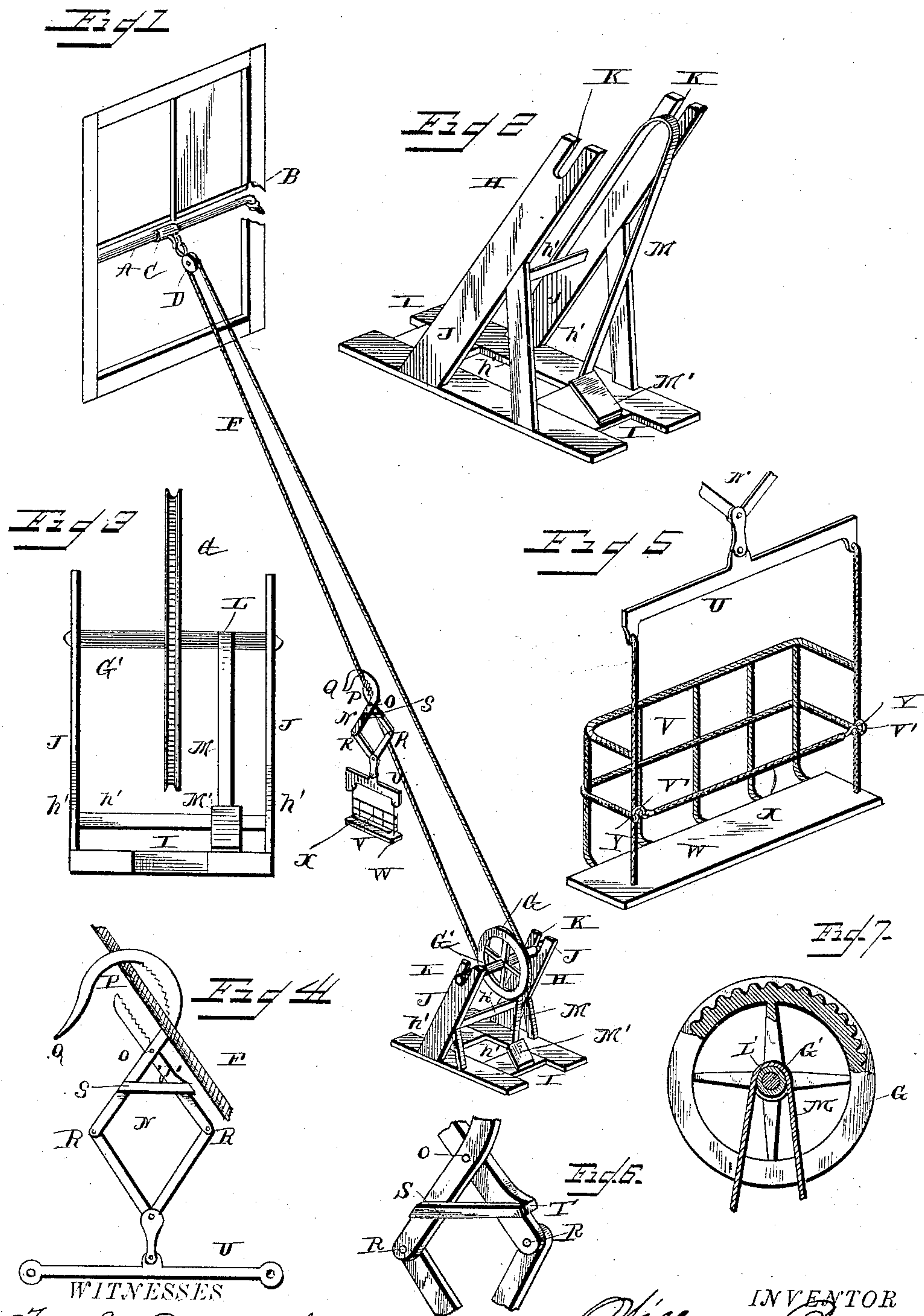


(No Model.)

W. BRUCE.
FIRE ESCAPE.

No. 390,445.

Patented Oct. 2, 1888.



WITNESSES
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UNITED STATES PATENT OFFICE.

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FIRE-ESCAPE.

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To all whom it may concern:

Be it known that I, WILLIAM BRUCE, a citizen of the United States, and a resident of Wellsville, in the county of Allegany and State of New York, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved fire-escape, showing the same in operative position. Fig. 2 is a perspective view of the street-frame, showing the shoe or treadle with its attached tension-bar in position thereon. Fig. 3 is a rear view of the frame with the wheel in position thereon. Fig. 4 is a detail view, on an enlarged scale, of the automatic grip; and Fig. 5 is a detail view of the rope basket, showing also the lower part of the grip. Fig. 6 is a perspective view of the gripping device, showing the operation of the spring-catch; and Fig. 7 is a vertical sectional view through the steel friction-band, as shown in Fig. 3, and also showing a portion of the wheel broken away, so as to illustrate the corrugations within the groove of said wheel.

Like letters of reference indicate corresponding parts in the several figures.

My invention has relation to improvements in fire-escapes; and it consists in the improved construction and combinations of parts of the same, as hereinafter more fully set forth.

In the accompanying drawings, the letter A represents the removable cross-bar having hooked ends, which, in its operative position, is supported by hooks or screw-eyes B B, arranged on opposite sides of the inside window-casing. This cross-bar is provided or formed with a central eye, C, to which is hooked a pulley-block, D; or the cross-bar may be secured to an upright frame on the roof, from which the device may also be operated.

Through the pulley-block D runs an endless rope, E, which passes down to the street at a suitable angle, and then around a large deeply-grooved wheel, G, journaled in a suitable frame, H, spiked or otherwise secured to the ground, said wheel having its grooved per-

iphery slightly corrugated to prevent the endless rope from slipping. This frame H consists of the base-pieces I I and the slanting uprights J J, said frame being securely braced by suitable brace-pieces, *h' h' h'*, and provided in their upper ends with U-shaped grooves K K. Into these grooves fit the ends of the axle G', carrying the deeply-grooved wheel G, rigidly secured thereto, the ends of said axle or shaft adapted to turn freely within the grooves K K, and also themselves provided with suitable grooves registering with said grooves K K and fitting loosely therein, so as to turn freely.

One end of a steel friction-band, M, is secured to the cross-brace *h'* of the frame, and is adapted to pass over and in a flat groove, L, located upon the axle G' between the wheel and one of the slanting uprights, (said groove being preferably lined with a band of steel, L', or other metal to give it superior wearing qualities,) and thence down to a shoe or treadle, M', to which it is also fastened, said shoe or treadle being hinged to one of the cross-pieces of the base-pieces I I of the frame.

The letter N denotes the improved gripping device employed by me, which is formed something like a pipe-tongs, consisting of four pieces or forks suitably pivoted together at their meeting-points, forming, essentially, toggle connections or joints. The two upper jaws are further pivoted together where they cross each other at O, and their meeting edges P, above this upper pivot, are toothed or serrated, one of the jaws, however, being longer than the other and bent or curved over to form a hook, Q, which acts as a guard for the rope, holding the grip on the rope when the serrated jaws are relaxed. The two upper jaws extend down below their pivotal point O, where they are hinged at R R to corresponding jaws or forks, which in turn extend down and inward until they meet at a point, where they are likewise hinged together.

Below the pivot O of the upper jaws is located a spring-catch, S, which is welded onto one fork or jaw, the other end extending across to the opposite jaw, said end being bent or curved, so as to engage with a slight shoulder, T, on said opposite jaw. This spring-catch, when the grip is applied to the endless rope, will keep the grip in place until the

weight of a person in the basket suspended from the gripping device still further tightens the grip.

From the lower point of the gripping device depends a cross-bar, U, from which in turn is suspended a rope basket or chair, V, consisting of the side ropes and a series of longitudinal and cross ropes, to form a suitable back rest and guard for the person occupying the basket, and also the bottom board or piece, W. I also provide a front rope-guard, X, provided at each end with snap-hooks Y Y, adapted to engage suitable rings or eyes, V', in the side ropes of the chair. This rope can be easily adjusted by the party entering the chair or basket, whereby all danger from falling out of the chair is avoided.

The operation of my device is as follows: In practice the iron cross-bar, pulley-block, the endless rope, and a sufficient number of grips, with their basket chairs, are kept in a convenient place near the window, while the street-frame and other attachments are kept upon the ground-floor. In case of fire, the iron bar A is placed in position and the pulley-block D secured thereto, the endless rope F being then thrown to the street, where it is passed over the grooved wheel, which is then placed in the U-shaped slots of the slanting uprights, when the frame is then pulled backward to straighten the rope out and render it taut, at which position the frame is spiked securely to the ground. The apparatus is then ready to be operated. The gripping device, with the rope basket attached, is adjusted to clutch the lower slant of the rope. The person then enters the escape basket or chair, and his weight sets the wheel on the street in motion, and as he descends on the rope the speed of the descent is regulated by a person at the wheel having his foot on the shoe or treadle and exerting a pressure on the axle of the wheel by means of the curved steel friction-band. Should the supply of grip-tongs at the window or on the roof give out, a fresh supply can be sent up on the upper rope.

It will be seen that the several parts composing this device are inexpensive in their construction, readily put together, and certain and effectual in their operation, so that this improvement may be manufactured at comparatively a small cost, and will prove not only absolutely certain and effectual in use, but very strong and durable, so that it is not apt to break or otherwise get out of order, even if the machine is subjected to exceptionally rough usage.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a fire-escape, the combination, with the escape-basket, of the automatic gripping device, consisting of four pieces or forks pivoted together at their meeting ends by toggle connections or joints, and having its two up-

per jaws pivoted together where they cross each other, and their meeting edges above this upper pivot toothed or serrated, one of the jaws being longer than the other and provided with a hooked or curved end.

2. The combination of the escape basket or chair, the automatic gripping device, one of the upper jaws of said gripping device being provided with a shoulder or lug, and the spring-catch secured to one of the upper jaws of the gripping device and having its free bent end adapted to engage the shoulder or lug on the opposite jaw.

3. The combination of the cross-bar having central eye, the pulley-block provided with a hook adapted to engage said central eye, the inclined endless rope, the escape basket or chair, the street-frame provided with inclined standards or uprights having U-shaped grooves in their upper ends, and the axle or shaft carrying a deeply-grooved wheel rigidly secured thereto, said axle having its ends resting in the U-shaped grooves of the inclined uprights.

4. The combination of the cross-bar having central eye, the pulley-block provided with a hook adapted to engage said central eye, the inclined endless rope, the escape basket or chair, the street-frame provided with inclined standards or uprights having U-shaped grooves in their upper ends, the axle or shaft carrying a deeply-grooved wheel rigidly secured thereto, and having its ends grooved, said grooves adapted to fit in the U-shaped grooves of the slanting uprights or standards.

5. The combination of the cross-bar having central eye, the pulley-block provided with a hook adapted to engage said central eye, the inclined endless rope, the escape basket or chair, the street-frame provided with inclined standards or uprights having U-shaped grooves in their upper ends, the axle or shaft carrying deeply-grooved wheel rigidly secured thereto, said groove being provided with corrugations.

6. In a fire-escape of the described class, the combination of the lower frame, the shaft carrying a deeply-grooved wheel mounted thereon, and provided with a metallic-lined groove between the wheel and one of the slanting uprights of the frame, the curved friction-band having one end suitably secured to said frame and adapted to pass over and in said metallic-lined groove, and the shoe or treadle connected to the lower end of said curved friction-band, and having its other end hinged to the base of the frame.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

WILLIAM BRUCE.

Witnesses:

J. R. FREELAND,
ELISHA GEER.