S. ROOT.
Fire-Escape.

No. 197,899. Patented Dec. 4, 1877

Fig. 1.

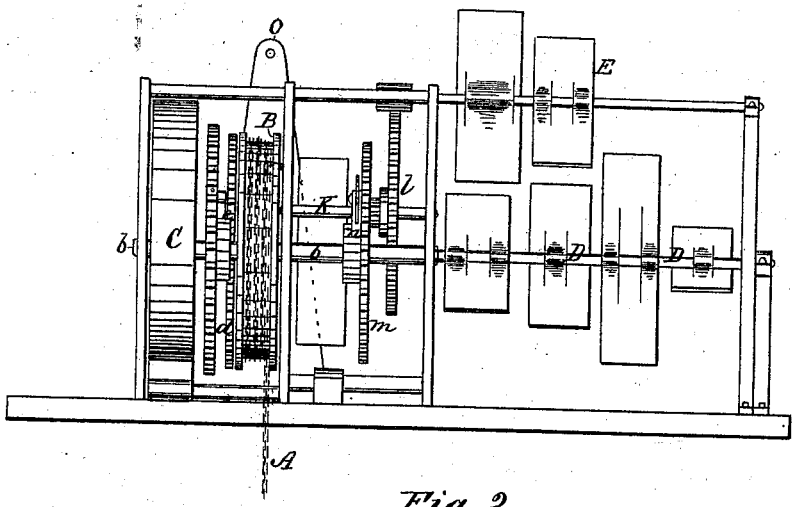
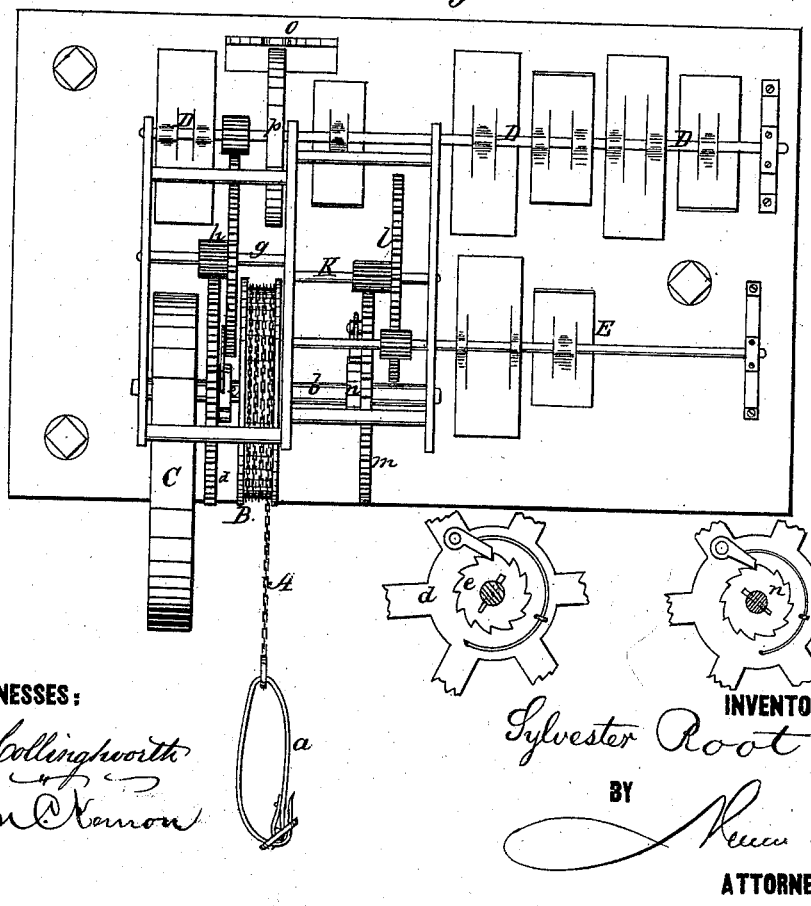
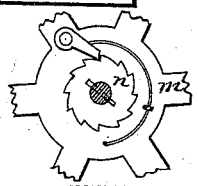


Fig. 2.





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SYLVESTER ROOT, OF KENTLAND, INDIANA.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **197,899**, dated December 4, 1877; application filed August 7, 1877.

To all whom it may concern:

Be it known that I, SYLVESTER ROOT, of Kentland, in the county of Newton and State of Indiana, have invented a new and Improved Fire-Escape; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to an improvement in the class of fire-escape apparatus in which a spring is wound or coiled upon a shaft, as the rope by which the person descends to the ground is being unwound from said shaft.

The improvement consists in combining the spring unwinding and winding mechanism with automatic brake mechanisms, one of which supplements the action of the coiled spring while a person is being lowered to the ground, and the other tends to retard the rotation of the shaft while the rope is being rewound on the same.

In the accompanying drawing, forming part of this specification, Fig. 1 is a side elevation, and Fig. 2 a plan, of my improved fire-escape.

The chief parts or elements of the apparatus are a chain, A, having a body-belt, *a*, attached and wound upon a drum, B, a coiled ribbon-spring, C, for retarding the rotation of the drum B during the descent of persons to the ground, and for rewinding the chain upon the drum after the person who has descended has detached the belt *a* from his body, and two air-brake mechanisms, D E, one, D, for aiding the spring C in retarding the unwinding of the drum B as persons descend to the ground, and the other brake, E, for hindering or retarding the rotation of the drum in the opposite direction, and thereby preventing the chain being rewound on it too rapidly. The spring C and drum B are attached to the same shaft *b*. Between the spring and drum is a spur-gear, *d*, which is loose on said shaft, and provided with a click or spring pawl for engaging an adjacent ratchet-wheel, *e*, which is fast on the shaft. The gear *d* operates the rotating air or fly brake D through the medium of an intermediate shaft, *g*, and its attached gear and pinion *h*. Thus, when the chain A unwinds from the drum B, the shaft *b* rotates and winds or coils the spring C around, it at the same time that the air-brake D is caused to rotate, and thereby regulate the rapidity with which the spring is coiled, and hence prevent the too rapid descent of the person being lowered to the ground.

The means for regulating the rewinding of the chain upon the drum are the air or fly brake E and the counter-shaft K, carrying a gear and pinion, *l*, by which said brake is connected with the gear *m* that is mounted loose on the main or drum shaft *b*. Said loose gear *m* is put in operative connection with the shaft *b*, when the spring rewinds the chain on drum B, by means of the ratchet and click or spring-pawl *n*.

It will be perceived, therefore, that, when a person is being lowered by the chain A, the fly-brake D is operated and the fly-brake E stands still, and vice versa. When the chain is being rewound upon the drum, the brake D stands still and the other air-brake, E, is operated. Hence the brake D applies as a regulator for the spring C in winding or coiling around the shaft *b* when the apparatus is operating as a fire-escape proper, and the brake E applies as a regulator for the spring in unwinding or uncoiling from around the shaft when the chain is being drawn up to be used for facilitating the descent of another person.

In addition to these brake mechanisms, I propose to employ a friction-brake consisting of a pivoted lever, *o*, arranged to act on the periphery of a friction-wheel, *p*, which is fixed on the shaft D. This friction-brake will require to be used only in case of a very heavy person being lowered to the ground. The several shafts are mounted in a suitable frame, composed of standards supported upon a platform.

The apparatus will operate with great rapidity, it being practicable to lower fifty persons in as many minutes from a height of fifty feet, with perfect safety and without the necessity of any other labor than that required to successively attach and detach the belt.

I may substitute for the chain a wire rope or a hempen rope made fire-proof.

The entire apparatus will, in practice, be inclosed in a box or case, placed contiguous to a door or window in the upper story of a dwelling or other building in which it is proposed to use the fire-escape. The belt *a* may be left protruding through a slot or aperture of the box, in order to be more quickly seized and attached when required.

The apparatus may also be utilized for elevating hose to the upper stories of a building by attaching the same to the chain by a line, or any suitable means.

Having thus described my invention, what I claim as new is—

1. In a fire-escape, the combination of the coiled spring, the drum, the chain, the loose gear, the ratchet and click, and the fly-brake, substantially as shown and described, for the purpose specified.

2. In a fire-escape, the combination of the fly-brake E with the shaft *b*, drum B, chain A, and spring C, substantially as shown and described, for retarding the recoiling of the spring, as specified.

3. In a fire-escape, the spring C, shaft *b*, drum B, the loosely-mounted gear, and ratchet and click, in combination with the fly-brake E, the loose gear, and its ratchet and click, and the fly-brake D, all as shown and described.

The above specification of my invention signed by me this 4th day of August, 1877.

SYLVESTER ROOT.

Witnesses:
AMOS W. HART,
AUG. M. TANNER.