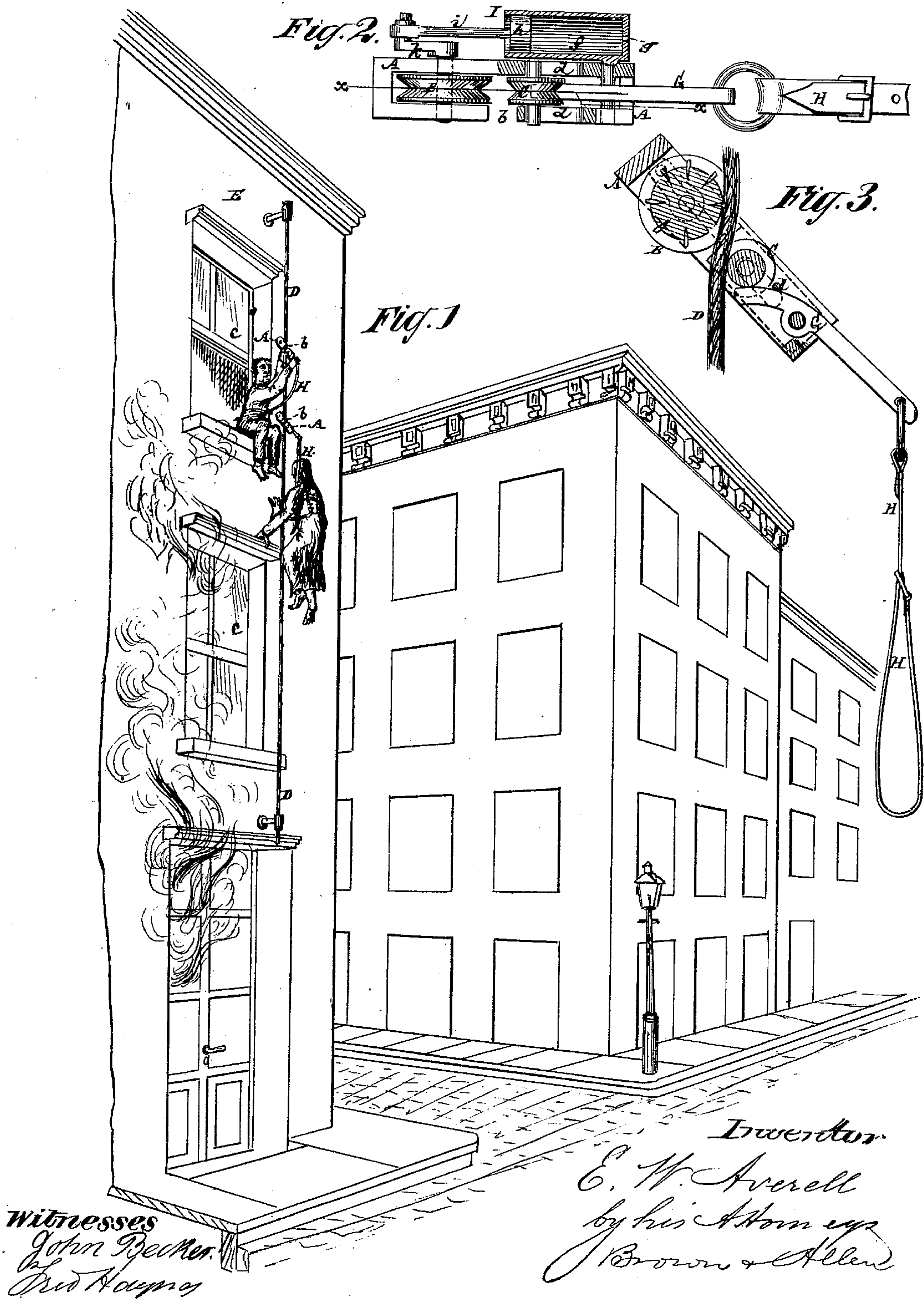


E. W. AVERELL.
FIRE-ESCAPES.

No. 195,788.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **195,788**, dated October 2, 1877; application filed August 15, 1877.

To all whom it may concern:

Be it known that I, EDWARD W. AVERELL, of the city and State of New York, have invented certain new and useful Improvements in Portable Fire-Escapes, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention consists in a portable roller-clamp, to which the body of the person to be lowered may be attached by a strap or straps, and which is designed to be applied to a fixed chain or wire rope, arranged to extend down the outside of a building or elsewhere, said clamp having its parts organized so that it may readily be slipped onto said rope or chain and be caused to hug or close on the same, and to admit of the safe lowering of the person attached to the clamp.

The invention also consists in various novel constructions and combinations of its parts whereby increased efficiency is obtained; and it furthermore consists in a combination, with the roller-clamp, of a pneumatic governor for checking the too rapid descent of the attached body or person.

Such portable fire-escape, by reason of its compactness, may either be carried about the person or in a traveler's baggage without much or any inconvenience; or, being both small and cheap, one or more may be kept in each room of a hotel or other building from which it is desirable to provide for an outside means of escape. The wire rope or chain with which said fire-escape is designed to be used may be secured to the outside of the building, at or near its eaves, and descend to within any desired distance from the ground, and be arranged to clear the lintels and sills of the windows, in front or to one side of which latter it may be placed, accordingly as inside or outside shutters are used.

Figure 1 represents a view in perspective of the front of a building with my improved fire-escape as in the course of being applied to lower a person or persons. Fig. 2 is a side view, upon a larger scale, of the roller-clamp detached; and Fig. 3, a section of the same on the line *x x*.

A is a roller-clamp frame, having rollers B C within it, and an opening, *b*, in one of its

sides or faces, at a point or place between said pulleys, to admit of the frame being entered over or around a wire rope or chain, D, attached to the building E, and so as to receive said rope or chain between said pulleys. This rope or chain D is designed to be a fixture, and may be attached to the building at or near its eaves, and descend to any desired distance from the ground; it may either be arranged alongside of or in front of the windows *e*, but so as to clear the sills and lintels thereof, and free from interference by the shutters.

When a chain is used it may be constructed somewhat similar to the fusee-chain of a watch, and so that one of the pulleys, B, of the clamp will engage by pins or studs on its periphery with the links, but will not be restrained from clamping the chain and moving down over it. Said pulley may also be roughened on its surface when a wire rope is used to make the descent. In either case the rope or chain D should be more or less flexible, to admit of its being clamped by the pulleys B C.

The pulley B, which, when the clamp is applied to the rope or chain D, as represented in the drawing, has a fixed bearing in its frame A, is the upper pulley of the clamp, and may be of larger diameter than the other pulley C, the axle of which works in longitudinal slots *d* of said frame, so that said pulley C may be adjusted nearer to or farther from the pulley B, and so that when set or adjusted toward the latter it partly or wholly closes the opening *b* in the frame A, and prevents the clamp from being disconnected from or falling off the rope or chain D. The drop or outward adjustment of the pulley C relatively to the pulley B admits of the clamp being received onto the rope or chain D through the opening *b* in the clamp-frame.

The closing of the clamp on said rope or chain is effected by a bent or cam lever, G, pivoted to the under end of the frame A, and bearing up against the under side of the pulley C. By suitably manipulating this lever the clamp is closed on the rope or chain, and made to gripe the latter on opposite sides by the pulleys B C, and said clamp is kept closed on the rope or chain by the weight of the body or person attached to the lower or outer end of the lever G by ropes or straps H secured around

the body before making the descent from any one of the windows of the building.

The flexing of the rope or chain D by the clamp exerts a tendency to retard the descent of the person attached to the lever G; but, to give fuller or better protection against accident from this cause, the pulley B has connected with it a pneumatic governor, I. This governor may consist of an air-cylinder, *f*, pivoted or otherwise suitably attached to the frame A, and having a closed end, in which is a small perforation, *g*, also containing a piston, *h*, which is attached by rod *i* to a crank, *k*, on the axle of the pulley B. The rotation of the crank *k* by the pulley B, as the latter revolves in making its descent of the rope or chain D, serves to slowly draw in air through the orifice *g* of the cylinder *f*, and to subsequently expel said air from said cylinder, subject to a certain resistance due to the size of the orifice *g*, thus producing a retarding or governing action on the pulley B, and on the clamp, of which said pulley forms a part. Instead of an opening, *g*, in the cylinder *f*, there may be an opening in the piston for ingress and egress of air.

In some cases the pulleys B and C may be

of the same diameter, or the under pulley larger than the upper one, and either or both pulleys be made adjustable to clamp the rope or chain, and to more or less close the opening *b* in the frame A of the clamp.

I claim—

1. The roller-clamp having an opening, *b*, in one side or face of its frame A, in combination with the rollers B C, either of which is made adjustable relatively to the other and to the opening *b* in the frame, substantially as and for the purposes specified.

2. The cam or bent lever G, in combination with the adjustable roller C, the fixed roller B, and the frame A, having an opening, *b*, in its side, essentially as and for the purposes described.

3. The combination of a pneumatic governor with a roller-clamp for operation on a fixed or pendent rope or chain, substantially as and for the purposes specified.

EDWARD W. AVERELL.

Witnesses:

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