2 Sheets—Sheet 1

F. A. COPELAND & R. W. TAYLOR.

Fire-Escape.

No. 206,087. **Patented July 16, 1878.**

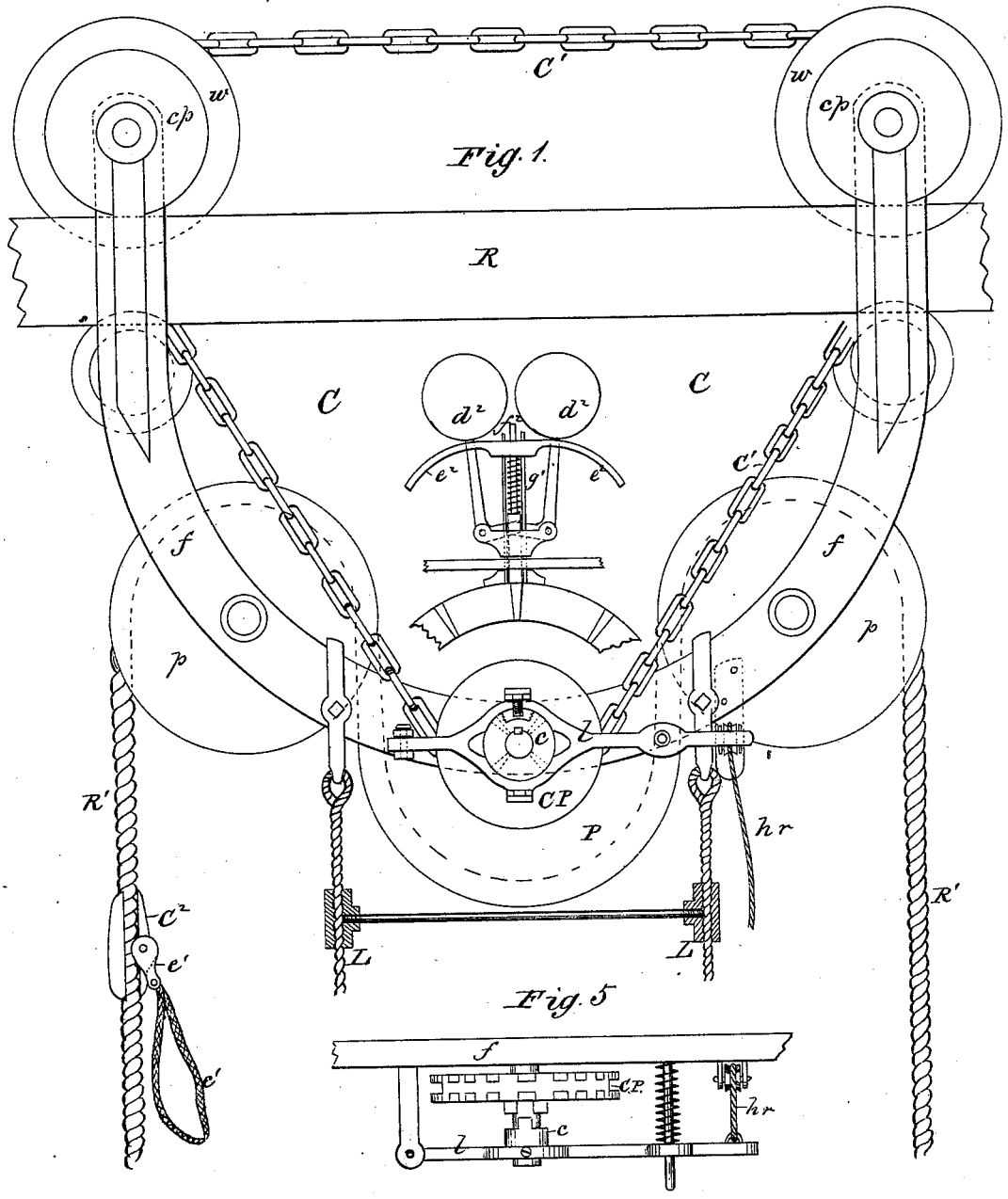

Fig. 1.

Fig. 5

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2 Sheets—Sheet 2.

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Fire-Escape.

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Fig. 3.

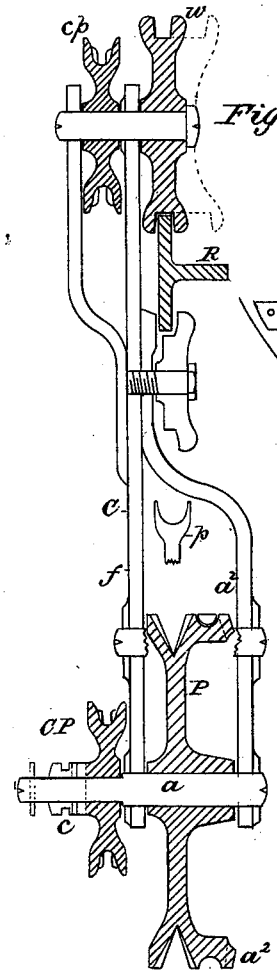


Fig. 2.

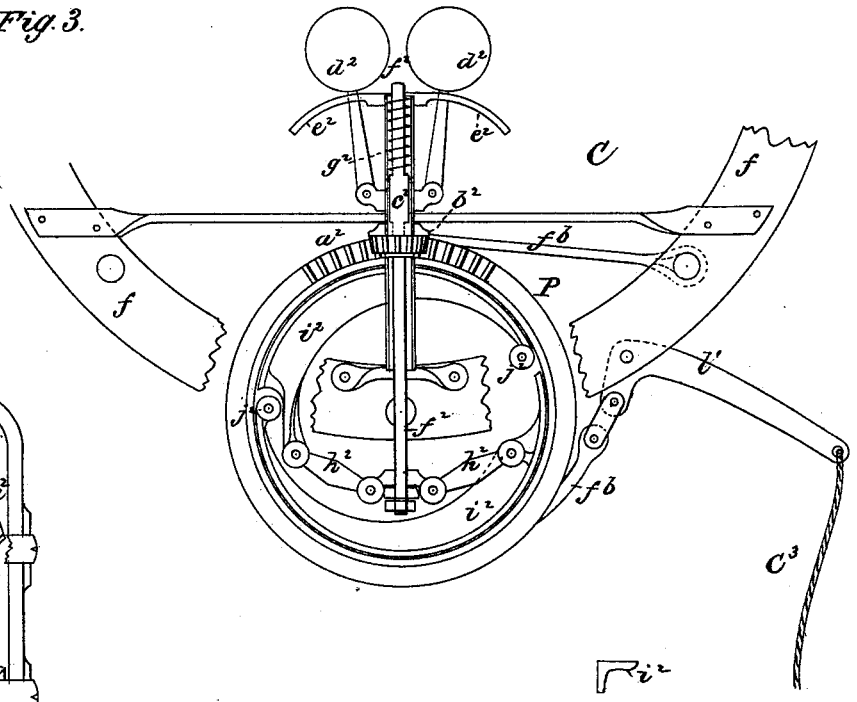


Fig. 4.

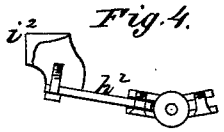
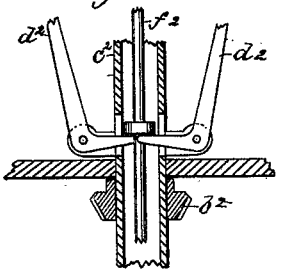


Fig. 6



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UNITED STATES PATENT OFFICE.

FREDERICK A. COPELAND AND ROBERT W. TAYLOR, OF LA CROSSE, WISCONSIN; SAID TAYLOR ASSIGNOR TO SAID COPELAND.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **206,087**, dated July 16, 1878; application filed January 29, 1878.

To all whom it may concern:

Be it known that we, FREDERICK A. COPELAND and ROBERT W. TAYLOR, of the city and county of La Crosse, and State of Wisconsin, have invented a new and Improved Fire-Escape; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a front view of the working parts of the fire-escape, showing the same applied to a rail attached to the building. Fig. 2 is a rear view of a portion of the device, showing the arrangement of the governor and strap-brake. Fig. 3 is a sectional edge view; Fig. 4, a detail of the brake-shoe and links of the governors. Fig. 5 is a detail plan view of the spring-clutch; and Fig. 6 is a sectional detail view of a part of the governor, showing the arrangement of the elbow-extensions of the governor-ball arms with respect to the vertical stem.

The object of our invention is to provide an improvement in the class of fire-escapes which may be made available for use on the exterior of a dwelling or other building, at any point, for the descent of persons in safety to the ground.

Our invention relates more particularly to that form of fire-escape in which a carriage is arranged to run upon a track near the top of the house, and is provided with a pendent ladder.

The invention consists in applying an endless rope and chain and chain-pulleys to the carriage, so that the rope may be used to propel the carriage in one direction or the other on the rail, for the purpose of bringing the ladder opposite a window, door, or other place of escape.

The invention further consists in applying a clutch in such manner that the endless rope may be utilized to cause the propulsion of the carriage.

The invention also further consists in the construction and arrangement of an automatic governor, for regulating the descent, all as hereinafter described.

A horizontal rail, R, is attached to the building beneath the cornice by means of suitable supports.

The ladder L is attached to a carriage, C, which consists of a U-shaped frame, *f*, mounted on grooved or flanged wheels *w*, that travel on the rail R.

An endless rope, R′, passes over grooved pulleys *p*, and an intermediate pulley, P, which is journaled in the lowest part of frame *f*.

A chain-pulley, C P, Figs. 1 and 3, is mounted loose on the projecting axis *a* of the rope-pulley P, and may be locked thereto, so as to have the same rotary motion, by means of the spring-clutch *c*, (see Fig. 5,) which is fixed on the axis *a*, and operated by a lever, *l*, and hand-rope *h r*, that extends to the ground.

An endless chain, C^1, connects pulley C P with the upper pulleys *c p*, which are fixed on the same axis as the flanged transporting-wheels *w*. (See Fig. 3.)

It will be perceived that by pulling the rope *h r* the chain-pulley C P and rope-pulley P will be locked together; then, by pulling the endless rope R′ in one direction or the other, the carriage C will be propelled on the rail R in a corresponding direction, since the rotary motion of the chain-pulley C P (caused by friction of rope R^1 with pulley P) will be communicated through chain C^1 to the small pulleys *c p*, and thereby to the flanged wheels *w*, from which the frame *f* depends. It is hence within the power of any person, stationed on the ladder or on the ground, to propel the carriage and its attachments along the rail R to any desired point, and thereby render the ladder available for convenient and immediate use for the purpose of descent from or ascent to any window, door, or other part of the building to which the escape is attached.

The ladder L furnishes the chief means of escape from or access (of firemen or rescuers) to the building. But we design to utilize still another means of descent, when occasion requires. The same consists of a clamp, C^2, Fig. 1, which is attached to the endless rope R′. This clamp is formed of a block having a groove or channel in one side to receive the rope R′. The latter is clamped by a pivoted cam-lever, e^1, to the large arm of which a cord, c^1, is attached. This cord is secured to the

body of the person to be lowered to the ground, and the endless rope R′ then allowed to travel over its pulleys. The rapidity of the descent may be governed by the strap friction-brake *f h*, Fig. 2, which is applied to the pulley P, and operated by lever *l′* and cord c^3, extending to the ground.

The clamp may be easily detached from the rope R′ when the person has reached the ground.

To render the movement of the endless rope uniform, and at the same time automatically so, as when an insensible person is being lowered, we provide an automatic governor, as follows: Upon the rear of the pulley P (see Fig. 2) we form cog-teeth a^2, which engage with a pinion, b^2, attached to a revolving sleeve, c^2. To this tube are pivoted weighted arms d^2 and curved guides e^2. Now, as the sleeve revolves, centrifugal action throws the balls of the weighted arms outwardly in the guides, causing their elbow-extensions (see Fig. 6) to lift the stem f^2 against the tension of spiral spring g^2, and, by lifting the links h^2, causes the brake-shoes i^2, pivoted at j^2, to be projected against the inner edge of the flanged pulley P, to retard its motion and render its action uniform.

The entire fire-escape apparatus, with the exception of the rail R, which is a fixture, may be inclosed in a suitable box or casing on the rear side of the building, where it will be out of observation and protected from the weather, as well as from access of thieves or burglars designing to enter the building. By constructing the box or casing with a door properly arranged, the carriage-ladder and other attachments may be moved out at once when required for use, and guided to the desired point.

To allow the escape to travel around a corner to a different side of the building, the supporting-rail is curved, and the flanged supporting-wheels are made with a tread wide enough to accommodate said curve, as shown in dotted lines in Fig. 3.

Having thus described our invention, what we claim as new is—

1. A fire-escape consisting of a rail fixed to a building, a carriage adapted to travel thereon, and a rope combined with and adapted to rotate the supporting-wheels of the carriage, so as to cause the propulsion of the carriage upon the rail from below, substantially as described.

2. The combination, with the supporting-wheels *w*, of the chain-pulleys *c p*, geared rigidly thereto, the endless chain C^1, the loose chain-pulley C P, an endless rope and pulley, P, and a clutch for connecting the same with the loose chain-pulley, substantially as and for the purpose described.

3. The flanged pulley P, having teeth a^2, in combination with tube c^2, having pinion b^2 and pivoted weighted arms d^2, the spring g^2, stem f^2, links h^2, and brake-shoes i^2, substantially as and for the purpose described.

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Witnesses:
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