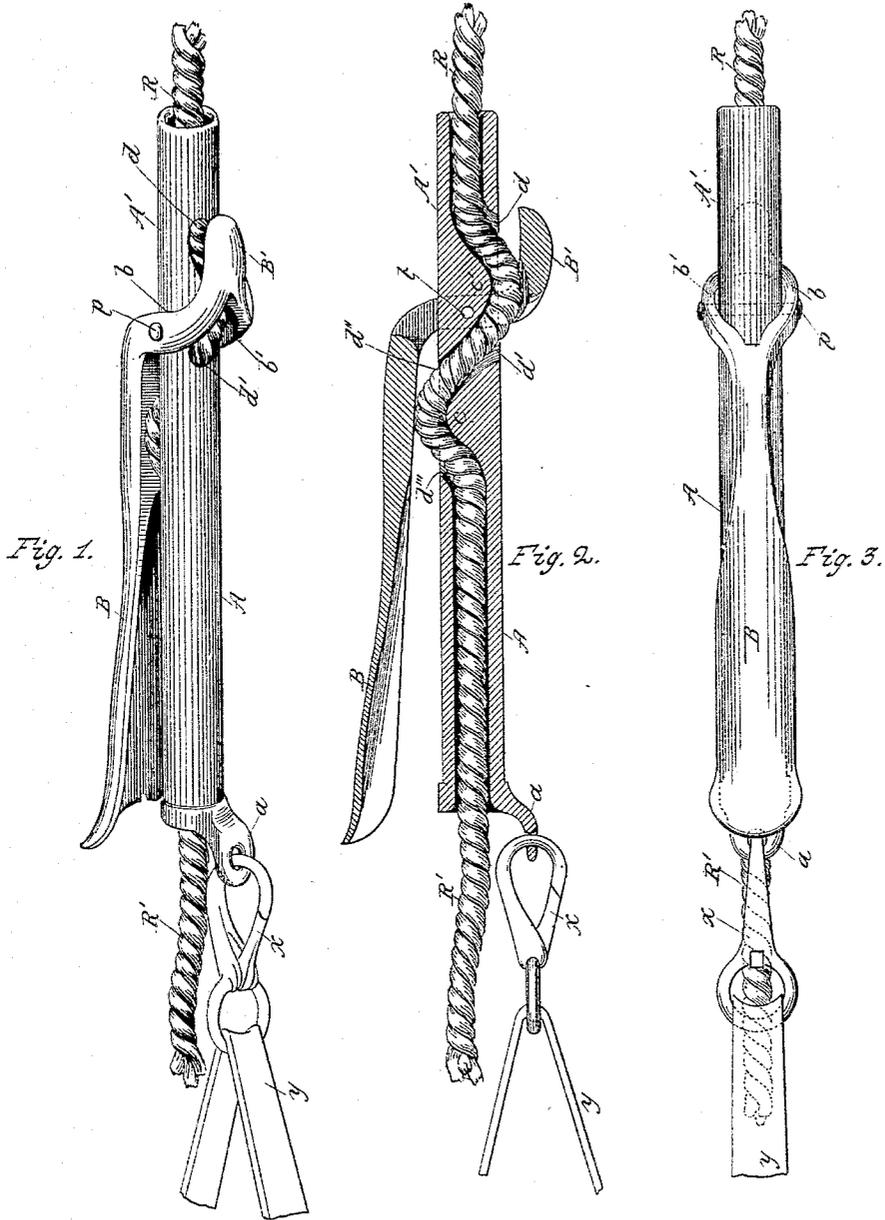
(No Model.)

H. PADDOCK & H. W. MILLER.

FIRE ESCAPE.

No. 300,498.

Patented June 17, 1884.



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HOWARD PADDOCK AND HERMAN WALTER MILLER, OF ALBANY, N. Y.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 300,498, dated June 17, 1884.

Application filed August 21, 1883. (No model.)

To all whom it may concern:

Be it known that we, HOWARD PADDOCK and HERMAN WALTER MILLER, both residing at the city of Albany, county of Albany, and State of New York, have invented new and useful Improvements in Portable Fire-Escapes, of which the following is a specification.

Our invention relates to improvements in fire-escapes in which is employed a rope with a seat, in which the person descending is supported, mounted on the rope by means of a friction barrel, sleeve, or tubular piece, whose descent upon the rope is controlled by a lever; and the object of our invention is to provide an instrument by which a person may safely descend from a building or from an elevation by means of a rope without danger of injuring his hands by contact with the rope, and without danger of injuring any part of his person by contact with the rope or the side of the building, and by which with one hand the rapidity of his descent may be readily controlled and his progress in descending may be partially or wholly arrested at will at any point along the length of the rope, leaving his other hand and his feet and legs free to assist in protecting him from injury against the building or otherwise in his descent; and its object, also, is to provide this means of descent in a small, simple, light, compact, and portable form, without impairing the strength, durability, and effectiveness of the instrumentality, so that it may be easily carried from place to place about the person of the user, or in his hand-valise, and always be ready for immediate and effective use in emergencies.

Our invention also relates to that class of fire-escapes which consist of a barrel or tubular piece to slide upon the rope by which the descent is to be made; and it consists in the several improvements hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a perspective view of our invention. Fig. 2 represents a vertical section showing the rope taking a devious or double-ogee course through the barrel, and Fig. 3 is a plan of the invention, looking toward the handle or long arm of the angled or forceps lever. In each figure only enough rope is shown to illustrate the

operation of the descending apparatus, and the strap or loop seat or support is taken off except enough to show the manner of mounting or attaching it to the barrel.

In the drawings, A A' is the barrel, pipe, or tubular piece having a devious or double-ogee bore or hole through its length, and B B' is a double angled lever mounted on the barrel by means of the fulcrum-pivot *p*.

b b' are the two parts into which the lever is divided and swelled or curved to circumscribe the barrel A A' and where the lever is pivoted to A A'.

R R' is the rope upon which the barrel slides. *a* is an attachment to the barrel, having an eye, to which the detachable strap or rope seat or support *y* is attached by the hook or snap *x*.

We construct the barrel or tubular piece A A' of any suitable length and material, but preferably about one foot in length and of malleable iron, and pierce it with a bore or core it out, as shown in Fig. 2, leaving two protuberances, *c* and *c'*, in the course of the bore, which serve to add strength to the barrel, and to cause the rope, in following the course of the bore, to emerge from within the barrel to its surface. The protuberances *c* and *c'* could obviously be inserted in a tube having a straight bore, and fastened at suitable places within the tube, and holes could be made in the side of the tube at suitable places, as at *d d'' d'''*; but we prefer to core out the barrel, as shown, so that the rope shall take a devious course through the barrel. The rope enters at the top of the barrel A', and then is carried to the surface of the barrel at *d*, and re-enters at *d'* at a suitable distance from *d* to expose the rope for a short space along the length of the barrel and over the part *c'*. It then passes diagonally across through the barrel to its opposite side and emerges at *d''*, and then, as before, re-enters at *d'''* and passes down through the barrel A, making, as shown in Fig. 2, a double-ogee curve in its passage or course through A A'. Obviously the rope could be brought to the surface only once, or more times than twice; but we prefer the construction as shown. By this construction the rope emerges on opposite sides of the barrel, to be exposed to the action of the lever B B'

equally above and below its fulcrum p , and the rope is thereby prevented from being too severely strained or frayed or caught in too sudden or quick or cramped turns in its course, while at the same time the friction between the barrel and the rope in this construction is sufficient to prevent the apparatus from descending the rope by its own weight.

Upon the outside of the barrel $A A'$ we mount an angled friction-lever, $B B'$, constructed of suitable material, but preferably steel. This lever operates along the length of the barrel, and is swelled in two branches to encircle the barrel at $b b'$, and unites again in B' , which is its short arm. It is so pivoted at p to the barrel and so angled, as shown in all the figures, that it plays parallel with the vertical direction or length of the barrel, like one arm of pinchers, and so that the arms of the lever shall cover the parts of the rope exposed on the surface of the barrel, the arm B covering one part of the rope over c , and the arm B' covering the part over c' , so when the lever is operated these arms $B B'$ in their lateral motion toward and away from the barrel play perpendicularly upon the rope where it is exposed on the barrel. By this construction it is obvious that the rope is made to pass between the surface of the barrel at c and c' and the lever-arms B and B' , as if between two sets of jaws or clamps, so that when the lever is operated and pressed toward the barrel it impinges upon the exposed rope and holds it against the barrel as if it were clutched or clamped to the barrel, and the barrel, with all its attachments, is prevented from descending the rope, or is allowed to descend more or less rapidly, according to the pressure exerted on the lever by the person in the seat, who operates the lever with his hand. The outer side of the lever-arm B is convexed, and its inner side, toward the barrel, is concaved, so that when operated it can be pressed well down toward the barrel, and so the operator can readily grasp the barrel and lever in his one hand to operate them.

Upon the barrel we mount an attachment, a , with an eye in which a detachable hook or snap can be fastened, so as to sustain the strap, webbing, or looped seat y , in which is supported the person descending. The person is supported herein, in the usual well-known way, by thrusting his leg or legs through the loop, or by standing in it. While thus supported, he can easily grasp the barrel and lever with one hand. The descending apparatus is prevented from running off the end of the rope by knotting the rope at the end, or by some similar means; and any length of rope may be used suitable to the distance to be descended.

Obviously the size of the rope may be varied according to the work to be required of it in sustaining one or more persons, and the size of the barrel may be made correspondingly large or small.

The lever-arms B and B' may be slightly grooved where they impinge on the exposed rope, so that when operated the rope will not be squeezed out from under the lever side-wise, and the surface of the barrel over which the rope passes may be slightly grooved for the same purpose.

Another modification within the spirit of our invention is to construct the arm B' of the lever similar to the arm B and increase the length of the barrel A , so that the lever could be operated at either end of the barrel, and to attach the seat-connection a to the barrel at some convenient point midway along the length of the barrel, so the apparatus would operate equally well whichever end of the barrel was uppermost on the rope. In either construction the apparatus will perform its object, no matter whether the lever-handle is toward the operator or away from him, or whether one end of the barrel is uppermost on the rope in making the descent.

The mode of operating our invention is to attach one end of the rope $R R'$, which must be of suitable length, to some part of the building to be descended—such as the chimney, or a hook in the wall, or within a window, or to a stick placed across the window, or to a bed within a window, or to some stable and firm attachment—and let the other end fall to the ground. The person descending mounts into the seat at y , and grasps the lever B and the barrel A with one or both hands, both to steady himself and to operate the lever. By relieving the lever of pressure, by loosening his grasp thereupon, the weight of the person descending in the seat will cause the apparatus to slide down the rope, and pressure on the lever will, by increasing the friction of the parts upon the rope, decrease the speed with which the apparatus and its burden descends, and according to the degree of pressure on the lever exerted by the operator the progress of his descent can be at will hastened or retarded, or wholly stopped, so he may descend to the ground or only from one story in a house to another; and since only one hand need be employed to easily and readily control his descent, his other hand and legs and feet can be used in directing his descent, to guard his person from injury against the building or otherwise, or from contact with the rope. Obviously also the rope may be so held from below that the descent would be made on the rope slanting from its point of attachment to the building, so the one descending would escape injury from fire burning lower down about a building than the point from which he begins his descent.

The friction caused by the contact of the rope with the barrel in passing through it in the double-ogee curve described prevents the descending apparatus from moving down the rope by its own weight, so when one person has descended upon it, if the rope is drawn up from any point above the apparatus, the

apparatus will be drawn up also, and may then be readily pushed back along the rope and again be operated or used by a second person to descend in; or the apparatus may be placed
 5 at a proper and suitable point along the rope and be lowered from above to the window in a lower story, from which a person may make his escape. Many other employments for our invention readily suggest themselves, for the
 10 accomplishment of which our invention is suitable and efficient.

The barrel alone may with the rope be employed to make the descent by the operator grasping the rope at R' and pressing it side-
 15 wise across the mouth of the barrel with one hand, and this is accomplished readily in this manner from the retarded motion of the barrel on the rope on account of the double-ogee course the rope is made to take in the barrel.

20 These above-described improvements in fire-escapes enable the machine to be compactly made in all its parts, to be made light, and to be easily carried with or about the person, and give to the parts great efficiency, durability,
 25 and economy of construction, and enable the operator to have full and easy control over the operation of the machine while he is descending supported in its seat.

The mode of operation of our improvements
 30 in fire-escapes and the advantages attained by the organization of the mechanism herein recorded will be obvious to those skilled in the art from the foregoing description without further explanation.

35 We do not broadly claim friction-levers or clamp-brakes in combination with a rope on which the descent is made, but limit our claims to instrumentalities substantially such as herein are specified.

40 We claim as of our invention and desire to secure by Letters Patent—

1. In a portable fire-escape, the combination

of the rope R R', the friction-block A A', provided with the sinuous passage $d d' d'' d'''$, the
 45 central pivot, p , and the double-armed lever B B', substantially as described.

2. In a portable fire-escape, the combination of the rope R R', the friction-block A A', provided with the sinuous internal or double-ogee
 50 passage $d d' d'' d'''$, extending to the surface at opposite sides of the block, and the double-armed pivoted lever B B', having two branches encircling the block and reunited at their outer
 55 ends to bear upon the rope R R', substantially as described.

3. In a portable fire-escape, the combination of the rope R R', the tubular friction-block A A', provided with the sinuous groove $d d' d'' d'''$,
 60 and the double-armed pivoted lever, one arm, B', of which consists of two forked branches, $b b'$, reunited and bent inwardly at their outer ends, whereby the arm B' comes in frictional
 65 contact with the sides and top of the rope section occupying the space $d d'$, substantially as shown and described.

4. The combination, substantially as described, of a barrel, A A', a lever, B B', a detachable support or seat, and a rope, for the
 70 purposes specified.

5. The combination, with the grooved friction-
 75 block, of the double-armed pivoted brake-lever having separate bearing-surfaces at opposite sides of the block, whereby a double frictional contact is secured between the brake and rope, substantially as described.

In testimony whereof we have hereunto set
 our hands in the presence of two subscribing
 witnesses.

HOWARD PADDOCK.
 HERMAN WALTER MILLER.

Witnesses:

B. I. STANTON,
 EDWIN G. DAY.