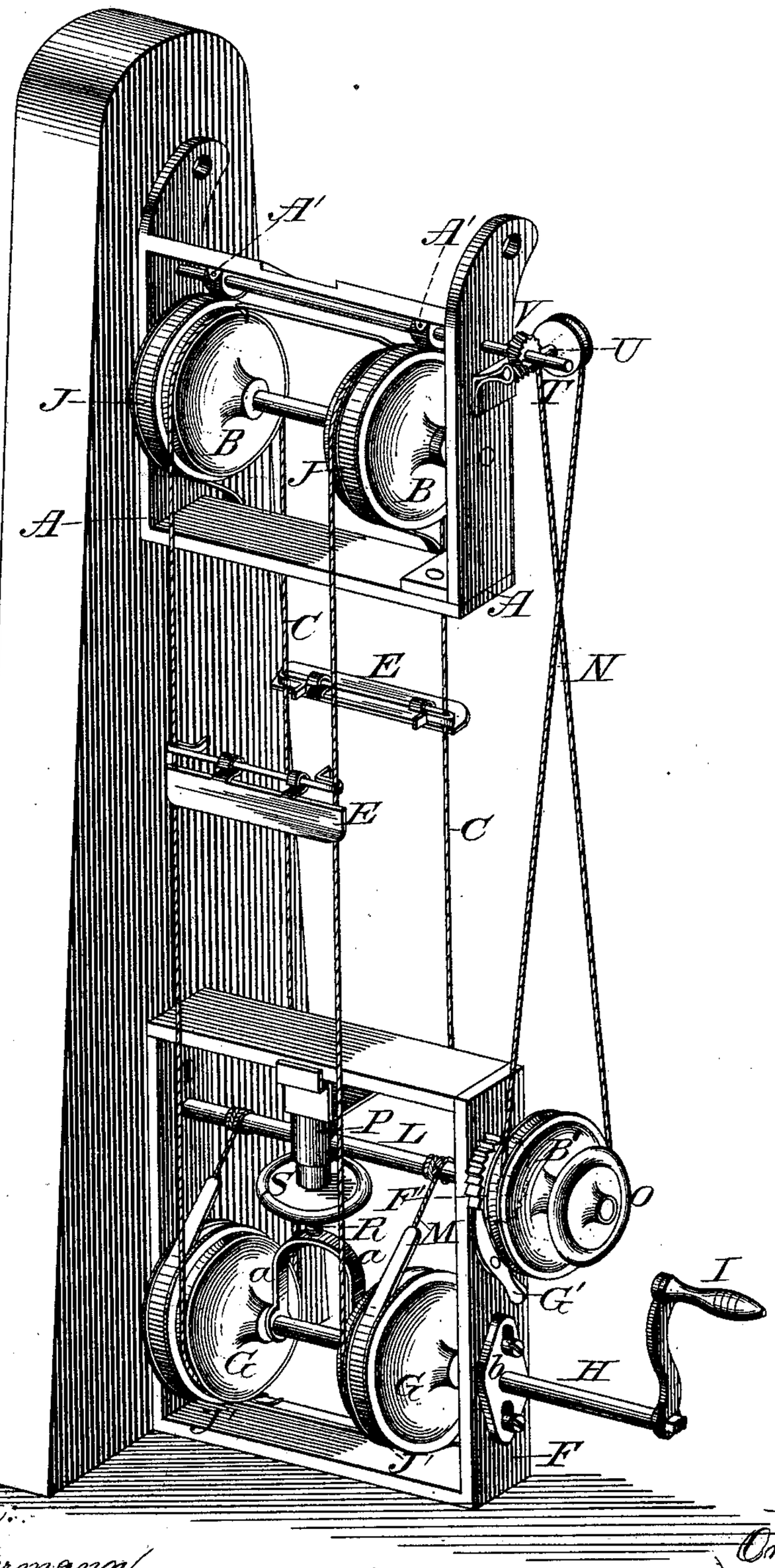
O. H. CURTIS.

Fire-Escape.

No. 220,703. Patented Oct. 21, 1879.



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UNITED STATES PATENT OFFICE.

ORVILLE H. CURTIS, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **220,703**, dated October 21, 1879; application filed December 27, 1878.

To all whom it may concern:

Be it known that I, ORVILLE H. CURTIS, of the city of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the accompanying drawing represents a perspective view of my invention.

The object of my invention is to provide improvements in fire-escapes, which escape may be used both as a stationary ladder, upon which several persons may both ascend and descend at the same time, as occasion may require, to facilitate escape from and access to a burning building, and by which firemen may elevate and use their hose at any fixed point desired, and as an automatic device upon which both persons and things may be caused to descend safely by their own gravity, which device is provided with suitable friction-brakes, whereby the motion of the ladder, when thus automatically operated, is governed or held in a rigid position when used as a ladder, which device is also further adapted to elevating as well as lowering articles of furniture and other objects by means of a crank, which is operated by a person at the bottom of the ladder, all of which is further explained by reference to the accompanying drawing, in which—

A represents a substantial frame, which is attached at or near the top of the building. It is provided with pulleys B B, upon which cables C C are suspended. The cables are provided with steps or supports E, by which they are connected together.

F is a substantial frame, which is secured to or near the base of the building, and is provided with pulleys G G, around which the lower ends of the cables operate. The pulleys G G are secured to shaft H, with which they revolve. The shaft H is provided with crank I, by which a person upon the ground may operate the ladder for both elevating and lowering persons and things.

J and J′ are brakes, by which the speed of the descending object is governed. The brakes are made of spring-steel or other elastic plates or bands, and are secured near the periphery of the pulleys, whose motion they check by being drawn firmly against them. The upper brakes, J, have their lower ends attached to the frame, A, and their upper ends attached to the eccentrics A′ upon the shaft K, around which they wind, and by which they are drawn firmly against the periphery of the pulleys.

By the use of eccentrics the brake-straps are applied with a force in an increasing ratio to that applied to the cord N. The lower brakes, J′ J′, are in like manner secured to the frame F, and are drawn against the periphery of the pulleys G G by the shaft L, with which they are connected by the cable M.

The shaft L is operated and the cables M and lower brakes, J′, are tightened by revolving the hand-wheel Q, and the shaft L is retained as adjusted by the pawl G′ and ratchet F′, as shown. The shaft L serves to support the stud P, through which it passes.

The shaft H, with pulleys G, is raised and lowered by turning the hand-nut S upon the screw R. As the nut S is turned upward upon the screw R it presses upward against the stationary stud P, and thus drives the screw downward with the arms *a a* and shaft H, which shaft is provided at each of its ends with sliding boxes or journals *b*, as shown. Thus, by turning the nut S, the pulleys G are forced downward and the cables C of the ladder are tightened.

The shaft K is operated by drawing upon cord N, through the medium of the pulley T, endless screw U, and screw-pinion V, as shown in the drawing. The pulley B′ revolves loosely upon the shaft L, its office being simply to retain the break-cord N, which runs around it. The brake-cord is suspended from pulley T in a convenient position to persons upon the ladder, thus enabling them to govern their descent or entirely check their motion.

It is intended by this device that the tension of the brakes shall at all times be so great

that the ladder will remain at rest when persons are getting upon and preparing to descend, and that the automatic descent may be accomplished only by drawing upward upon the brake-cord.

Having thus described my invention, I do not claim flexible ladders, broadly, but only in the construction of this particular device.

What I claim as new, and desire to secure by Letters Patent, is—

1. In that class of fire-escapes having an endless cable-ladder arranged to operate around pulleys, the speed of which is checked by brakes, the combination of the pulley T, endless screw U, screw-pinion V, eccentric A′, shaft K, band-brake J, and frame A, all substantially as set forth.

2. In said class of fire-escapes, the combination of shaft H, having handle I, movable journal-boxes *b*, arms *a*, screw R, hand-nut S, stud P, and frame F, all substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ORVILLE H. CURTIS.

Witnesses:
JAS. B. ERWIN,
K. SHAWVAN.