

(No Model.)

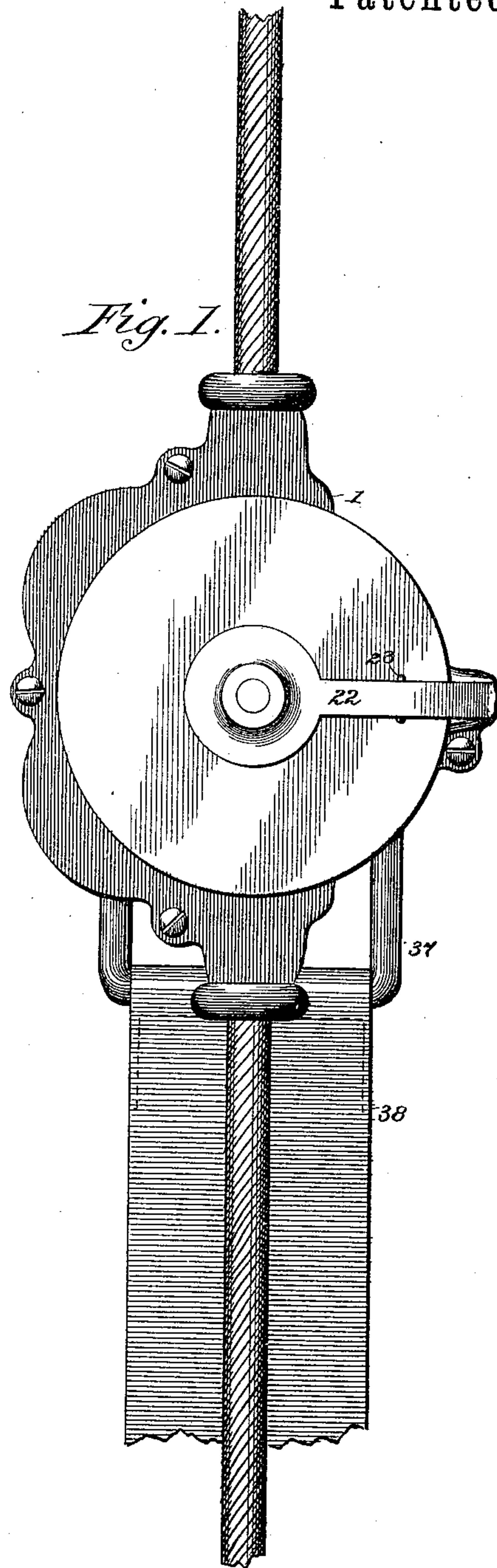
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A. J. JOHNSON.

FIRE ESCAPE.

No. 338,750.

Patented Mar. 30, 1886.



Witnesses,
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Frederick Goodwin

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Attys.

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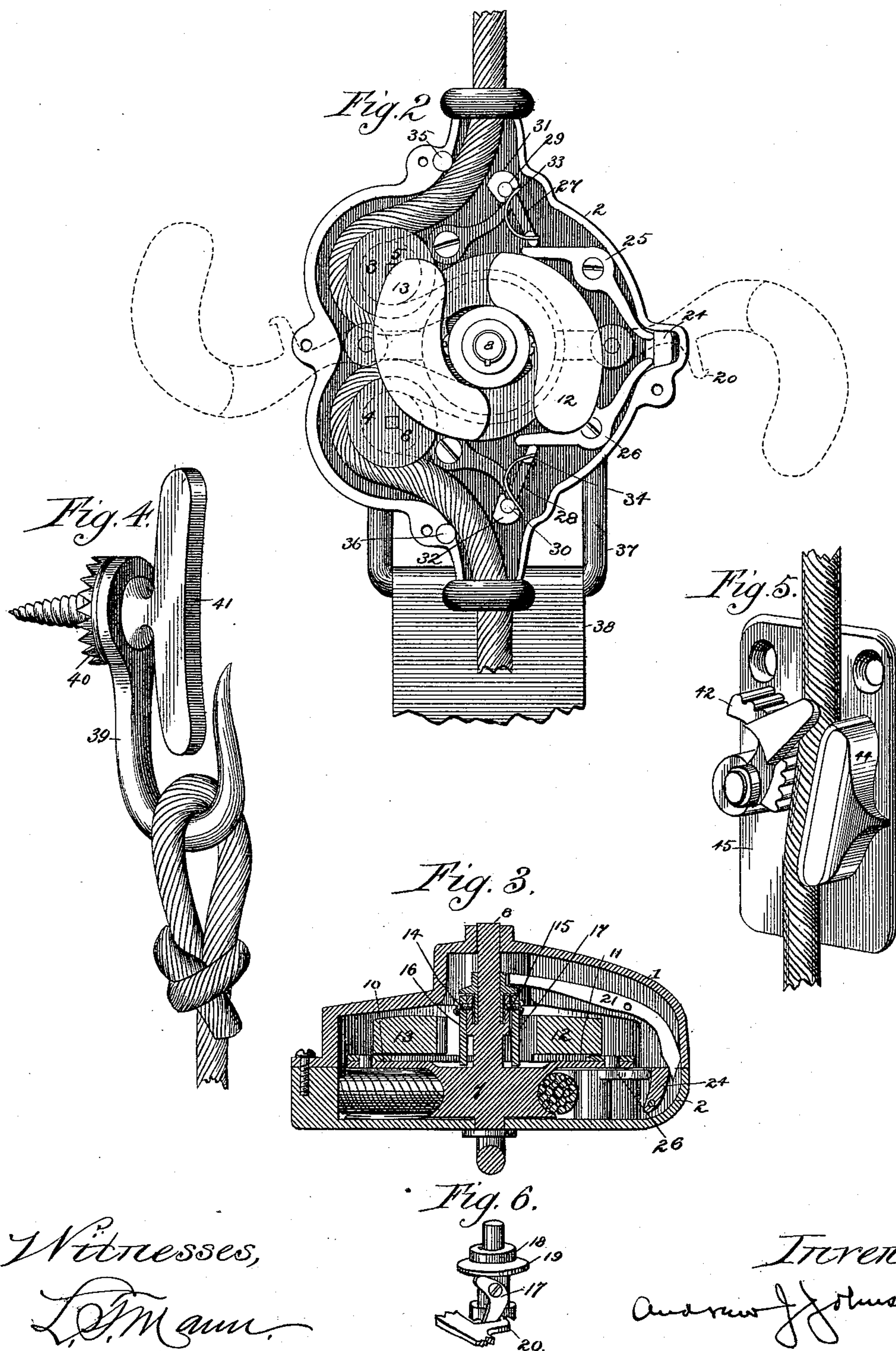
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A. J. JOHNSON.

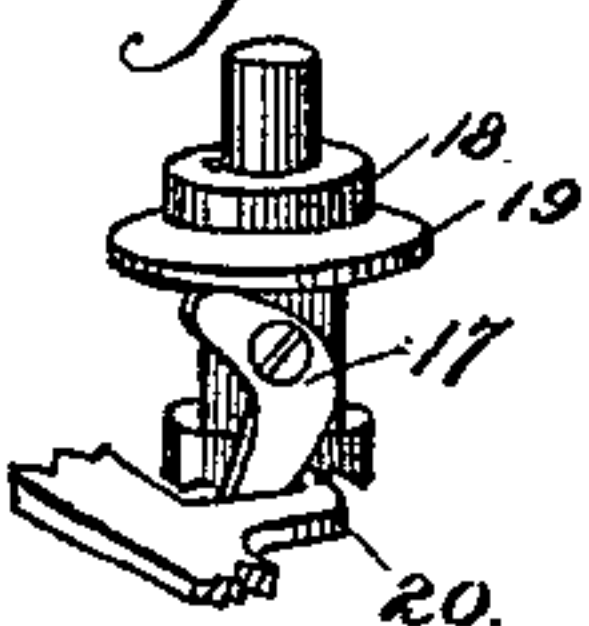
FIRE ESCAPE.

No. 338,750.

Patented Mar. 30, 1886.



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UNITED STATES PATENT OFFICE.

ANDREW J. JOHNSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE POCKET
AND STATIONARY FIRE ESCAPE COMPANY, OF SAME PLACE.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 338,750, dated March 30, 1886.

Application filed November 5, 1885. Serial No. 181,951. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. JOHNSON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Fire-Escapes, of which the following is a specification.

It is the object of my invention to provide a fire-escape which shall automatically set a safe and inflexible limit to its speed in its descent, and which shall at the same time be capable of being further slowed up or brought to a total stop by the person descending, in case it should be desirable, and further to provide a construction which shall permit of easy and quick preparation for use a second time after it has been used.

To accomplish these ends my invention consists in certain details of construction, herein-
after fully described, and set forth in the claims.

In the drawings annexed hereto, and which form a part of this specification, Figure 1 is a perspective view of my improved fire-escape as it appears when ready for operation. Fig. 2 is a view of the interior of the same, one-half of the casing thereof having been removed. Fig. 3 is a central cross-section on a plane at right angles to the direction of the rope. Fig. 4 shows a means of attaching the rope to the building. Fig. 5 is a modification of the same; and Fig. 6 represents a view of one of the bell-crank levers operated by the governor.

The casing surrounding the mechanism which I have devised is made in two parts, 1 and 2, screwed together, as shown, so shaped that apertures for the entrance and egress of the rope are left at the upper and lower ends of the case when the two parts are fastened together. Two pulleys, 3 and 4, with grooves adapted to the size of the rope used, are mounted on square pins 5 and 6, fixed to the part 2 of the casing. A third pulley, 7, is fixed fast upon shaft 8, journaled in the upper and lower parts of the casing, and centrally situated therein, the fixed pulleys 3 and 4 being placed, as shown, to one side. The rope passes around these three pulleys, as shown in Fig. 2, and the curves given to it thereby cause the casing to have such an amount of friction upon

the rope that a considerable weight will be required to give it motion. This friction may be indefinitely increased, as desired, by pulling on the rope below the escape, and this means of regulating the descent of the escape would be sufficient to enable it to be practically used were it not for the fact that persons endeavoring to escape from a burning building frequently lose control of their intelligence. They are likely, therefore, either to omit to moderate the rapidity of their descent at all, and thus to be precipitated with considerable force upon the ground, or, in case they attempt to check their descent, to do it so suddenly as to break the rope through the force of their momentum. It is therefore highly desirable to provide an automatic regulator which shall, as far as practicable, of itself keep the rate of downward motion within safe limits. To this end I have devised a governing mechanism which I will now describe. Two arms, 10 11, project, respectively, from opposite sides of the pulley 7, and upon these arms are pivoted two governing-weights, 12 13, which, when in their normal position, lie closely about the shaft 8, but will be thrown out by the too rapid revolution of the pulley 7 into the chambered interior of the part 1 of the casing, in the plane of which they are pivoted, and which, it will be observed, is circular, as shown in Fig. 1. The axial projection 8 carries on each side two lips or ears, 14 15, as shown in Fig. 3, to which are pivoted the bell-crank levers 16 17. Above and within the ears 14 15 is a cylinder, 18, provided with a circular shoulder, 19, said cylinders surrounding the shaft 8 and sliding upon it, being feathered thereon. The governors are provided with interior projections, (shown at 20 in Fig. 6,) which normally lie behind the lower extremities of the levers 16 17, and operate upon these levers when the governors are thrown into their outward positions by the rapid rotation of the pulley 7. The levers 16 17 being then caused to revolve on their axis, operate with their upper limbs upon the lower side of the shoulder 19, raising the cylinder 18, and causing its upper surface to move one end of the lever 21, pivoted at 23, in a raised channel, 22, formed in the part 1 of the

casing. The other end of this lever projects into the other part of the casing, as shown in Fig. 3, and when tilted, as described, operates upon a pivoted lug, 24, forcing it inward toward the center of the casing, and causing it to throw two other bell-crank levers, 25 26, which in turn operate upon two pivoted arms, 27 28. These latter arms are pivoted to the casing, as shown, and carry at their elbows pivots 29 30, upon which are mounted friction-shoes 31 32, these shoes having an interior curved slot of a size corresponding with the pivots and of a curvature somewhat greater than half a circle, so that when slipped upon the said pivots they will be held from lateral displacement. Springs 33 34, fixed upon the arms 27 28, bear upon the faces of the friction-shoes in which the curved slots above described are cut, causing the shoes to normally maintain the position shown in the drawings. It will be seen that the effect of the outward motion imparted to arms 27 28 by the movement of levers 25 26, above described, will be to throw the friction-shoes into contact with the rope, increasing the friction thereon. It is desirable that the friction-shoes should operate only upon that part of the rope which is below the pulleys, and that they may not operate upon the rope above the pulleys their faces are cut away, as shown in Fig. 2, so that the upper shoe will be revolved by the rope, on touching it, until its cut face is turned toward the rope, in which position it will not bear upon it so as to increase the friction, while revolution of the lower shoe is prevented by the normal contact of one part of its face with the shank of the pivoted arm 28, and this shoe is therefore held with all the force of the governor against the rope. It is thus apparent that the operation of the mechanism will be precisely the same, whether it is used with one or the other end up, and after it has been once used it is merely necessary to turn the rope end for end to prepare it for a second use. The cylindrical pieces of metal 35 36 upon the opposite sides of the rope furnish projections against which the rope is forced by the friction-shoes, giving a greater amount of friction than would be obtained if the rope were pushed against a regularly-curved surface.

It will be observed that an escape in which there is an automatic controlling device, and also means whereby the rate of descent may be governed at will, has great advantages over an escape provided with only one of these governing devices. On the one hand, as has been above stated, it is not safe to always rely upon the intelligent action of the person descending, and, on the other, it will frequently be desirable to stop the downward motion of the escape altogether—as, for instance, should the person descending have his foot caught and wedged behind a sign; an emergency in which a merely automatic apparatus would fail. A bail, 37, is fixed to the back of the casing, and to this is attached the strap 38.

In Figs. 4 and 5 are shown means of attaching the rope to the building, that in Fig. 4 consisting of a hook, 39, a toothed washer, 40, and a thumb-screw, 41. The teeth of the washer are forced into the wood of the building by means of a thumb-screw, and a very firm attachment of the hook is thus readily secured. In Fig. 5 a toothed eccentric, 42, pivoted to a plate, 43, nips the rope upon the anvil 44.

It will be observed that a fire-escape constructed according to the above description is absolutely controlled by its governor, and that the speed of the person descending cannot be increased above a safe limit, even if desired, and that the rate of descent may be further controlled at will, and the motion be made to instantly cease by pulling on the rope below the casing. This combination of controlling devices renders accidents in the use of this fire-escape a practical impossibility.

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

1. The combination, in a fire-escape, of a rope or its equivalent, a casing, fixed pulleys for the rope mounted therein, a pulley mounted to rotate, a centrifugal governor attached to said rotating pulley, and friction devices controlled by the governor for regulating the friction of the casing upon the rope, substantially as described and shown.

2. In a fire-escape, the combination of a rope or its equivalent, a casing, means therein for effecting a certain normal amount of friction between the casing and rope, means for increasing said normal friction at will, as desired, a centrifugal governor operated by the rope as it moves through the casing, and friction devices controlled by said governor for automatically regulating the descending motion of the case, substantially as described and shown.

3. In a fire-escape, the combination of a casing, a pulley mounted therein so as to be rotated by the rope as it passes through the said casing, governors attached to said pulley, a cylinder mounted upon the shaft of said pulley, mechanism between the governor and the cylinder, whereby the latter is moved by the action of the governor when the speed of the casing becomes too great, and friction-shoes, and mechanism connecting said friction-shoes with the said cylinder, whereby they are caused by the motion of the cylinder to impinge upon the rope, substantially as described and shown.

4. The combination, in a fire-escape, with a governor, of two friction-shoes operated thereby, one of said shoes being located above and one below the governor, and being so constructed as to operate when moving upon the rope in one direction only, and being oppositely arranged in this respect with reference to the rope, substantially as described and shown.

5. In a fire-escape, a friction-shoe mounted

to rotate and having one face cut away, substantially as described, and for the purpose set forth.

6. In a fire-escape, the combination, with a friction-shoe, of a projecting cylindrical metal surface opposite thereto, upon which the rope is forced by the friction-shoe, substantially as described and shown.

7. In a fire-escape, a rotating pulley, 7, having projecting arms 10 and 11, governing-weights 12 and 13, pivoted thereto, sleeve 18, mounted upon the shaft of the said pulley, levers 16 and 17, pivoted to projections from said shaft, lever 21, lug 24, levers 25 and 26, arms 27 and 28, and friction-shoes 30 and 31, substantially as described, and for the purpose set forth.

8. In a fire-escape, the combination of a casing, a pulley mounted upon a shaft journaled within said casing, projections from said shaft extending parallel thereto, and a sleeve about said shaft and between it and the said projections, said sleeve having a shoulder, the under side of which normally rests upon said

projections, and the upper side of which gives movement to a train of mechanism connected with a friction device when said sleeve is moved by a governor, also carried by the said pulley, substantially as described, and for the purpose set forth.

9. As a means for attaching a fire-escape rope, a hook, a toothed washer, and a thumb-screw, substantially as shown and described.

10. The combination, in a fire-escape, of a rope, a casing adapted to move thereon, and friction devices, and a governor controlling the same attached to said casing, substantially as described and shown.

11. The combination, in a fire-escape, with a moving part thereof, of a rotating governor mounted on said moving part, for regulating its movements, substantially as described and shown.

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Witnesses:

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