

E. LUMPERT.
Fire-Escape.

No. 199,078.

Patented Jan. 8, 1878.

Fig. 1

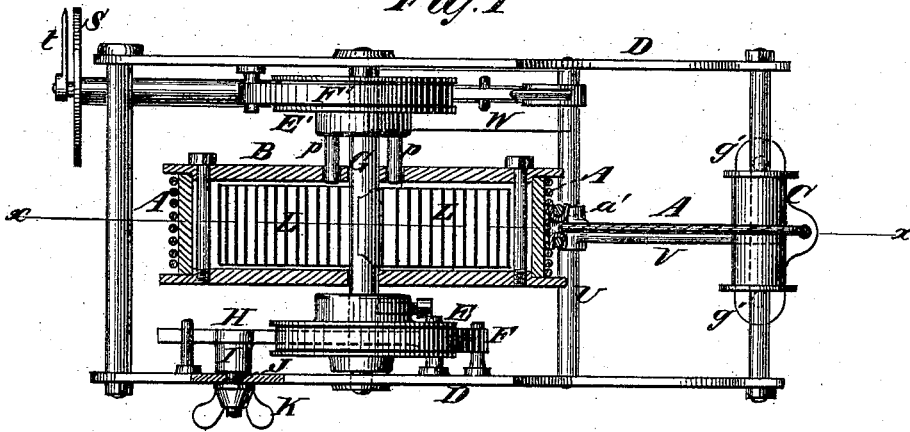


Fig. 3

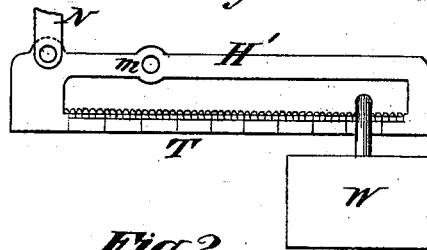
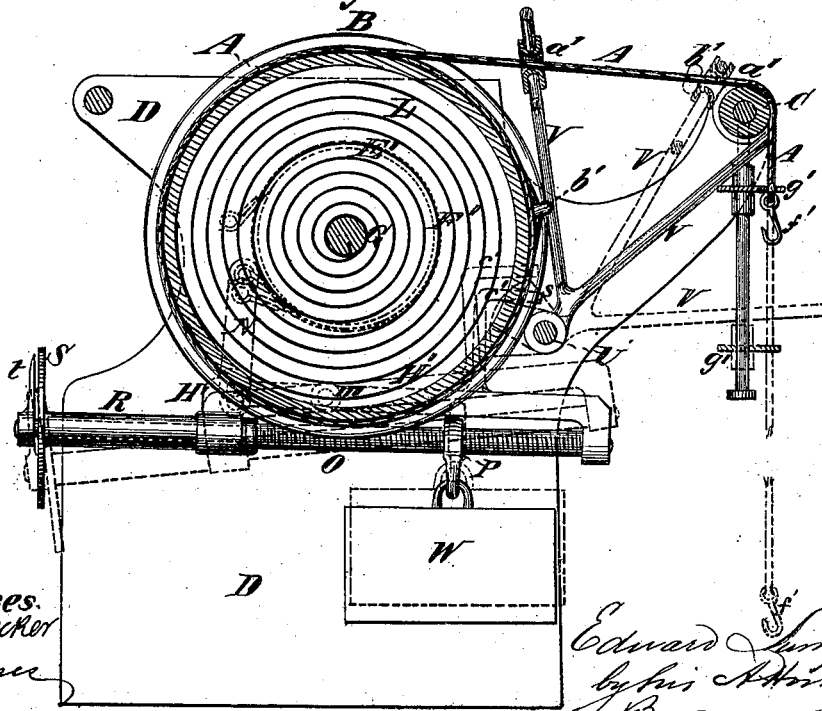


Fig. 2



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IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. 199,078, dated January 8, 1878; application filed November 16, 1877.

To all whom it may concern:

Be it known that I, EDWARD LUMPERT, of the city and State of New York, have invented an Improved Fire-Escape; and I 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.

My invention is designed more particularly for use in hotels, factories, tenement-houses, and other buildings wherein many people are congregated or employed.

Figure 1 in the drawing is a partial top view and partial section of my improved fire-escape. Fig. 2 is a vertical section made on the line *xx* in Fig. 1. Fig. 3 is a detail, showing a modification of one part of my improvement.

A is a rope or chain, by which the descent of persons in danger from fire is to be made. The said rope is to be supplied with a hook or other appliance for the attachment thereto of any device for carrying the persons safely to the ground. Said rope is wound upon a drum, B, in its ascent, and unwound from the same in its descent, passing also over the pulley or sheave C. Said drum and sheave have their axles supported in suitable bearings in a frame, D.

The axle G of the drum B is fixed in the frame D, and held from turning by means of a brake-wheel, E, keyed or otherwise rigidly attached to said shaft, and a flexible brake, F, which holds said brake-wheel and the said drum-axle G from turning when the fire-escape is in use, as hereinafter described. Said flexible brake is tightened on said brake-wheel by means of a lever, H. From the lever H projects a male screw-threaded stud, I, which enters an arc-shaped slot, J, in the frame D, and which is held from moving by a set-nut, K, when desired.

Within the drum B is placed a coiled spring, L, the inner end of which is attached to the axle G, and the outer end of which is attached to the inside of the periphery of the drum, in such manner that the winding off of the rope A from said drum winds up the said spring around the said axle, and the uncoiling of said spring will wind the rope again on said drum.

The brake-wheel E, brake F, and lever H

are employed in coiling the spring and setting the apparatus in such manner that the free end of the rope may be drawn up to the proper height when wound off from the drum in the use of the same, as hereinafter described.

For very high buildings, two or more drums may be employed, so connected that the action of their interior springs may be aggregated in drawing up a long rope.

Upon the axle G is also loosely fitted another brake-wheel, E', the object of which is to control the descent of the rope when the free end of the latter is weighted. Said brake-wheel E' is connected with the said drum B by projections *pp* entering recesses in the side of said drum, or in any other suitable manner, and consequently the said drum B and brake-wheel E' turn together on the axle G.

Resistance to the motion of the brake-wheel E' and drum B is obtained by the flexible brake F', which is pressed upon the wheel E' by means of a tightening-lever, H', having its fulcrum at *m*, and which applies its power to the said flexible brake F' by means of a link-bar, N. The said lever carries a weight, W, which is suspended by a nut, P, from a screw, O, attached to said lever. Said screw passes through a sleeve, R, to which sleeve is attached a plate, S. Said plate S is graduated in such manner that in turning the screw O an index-finger, *t*, on the end of said screw, points out when the weight W is set to give the required pressure upon the brake F' and brake-wheel E', to permit only a prescribed velocity of descent to a person of given weight descending by the rope A. The setting of the weight is, in this manner of carrying out the invention, accomplished by the turning of the screw O; but in another mode of carrying out the invention the weight W is suspended from a scale-beam, T, attached to the lever H', as shown in Fig. 3, and is set by sliding it along to the gradations on said beam.

To a shaft, U, which has its bearings in the frame D, is attached a rock-lever, V. This lever may be of a bell shape or any suitable construction, but is here represented as composed of duplicate arms, on one of which is an eye-piece or guide, *a'*, for the rope A' to pass through. Said guide is free to play up

and down on said lever to accommodate itself to vibratory motions of the rope. On the rope A' is a stop, *b'*, which may either be fixed or adjustable, and which is designed to occupy such a position on the rope that when a person escaping reaches the ground said stop engages with or is arrested by the lever V or guide *a'* thereon. This causes said lever, when moved by the pull or draft on the rope by the descending body to the position represented for it by dotted lines in Fig. 2, to act, by a cam, *s'*, on the shaft U, against a bent arm, *c'*, on the brake-lever H', in such manner as to relieve the brake-wheel E' from pressure or hold by the brake F'.

Secured also to the rope A' on the advance or opposite side of the guide *a'*, or in advance of the sheave C and forward arm of the lever V, is a reverse stop, which may be formed by the lowering-hook *f'* or other attachment to the rope. This reverse stop, on the return or lift of the rope by the winding action of the drum B, acts on a sliding drop, *g'*, which is free to move up and down a rod or rods pendent from the shaft of the sheave C, and causes said reverse stop to operate, as the rope A' approaches the completion of its return action or lift, to raise said drop till the latter, acting against the forward arm or portion of the lever V, moves said lever from the position represented for it by dotted lines in Fig. 2 to the position shown for it by full lines in said figure, and thereby allows the weighted lever H' to descend again and tighten the brake F', which restores the apparatus to its normal working condition. These means for relieving and tightening the brake F' constitute an automatic regulator for controlling the run-

ning or paying out of the rope and return movement of the latter to a given height of the apparatus from the ground.

I claim—

1. In a fire-escape, the combination, with the hollow drum, its attached rope or chain, and the coiled spring attached to the drum and its shaft, of two automatically-operating brake-wheels and brakes, one for controlling upward run of the rope or chain and the other for controlling the downward run of the same, substantially as set forth.

2. The combination, in a fire-escape, of an adjustable weight and means for indicating the adjustment of the same to the weight of the body to be lowered, the spring-drum, with its attached lowering rope or chain, and the brake and brake-wheel which regulate the descent of said rope or chain, substantially as specified.

3. The combination, in a fire-escape, with the spring-drum and its attached lowering rope or chain, of a brake-wheel and brake for controlling the descent of said rope or chain, and a regulator or means for automatically releasing and applying said brake at the two extremes of the up-and-down run or action of said rope or chain, essentially as specified.

4. The stops *b'* and *f'*, attached to the lowering rope or chain, in combination with the lever V, the cam *s'*, the lever H', the brake F', the brake-wheel E', and the spring-drum B, substantially as and for the purposes herein set forth.

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Witnesses:

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