

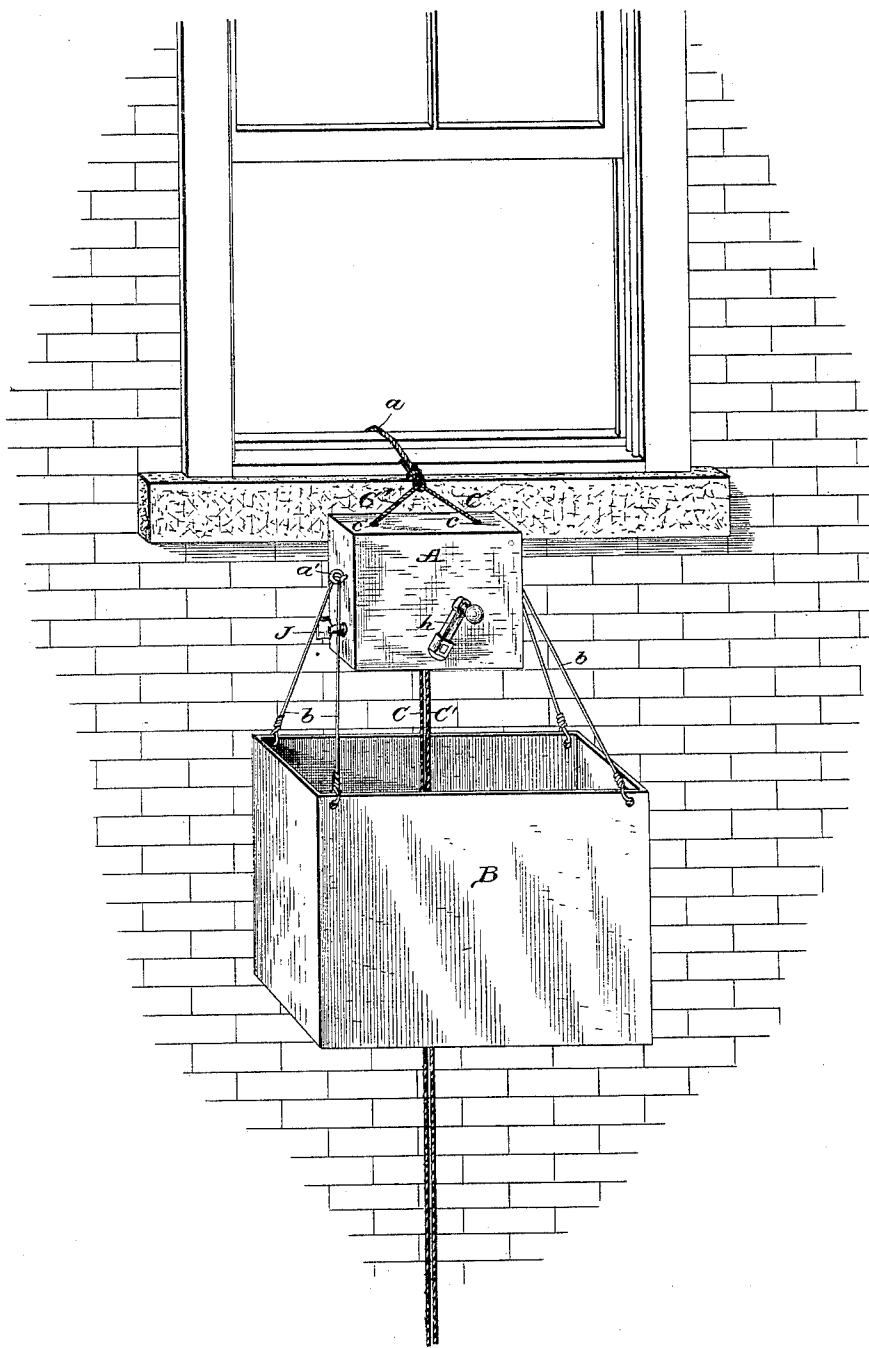
(No Model.)

2 Sheets—Sheet 1.

T. J. BAKER.
FIRE ESCAPE.

No. 394,149.

Patented Dec. 11, 1888.



Witnesses.

Percy L. Bowen.
Ed. Bryant.

Fig. 1.

Inventor,
Theodore J. Baker.

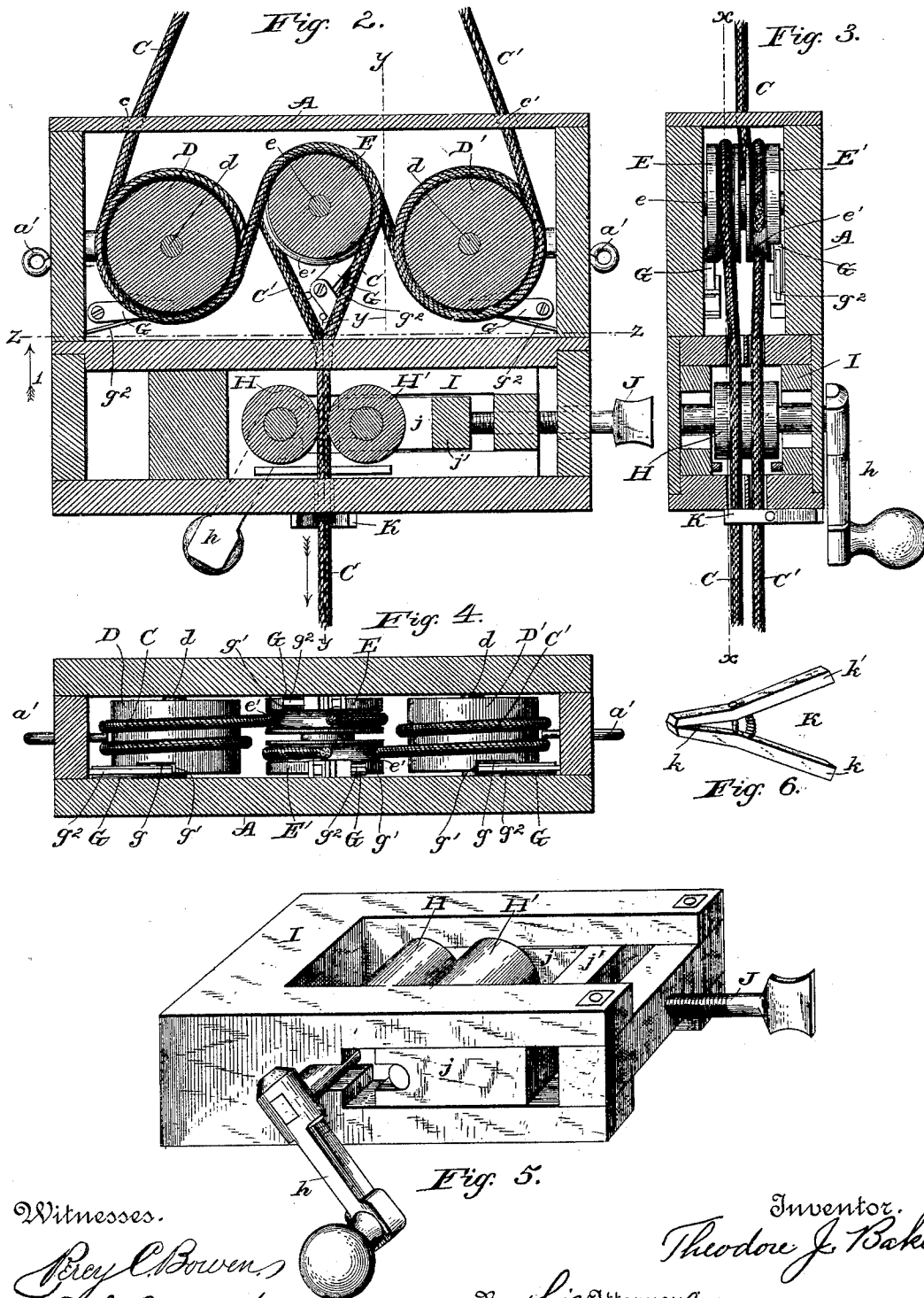
By his Attorneys

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Theodore J. Baker

By *his* Attorneys,

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UNITED STATES PATENT OFFICE.

THEODORE J. BAKER, OF SALT LAKE CITY, UTAH TERRITORY, ASSIGNOR OF
ONE-HALF TO ABNER J. STANCHFIELD, OF SAME PLACE.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 394,149, dated December 11, 1888.

Application filed August 17, 1888. Serial No. 282,970. (No model.)

To all whom it may concern:

Be it known that I, THEODORE J. BAKER, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and Territory of Utah, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby 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.

My invention relates to improvements in fire-escapes; and it consists of the peculiar combination of devices and novel construction and arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

The object of my invention is to provide an improved fire-escape by which a person in a burning building or structure can readily and quickly descend from an elevated room or apartment and be able to control the speed of the descent, so as to reach the ground with entire safety.

A further object of my invention is to construct and arrange the friction-rolls in a peculiar manner, so that a very great friction is brought on the cords or ropes when the case or shell descends thereon, and to permit the cords or ropes to be readily and easily drawn between the same to readjust the fire-escape for service after it has been returned to the room or apartment from which the previous descent has been made, and thus enable persons remaining in said apartment to in turn make their escape therefrom.

I will now proceed to describe my invention in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a fire-escape embodying my invention and adjusted in position for use. Fig. 2 is a vertical central sectional view through the inclosing case or shell on the line $x x$ of Fig. 3. Fig. 3 is a vertical transverse sectional view on the line $y y$ of Fig. 2. Fig. 4 is a horizontal sectional view on the line $z z$ of Fig. 2, looking in the direction of the arrow. Fig. 5 is a detail perspective view of the gripping-rolls and their supporting and adjusting mechanism de-

tached from the shell or casing. Fig. 6 is a detail view of a spring-clamp.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the inclosing shell or case of a fire-escape embodying my invention. This shell or case is adapted to be suspended out of a window by means of a rope, a , which is attached to a suitable fixture or heavy piece of furniture or other unmovable object in the room or apartment. To the sides of the inclosing shell or case are secured loops or eyes a' , to which are connected ropes b , that suspend a receptacle, B, from the inclosing shell or case, as clearly shown in Fig. 1. This receptacle is arranged immediately below the case, and it is made large enough to contain one or more persons.

I lay no stress upon the particular form of the receptacle shown herein, as I am aware that numerous different forms of receptacles can be used without departing from the spirit of my invention.

Within the upper part of the inclosing case or shell I arrange a series of vertical friction-rolls, which will be presently more fully described, around which are passed cords or ropes $C C'$, which are connected at their upper ends, and to which the rope a is secured. (See Fig. 1.) The rolls are held in fixed positions when the inclosing shell or case slides or descends on the cords or ropes; but said friction-rolls are adapted to rotate freely on their axes when the cords or ropes are drawn through the case or shell and between the rolls by the hand after the case or shell has been returned to the apartment, which thereby permits said ropes or cords to be drawn freely through the box, or between the said rolls, and enables it to be again quickly and easily adjusted for use. Below the friction-rolls I arrange a pair of gripping-rolls, by means of which the speed with which the shell or case slides over the rope can be readily controlled by the person occupying the receptacle B, in the manner which I will presently describe.

$D D'$ designate the large friction-rolls, which are arranged in substantially the same horizontal plane in the upper part of the shell or case, near the sides thereof. These large fric-

tion-rolls are of equal diameter, and of such width as to fit snugly within the side walls of the case, each roll being loosely journaled on a shaft, *d*, which is fixed in the walls of the case. Between this pair of large friction-rolls I provide another pair of friction-rolls, E E', of slightly-smaller diameter, which are arranged side by side, and are independently journaled on a common shaft, *e*, which is also fixed in the side walls of the case between the two shafts *d*, as shown. The periphery of the large friction-rolls is preferably made smooth and plain, while the smaller friction-rolls have annular grooves *e'* formed in their periphery, to properly guide the cords or ropes around said intermediate friction-rolls and prevent lateral displacement of said cords.

The larger friction-rolls, D D', are adapted to rotate on their axis in reverse directions to each other—the one to the right and the other to the left—and the intermediate grooved rolls, E E', are likewise limited to turn in reverse directions to each other on the common shaft *e*. Each roll is limited to rotation on its axis in one direction by means of pawls G, which take in notches *g*, formed in the periphery of the rolls. These notches are inclined, as shown, and terminate in abrupt shoulders *g'*, against which the free ends of the pawls rest to prevent said rolls from rotating in one direction, while the rolls are permitted to rotate freely in the reverse directions by the pawls slipping over the shoulders *g'*. The pawls are pivoted to the side walls of the inclosing shell or case, and the free ends thereof are normally pressed in contact with the rolls by means of springs *g*², which are suitably held in position.

It will be noted that the rolls D E' rotate in the same direction, while the rolls D' E rotate in the reverse direction, and the notches in the rolls D E' are therefore inclined in one direction, while the notches of the other rolls are inclined in the reverse directions.

The cord or rope C passes through an aperture, *c*, in the top of the box, and is then coiled once completely around the larger friction-roll, D, and then passes around the upper part of the intermediate roll, *e*, within the groove thereof, and thence downward between the rolls E and D' to the gripping-rolls. The cord or rope C' passes through a separate aperture, *c'*, in the upper side of the case or shell, is then coiled once around the larger friction-roll, D, said cord C' being then passed around the friction-roll E' in the reverse direction that the cord C passes around the roll E, and thence passes to and between the gripping-rolls, parallel with the other cord, C, the two cords C C' emerging from the lower end of the case or shell through suitable apertures, as shown. The cords or ropes are thus coiled in a circuitous manner and in reverse directions around the two pairs of rolls D D' and E E', which rolls are held against movement and in fixed stationary positions by the pawls when the case or shell slides on the

ropes, which secures a great amount of friction on the ropes and rolls to prevent the case or shell from sliding too freely on the ropes. It will be noted that the cords can be drawn by hand in the reverse direction through the case or shell very easily, as the friction-rolls turn or rotate freely on their axis when the cords or ropes are drawn in the direction indicated by the arrow in Fig. 2.

After the ropes have been properly wound around the friction-rolls they are passed between yielding gripping-rolls H H', which are arranged in substantially the same horizontal plane in the lower part of the box or case below the friction-rolls. One of these rolls, H, is mounted in fixed bearings so as to turn axially, while the other roll is adapted to slide toward or from the fixed roll, and thereby release the cords or ropes or bind firmly thereon, according to the direction the regulating-screw is turned. The rolls are mounted centrally in a frame, I, which is securely fixed in the lower part of the shell or case, and has an elongated slot or recess, in which the rollers work and through which the cords or ropes pass. The adjustable roll H' is adapted to be forced toward the stationary roll by means of sliding plates *j*, which are connected to a transverse bridge, *j'*, upon which operates the inner end of a horizontal regulating-screw, J, that works in a fixed bearing in one end of the frame I, and has its outer end extended through one of the end walls of the shell or case, so it can be conveniently manipulated. The sliding plates *j* are arranged between the sides of the frame I, and at their inner ends are recessed, so as to fit snugly around the trunnions of the adjustable gripping-roll H'.

One end of the shaft of the fixed gripping-roll H is extended through one of the sides of the shell or case, and to said extended end of the shaft is secured a crank, *h*, by means of which the person in the receptacle can control the speed with which the box or case rides over the cords or ropes.

To the lower end of the box or case, at the points where the ropes or cords C C' emerge therefrom, I provide a spring-clamp, K, which is adapted to bind on the ropes C C'. This clamp compresses the ropes and prevents the case or shell from sliding thereon when a person first enters the receptacle, should the gripping-rolls H H' be free from said ropes, and thereby avoid accidental descent of the receptacle and case. The clamp is made of a piece of spring metal, which is bent to form an eye, *k*, and two laterally-diverging arms, *k'*, which are adapted to be grasped by hand to force the sides of the eye open and cause it to loosen its grip and detach itself from the ropes C C' entirely, said clamp being suitably connected to the case or shell to permit the arms thereof to be readily compressed.

The operation of my invention is as follows: The receptacle is properly connected to the case or shell, and one end of the rope *a* is secured to a suitable fixture or article of furni-

ture in the room, after which the case or shell and receptacle are lowered out of the window, as indicated in Fig. 1. The person or persons now descend into the receptacle, and should the gripping-rolls be free from the ropes or cords through oversight attending the haste with which the apparatus was prepared and adjusted out of the window for use, the clamp having a grip upon the ropes prevents the receptacle and case from prematurely descending. When the gripping-rolls properly bind upon the ropes, the clamp being removed, the occupant of the receptacle grasps the crank *h* and rotates the same to allow the cords or ropes to slip around the friction-rolls and between the gripping-rolls, thus lowering the case and receptacle at the desired speed to the ground. If desired, the regulating-screw can be turned to release the gripping-rolls and the cords or ropes grasped by hand, the occupant of the receptacle lowering the same hand over hand, which is quite important should the apparatus become broken, &c. After the occupant of the receptacle has alighted said receptacle and case or shell can be drawn to the apartment by the occupant thereof, and the ropes or cords quickly drawn through the shell, as the friction-rolls turn freely, and thus adapt the escape for use again.

30 I am aware that changes in the form and proportion of parts and details of construction can be made without departing from the spirit or sacrificing the advantages of my invention.

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

1. In a fire-escape, the combination of a shell or case, a pair of friction-rolls, *D D'*, located on the same horizontal plane and at opposite sides of the shell, another pair of friction-rolls, *E E'*, mounted on a common shaft between said rolls *D D'*, pawls for limiting the rotation of the rolls *D E'* in one direction and the rolls *D' E* in the reverse direction, two cords or ropes, each one of which is passed in a reverse direction around one roll of each pair of friction-rolls, and a pair of gripping-rolls located in the vertical plane of the pair of intermediate rolls, *E E'*, substantially as described.

2. In a fire-escape, the combination of a shell or case, a pair of plain friction-rolls, *D D'*, located on the same horizontal plane at opposite sides of said shell, a pair of grooved intermediate friction-rolls loosely mounted on a common shaft between said rolls *D D'*, pawls for limiting the rolls *D E'* and *D' E* to

rotation on their axes in reverse directions, two cords entering the shell at widely-separated points, thence passing around the friction-rolls and emerging from the shell at a common point, and a pair of yielding gripping-rolls located in the vertical plane of the intermediate rolls, *E E'*, substantially as described.

3. In a fire-escape, the combination of a pair of notched friction-rolls, *D D'*, located on opposite sides of a case or shell and supported on independent shafts, another pair of notched friction-rolls, *E E'*, arranged between the rolls *D D'* and located side by side on a common shaft, pawls for limiting the rolls to rotation on their axes in one direction, and cords or ropes passing around the friction-rolls, substantially as described.

4. In a fire-escape, the combination of the friction-rolls *D D'* and *E E'*, the gripping-rolls *H H'*, arranged in the vertical plane of the rolls *E E'*, and the two cords passing around said friction-rolls and between the gripping-rolls, one of the gripping-rolls being fixed and having a crank, and the other being movably mounted to slide toward or from the other roll, substantially as described.

5. In a fire-escape, the combination of a shell or case, the friction-rolls *D D'* and *E E'*, a fixed frame, *I*, arranged in the lower part of said case below the friction-rolls, the cords or ropes, a stationary gripping-roll, *H*, journaled in said frame and having a crank, *h*, a sliding gripping-roll, *H'*, also journaled in said frame in the same horizontal plane as the roll *H*, the connected slides *j*, arranged at one side of the sliding gripping-roll and guided in the frame, and a regulating-screw, substantially as described.

6. A fire-escape consisting of a case or shell having the friction-rolls, the cords or ropes, and a spring-clamp located exteriorly to the shell to which it is connected and adapted to the ropes, substantially as described.

7. A fire-escape consisting of a case or shell having the friction-rolls, the cords or ropes, and the spring-clamp connected exteriorly to the shell and normally free from said ropes, said clamp having an eye, and the yielding arms which are adapted to bite upon the ropes, substantially as described.

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

THEODORE J. BAKER.

Witnesses:

JOHN A. MARSHALL,
SAML. L. SPRAGUE.