W. ROBERTS & M. E. BENJAMIN.
FIRE-ESCAPES.

No. 194,536. Patented Aug. 28, 1877.

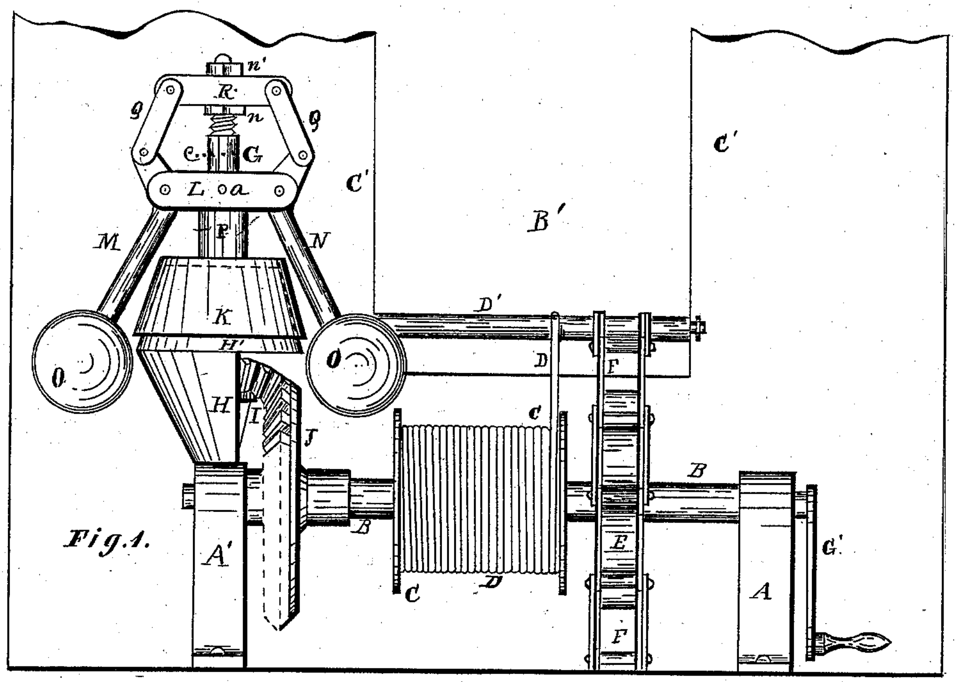
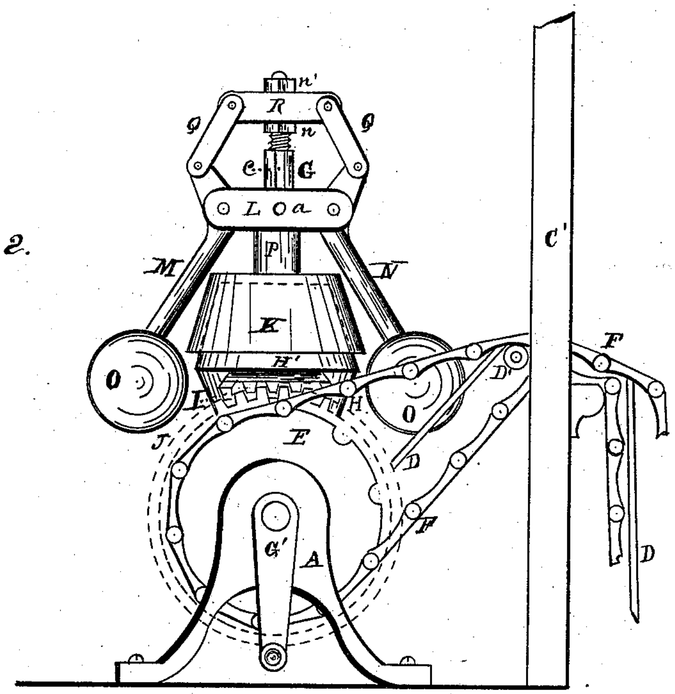


Fig. 1.

Fig. 2.



Witnesses.

A. Wm. Oppmann

R. B. Emerson

Inventors.

W. Roberts and
M. E. Benjamin
Per Burridge & Co.
attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WEBSTER ROBERTS AND MYRON E. BENJAMIN, OF CLEVELAND, OHIO.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **194,536**, dated August 28, 1877; application filed June 29, 1877.

To all whom it may concern:

Be it known that we, WEBSTER ROBERTS and MYRON E. BENJAMIN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Fire-Escape, &c.; and we do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making a part of the same.

Figure 1 is a front view of the fire-escape. Fig. 2 is an end view.

Like letters of reference refer to like parts in the several views.

The abovesaid invention is a device for a safe and immediate escape of persons from the upper stories of a burning building.

The construction and practical operation of the invention are substantially as follows:

In the standards A A′ is journaled a shaft, B, on which is secured a spool, C, whereon is wound a rope or cord, D, or its equivalent. On said shaft is also secured a sprocket-wheel, E, around which is passed an endless chain, F, as shown in the drawings. G is a vertical shaft, the lower end of which has its bearing in a step on the top of the standard A′, within the case H. To the lower end of said shaft is secured a beveled pinion, I, so arranged as to engage the beveled wheel J, secured to the shaft B, above referred to. The upper end of the case H is a truncated cone or core, H′, to which is fitted a corresponding shell, K, which, together with the cone, forms a frictional brake, as shown in the drawings. The shell K of the brake is attached to the shaft G so as to slide thereon, and is made to revolve with the shaft by being feathered thereto by a pin, *a*, passed through the cross-piece L of the shell, and into a groove, *c*, of the shaft.

The cross-piece L is attached to the neck P, through which the shaft G passes, and which, together with the neck, forms a part of the shell K, and whereby said shell is actuated in its relation to the core or cone H′ by the rise and fall of the balls O of the governor, for a purpose presently shown. To the extreme end of the vertical shaft G is secured a cross-piece, R, to which the arms M and N are attached by the links Q, pivoted thereto, as shown in the drawings.

The practical operation of the above-described fire-escape is substantially as follows: The machine is fastened to the floor directly under the window, in such relation thereto as shown in Fig. 1, in which B′ represents the window, and C′ the walls on either side. In practice the free end of the rope D is thrown over the window-sill or over a roller, D′, and allowed to hang down on the outside. To the rope is secured any suitable device whereby a person can be made fast to it, for being lowered thereby to the ground. The weight of the person thus suspended by the rope causes the spool to revolve and unwind the rope therefrom during the descent. This rotary movement of the spool revolves the balls O and O of the governor, which, if the unwinding of the rope from the spool be too fast, or beyond a certain rate, will spread out by centrifugal force, thereby forcing the cap or shell K down upon the cone H′ within, the result of which will be to check the speed of the spool, and prevent a too rapid descent of the person suspended from the rope, and such person descends more slowly accordingly.

The greater number of persons attached to the rope, or other greater weight secured thereto, would materially tend to accelerate the unwinding of the rope, which is, however, held in check by the action of the balls or governor, which, by their increased velocity, force the shell correspondingly harder down upon the cone, and restrain the rotation of the spool, allowing the rope to unwind only at a certain rate, as the machine may have been originally adjusted.

This adjustment of the machine is effected by the nuts *n n′*, whereby the cross-piece or head R is secured to the shaft, which, by elevating or lowering said head, increases or diminishes the sweep or diameter of the circuit in which the balls move, accordingly increasing or diminishing the speed of the spool. The action of the machine is such that it will make but little, if any, difference in the velocity of the descent whether one or many persons are on the rope. The unwinding of the rope will be at about uniform speed, without respect to the weight on the rope.

Instead of the rope being used for lowering persons, the endless chain F may be employed,

which is passed over the window-sill and roller D′, as will be seen in the drawings.

In using the chain the person or persons stand upon the rounds of the chain, and hold fast to the chain with the hands to prevent falling.

The chain does not require winding up each time a person descends, while the rope requires to be wound up for each descent, which is done by means of the crank G′.

Should the spool and rope be removed from the shaft, and the chain only be used, it would be better to this end to so adjust the machine that the shaft B will pass through the wall of the building so far as to have the sprocket-wheel and chain wholly outside of the window, and which, for the convenience of those who descend thereby, may be arranged near the top of the window, so that the chain can be easily and readily reached by the persons from the window-sill; and for the same purpose the rope may be passed to the outside through the wall above the window, so that it may hang down in front within reach of those wishing to descend by it. This, however, is a matter of adaptation, and must, as a consequence, be varied according to the nature of the building or other circumstances.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The shaft B, having on it a spool, C, for a winding-rope, a sprocket-wheel, E, carrying an endless chain, F, and a beveled gear-wheel, J, in combination with the gear I and friction-clutch consisting of shell K and friction-cone H′, the friction being regulated by the governor-balls and arms and sleeve P, substantially as and for the purpose described.

2. The shaft B, having on it a sprocket-wheel, E, and endless chain F, in combination with the friction-cone and ordinary governor-balls, by means of the beveled gear I I, substantially as and for the purpose described.

3. The combination, in a governor constructed as described, of the adjusting-screws *n m*, with the shaft G and cross-head of the frame, substantially as and for the purpose of regulating the friction-bearing of cone H′ and shell K.

WEBSTER ROBERTS.
MYRON E. BENJAMIN.

Witnesses:
J. H. BURRIDGE,
L. L. CRANE.