

(No Model.)

J. EVANS.
FIRE ESCAPE.

No. 554,587.

Patented Feb. 11, 1896.

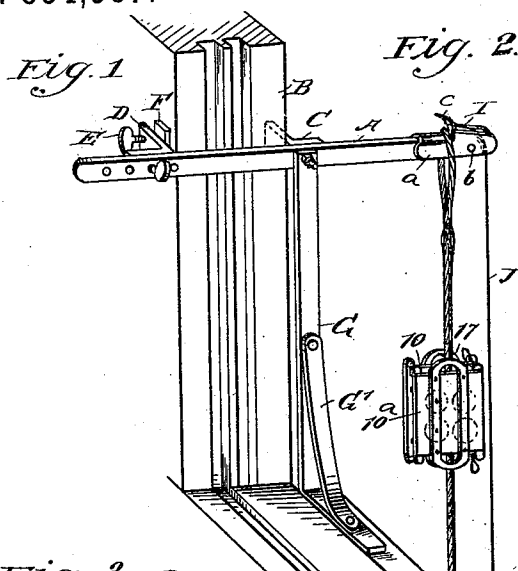


Fig. 2.

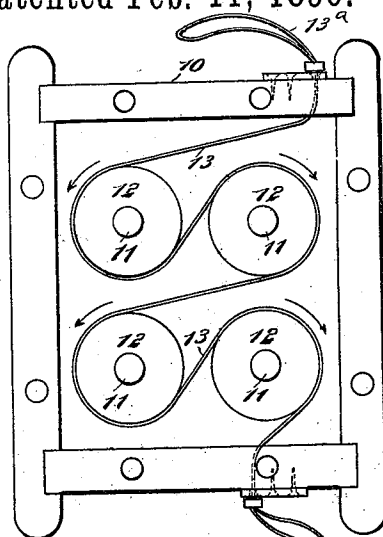


Fig. 3.

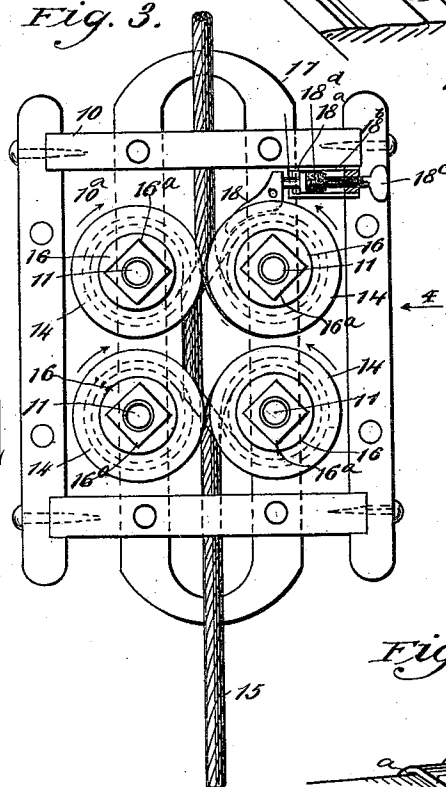


Fig. 4.

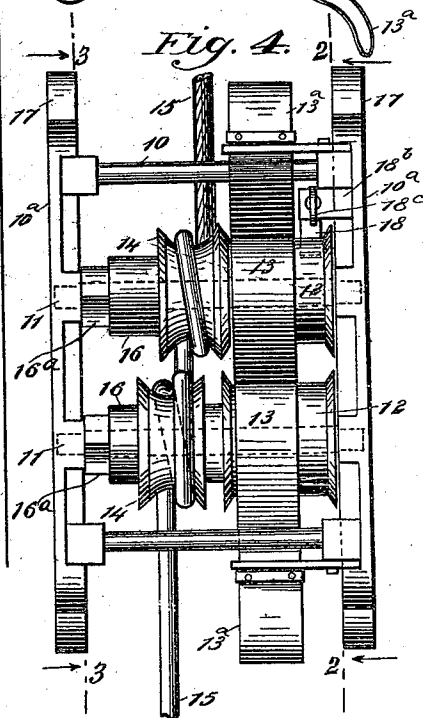
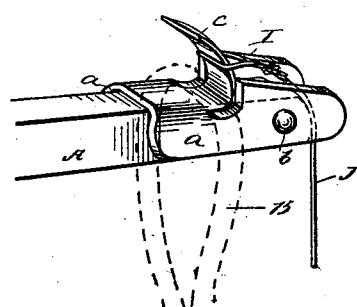


Fig. 5.



WITNESSES:

Edward C. Rowland.
Wm. L. Patton

INVENTOR

J. Evans
BY *Munn & Co*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN EVANS, OF DENVER, COLORADO.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 554,587, dated February 11, 1896.

Application filed April 25, 1895. Serial No. 547,146. (No model.)

To all whom it may concern:

Be it known that I, JOHN EVANS, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and Improved Fire-Escape, of which the following is a full, clear, and exact description.

This invention relates to an improved fire-escape, and has for its object to provide a simple, inexpensive, and portable device of the indicated character which will afford means for the safe and expeditious descent of one or more persons from a burning building, and also be adapted for the release of the lowering device after escape of persons has been effected, so as to preserve the improved fire-escape for subsequent use should occasion require its employment.

The invention consists in the construction and combination of parts, as is hereinafter described, and indicated in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the window-frame of a building broken away, an improved attachable supporting-jack that embodies features of the improvement, and the fire-escape proper, hung from the jack ready for use. Fig. 2 is a diagrammatic side view of the fire-escape, with one wall removed, on the line 2 2 in Fig. 4, showing the construction and arrangement of a friction-brake device that is part of the improvement. Fig. 3 is a side view of the device, having the opposite side wall removed, on the line 3 3 in Fig. 4, showing the ends of sheaves or pulleys whereon the rope used for descent from a building is imposed and a supplementary brake device for stopping the traverse of the said rope until the main brake can be brought into service. Fig. 4 is a side view of the device in direction of arrow 4 in Fig. 3, showing the sides of the rollers for the main friction device, an end view of the supplementary friction device, and the rope-sheaves engaged by the hanging rope, shown broken; and Fig. 5 is an enlarged perspective view of a detail of construction, showing the tripping-head for the window-jack whereon the hanging rope and fire-escape device are suspended for use.

The portable device, which embodies main

features of the invention, consists of a preferably rectangular frame 10, having such dimensions as will adapt it to receive and properly sustain working parts within its inclosure, and yet be light and capable of convenient portage or stowage in a trunk or grip-sack, without occupying any considerable space, as it is the intention to provide a safe fire-escape for travelers to carry with them, so that in emergency the person so provided will have at hand a reliable means for speedy escape from the upper story of a burning building. There are four metal spindles 11 furnished that are journaled at their ends in opposite sides of the frame 10, the said side walls 10^a, which are constructed of metal, being oppositely perforated to receive said journal ends.

The spindles 11 are properly located to permit them to each receive a friction-roller 12, which rollers are preferably formed of vegetable fiber, compressed paper or other similar material that is very strong and not liable to split or wear away unevenly or become glazed and slippery in service. The ends of the friction-rollers 12 are formed of metallic disks secured on the body of each roller, so that they will become a part of the said rollers and afford means for securely attaching the rollers on the spindles, keys being employed or other provision being made for attaching the disks to the spindles. A sufficient length is afforded the rollers 12 to permit the engagement with one of the rollers, near its outer end, of the shoe on a supplementary brake, which will be hereinafter described, and alongside of said brake-shoe the main friction-band 13 has contact with all of the brake-rollers 12.

Referring to Fig. 2, it will be seen that the band 13 passes partly around each roller in direction of the arrows, and its ends are extended through slots in the frame 10, terminating in looped handles 13^a outside of the frame, these handles being larger than the slots through which the band passes, and therefore serve as stops or abutments to prevent withdrawal of the band. A slight looseness is allowed in the contact of the band 13 on the rollers 12, so that normally there will be no friction produced, an enforced contact of the band on all the rollers resulting if one end or handle-loop 13^a is pulled upon. The sheaves 14 are of like form and dimensions,

each having a grooved periphery, and the sheaves are located and secured one on each spindle 11. The hanging rope 15 is of a strength that will afford safe descent for one or two persons at a time, and should be made of pliable material, so that it will readily wrap on the sheaves 14, and, as indicated in Figs. 3 and 4, the rope passes into the frame between a pair of the sheaves at one end of said frame, is extended from the lower side of the first sheave it engages with, outward, upward and then around the first sheave to engage the paired sheave on its lower surface. The rope trends around the second sheave and thence down on the inner side of its periphery to contact with the sheave directly below it, around which the rope passes from the inner and lower side of the periphery, so as to permit the rope to pass from the third sheave onto the fourth and last sheave, around which it is wrapped, and depends between the lower pair of sheaves, the trend of the rope being clearly represented by dotted lines in Fig. 3 and the respective rotary movement of the sheaves by curved arrows in the same figure.

In Fig. 4 it will be seen that what for convenience may be termed the "upper pair" of sheaves are secured on the spindles 11 nearer the brake-rollers 12 than are the lower sheaves, whereby the rollers are given an echelon arrangement, this arrangement being made to enable the disposition of the rope on the sheaves, so as to avoid an excessive cramping or lateral friction of the rope-coils on each other when the device is in use.

Preferably sleeve-like washers 16 are located on the spindles 11 to occupy the space between the sheaves and side plates or walls 10^a of the frame, but these may be omitted if the frame is made of a width to only receive the rollers and sheaves between the side walls of said frame. When washers are used, the jam-nuts 16^a may be screwed on the spindles and have contact with the washers to aid in holding them secured.

To the upper and lower cross-bars 10 at opposite sides of the frame of the device are secured by means of bolts or other suitable means links or braces 17, consisting each of two side pieces extending vertically of the frame and forming bearings at their central portions for the ends of the shafts 11, the extremities of said side pieces being united by curved portions extending beyond the ends of the frame and adapted to receive a connection or rope to support a person using the device.

The main brake device being inoperative until the band 13 is tightened on the rollers 12, it is essential that means be provided to enable the user of the fire-escape to prevent a movement of the frame 10 along the rope 15 until the operator is ready to descend from a point without a burning building. To this end a smaller supplementary brake device is provided, consisting of a shoe 18, that is pivoted on one frame side plate 10^a, so that its

concave surface may have contact with the adjacent periphery of one brake-roller 12, as indicated in Figs. 3 and 4, the shoe having a toe projected away from the roller, so that a pusher-bolt 18^a, that is loosely held in a suitable case 18^b, fastened on the frame 10, may press against said toe and rock the concave face of the shoe against the brake-roller.

The end of the case 18^b, opposite from that occupied by the pusher-bolt 18^a, is perforated and threaded to receive a jam-screw 18^c, and between the inner end of said screw and the pusher-bolt a preferably gum spring 18^d is introduced, as shown in Fig. 3.

When it is necessary to apply the supplementary brake which has been described, the jam-screw 18^c is screwed against the spring 18^d, which presses the shoe 18 upon the face of the roller it is to frictionally engage, and as the spring will slightly yield the pressure on the brake-roller may be gaged to hold it from rotation or permit a gradation of pressure thereon, or the supplementary brake by a proper recession of the jam-screw can be relieved of all pressure on the brake-roller it contacts with.

When there is no provision for the convenient hanging attachment of the improved fire-escape outside of an elevated window in a building, and it is necessary to employ the device that has been described for descent from an upper window, the person desiring to descend may connect the hanging rope 15 by one end to any substantial article or stable portion of the building within the room having said window—as, for instance, the end of the rope may be tied to a bedstead or any other heavy article of furniture, or a heavy trunk may be utilized for securing the end of the rope so as to permit its main portion to hang pendent from the window-sill.

Should a building be fitted for using the fire-escape, a crane-like attachment may be provided at each window for suspension of the hanging rope 15; but to avoid such fixtures that may be considered unsightly it is preferred to employ the device shown in Fig. 1, consisting essentially of the following-described parts: A hanger-arm A is provided, consisting of a metal bar of sufficient length to project a short distance outside of the window-casement B, a knee-piece C being removably secured by a bolt on one side of the arm, so as to afford an abutment for contact with the outer side of the casement, and said piece may be shod with gum to prevent injury to the woodwork of the window. Another knee-piece D is movably secured on the inner extension of the hanger-arm on the same side with the other piece C, and a pressure-screw E adjustably engages the knee-piece D, pressing on a clamping-plate F, that is seated on the inner face of the window-casement. From the hanger-arm a right-angular brace G downwardly extends and is seated on the window-sill, this brace affording support to the hanger-arm in service, and this brace is fur-

ther strengthened by a brace G'. On the outer end of the arm A a tripping-head I is loosely secured, which is designed to receive the hanging rope 15 and afford direct support thereto.

As represented in Figs. 1 and 5, the head I consists of a grooved block, which is preferably bent from a piece of sheet metal, affording two parallel flanges *a* that loosely embrace the outer end portion of the hanger-arm A and are thereto pivoted near its outer terminal, the said pivot *b* being also near the outer extremities of the flanges engaged thereby. An integral hook *c* is turned up between the flanges *a* and projects somewhat rearwardly over a depression made in the upper or saddle wall of the tripping-head, and, as indicated by dotted lines in Fig. 5 and full lines in Fig. 1, the looped end of the hanging rope 15 is hung over or upon the tripping-head, resting below the hook *c*, which is a short distance rearward from the pivot *b*, the hanging rope being thus disposed in pendent condition without and near to the building engaged by the supporting-jack that has the arm A for a principal member. On the hook *c* a small tripping-cord J is hung by a loop formed in its end, the cord extending over the outer rounded end of the hanger-arm, and thence hangs to the ground.

For effective use the hanging rope 15 should have sufficient length to permit its lower end to nearly reach the ground when said rope is hung from the tripping-head I, and the lower end of the rope should also be looped. When occasion requires the immediate use of the fire-escape, the "jack," that may be stood in a corner of the room when not in use, is speedily arranged and secured for service in the open window, as before explained, and the hanging rope, that may have been neatly coiled in a compact roll, is hung by one looped end on the tripping-head I, as shown in Fig. 1, the improved fire-escape device then being clamped by its supplementary brake, so as to hang near the open window for a convenient engagement therewith of a strap or other girdle that may encircle the person of the user.

It is designed to furnish, in connection with the improved fire-escape device, a safe harness to be used for lowering timid persons, but this need not here be described, as it is not part of the present invention.

Assuming that the person who is to descend from the elevated window is securely hung from the frame 10 by connection with the looped lower ends of the links 17, the user then grasps the lower looped end of the brake-band 13 and draws upon it, simultaneously releasing the smaller brake device, if this has been set to completely lock the engaged brake-rollers 12 from rotation. The operator can by graduating draft strain on the band 13 slowly lower himself to the ground, or as speedily as the urgency of the occasion may require.

Where there are several persons and baggage to be sent down on one fire-escape of the improved construction, then the first person lowered releases him or her self, as the case may be, and the operator at the window draws up the rope, along with the fire-escape. The looped ends of the rope are now reversed, and the end that was lowermost is hung on the tripping-head I, and the operation of sending down an individual is repeated, the reversal of the fire-escape device to dispose the ends as necessary being permitted by its construction; and it is evident that if the device is used with coolness, and danger is not imminent from the nearness of the flames, a number of individuals may be successively lowered, or two may be sent down together, and finally baggage, such as trunks, may be lowered with the device.

If it is permissible by circumstances, the fire-escape may be used, as has been explained, for the successive lowering of more than one person, but it is best that one of the improved fire-escapes be provided for each room of a building, or be the individual property of a traveler, who can save himself and his baggage in case of fire where ordinary avenues of escape are cut off.

After the person has descended the tripping-cord J may be pulled, which will tilt the head I so as to reverse the position of the latter and strip the long loop of the hanging rope 15 from off the end of the arm A, the rope and cord then being adapted for complete release if draft strain is applied at their lower ends, which will allow the fire-escape and rope to fall, thus preserving the same for subsequent use, if needed.

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

1. In a fire-escape, having a hanging rope and a movable apparatus adapted to slide on said rope, of a rope-suspending device, comprising a hanger-bar adapted for clamped connection with a window-casement, the outer end of said bar having a pivoted tripping-head whereon the hanging rope and a tripping-cord may hang, and the rope with the fire-escape device be released by tilting the tripping-head by the tripping-cord, substantially as described.

2. In a fire-escape, the combination of a frame having cross-bars at opposite sides of its upper and lower parts, links secured to said cross-bars and consisting each of two parallel side pieces extending between said cross-bars and curved loops projecting beyond the ends of the frame, and rollers having shafts journaled at their ends in the central parts of said side pieces, substantially as set forth.

JOHN EVANS.

Witnesses:

JAMES A. RIGHTSELL,
J. W. KERN.