(No Model.)

M. NAYLOR.

FIRE ESCAPE.

No. 377,266. Patented Jan. 31, 1888.

Fig. 2

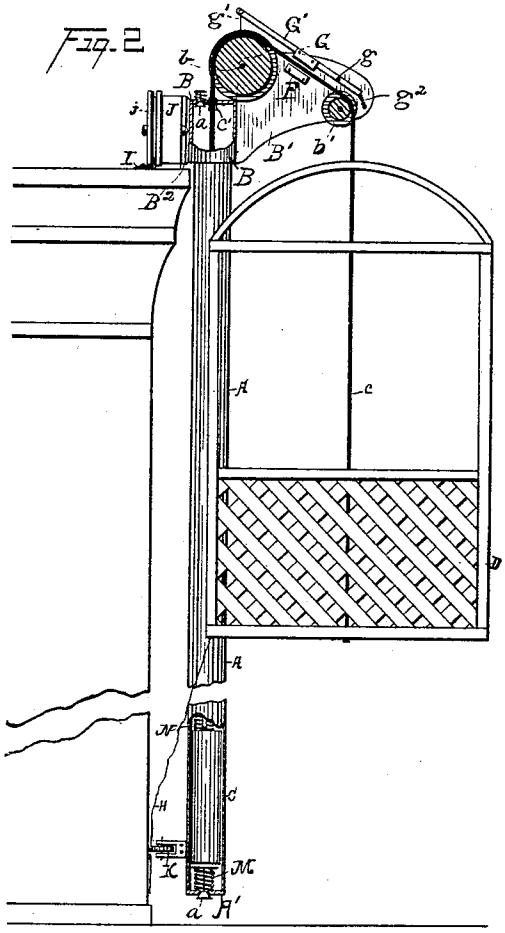


Fig. 1

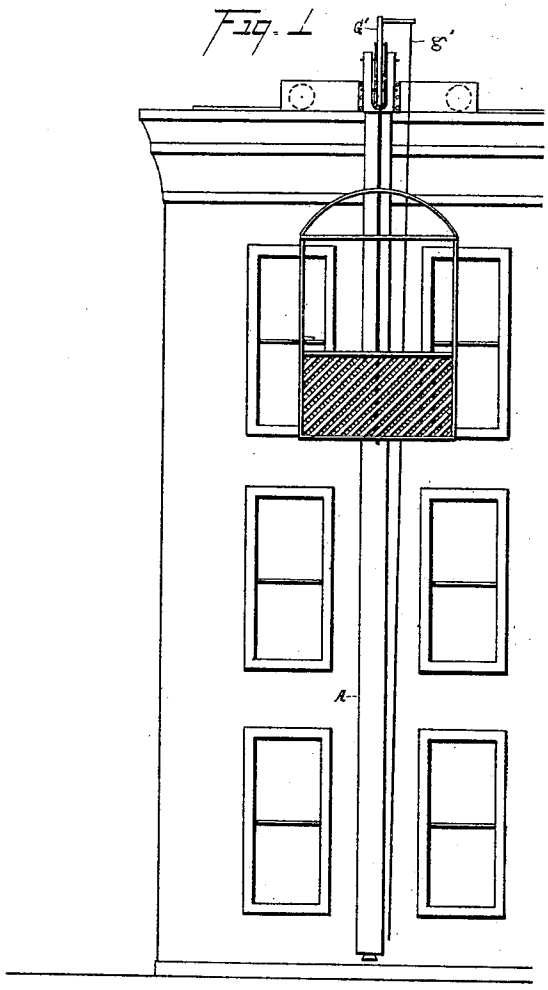


Fig. 3

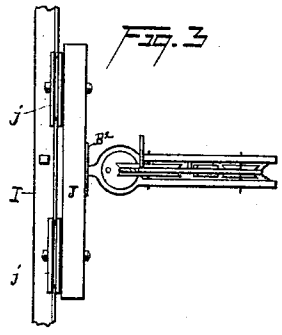
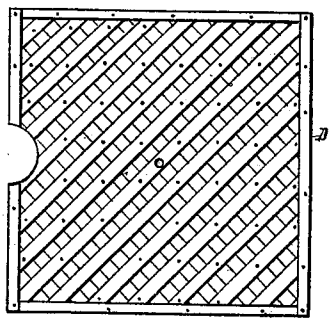


Fig. 4



WITNESSES

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UNITED STATES PATENT OFFICE.

MICHAEL NAYLOR, OF CLEVELAND, OHIO.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 377,266, dated January 31, 1888.

Application filed September 12, 1887. Serial No. 249,519. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL NAYLOR, of Cleveland, in the county of Cuyahoga and state of Ohio, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in fire-escapes; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation. Fig. 2 is an enlarged side elevation, partly in section, portions being broken away to reduce the size of the drawing. Fig. 3 is a plan. Fig. 4 is a plan of the cage in detail.

A represents a tube extending usually from the top to the bottom of the building. This tube is more commonly made of about four-inch gas-pipe closed top and bottom, for instance, as shown at A′ and B. The cap B is usually made integral with arm B′ and flange B^2, the former for supporting the sheaves *b* and *b′* and the latter for attaching the device directly or indirectly to the building. Inside of the tube operates the weight C, the same serving as a piston and as a counter-balance for the cage D. Weight C fits easily in the tube, and may be provided with any suitable packing, if found necessary; but usually a good easy fit will be all that is required. Cable *c* is attached to the weight and leads over sheaves *b* and *b′*, and is attached to the cage D. The cable passes out usually through a short tube, *c′*, inserted centrally in cap B. If the cap be of considerable thickness, the tube *c′* will not be required, as in such case a hole through the cap will have sufficient wearing-surface. Each cap A′ and B has a vent-hole closed, respectively, by a valve, *a*, both valves opening downward. With the upward movement of weight C both valves are closed, the upper valve by the pressure of air inside the tube, and the lower valve being closed by suction caused by a partial vacuum had in the tube below the weight. With the descent of weight C both valves open, the top valve admitting air into the tube above the weight, and the lower valve allowing the air in the tube below the weight to escape. The weight, therefore, in its descent is practically unobstructed, and, being somewhat heavier than the cage, elevates the latter with a moderate movement. The normal position of the cage is elevated, and when one or more persons step on the cage to descend the downward movement of the cage and load is regulated by the escape of air from the tube above the weight through the tube-orifice through which the cable passes. More or less of the air of course is forced past the weight. With tube or orifice *c′* of such internal diameter only as will allow the cable to pass freely, the velocity of the descending cage will usually be from one to two feet per second, according to the load, and with such slow movement no injury would accrue to passengers in the cage on reaching the ground. As soon as the passengers leave the cage the latter returns to its elevated position. A clamping device for the cable is provided, and consists of stationary block F and movable block G, the latter being attached to lever G′. This lever is pivoted at *g*, and has a cord, *g′*, attached to the free end thereof. By drawing down on the cord the cable is clamped between the blocks, thus holding the cage stationary while persons are taking their places on the cage. A spring, g^2, holds the clamp-blocks apart when cord *g′* is released. Cord *g′* usually extends down along the line of the cage, and may be used as a brake, if desired. A cord, H, is usually attached to the bottom of the cage and hangs down beside the building, so that persons on the ground or in the lower stories of the building can draw down the cage to where it may be wanted, or stop the ascending cage at any story.

The apparatus may be permanently attached to the building—for instance, in front of or between the line of windows, the latter location being shown in Fig. 1. The better arrangement is to secure a track, I, either on the roof or on the side of the building just under the eave. A beam, J, is mounted on grooved wheels *j*, that travel on the track, the beam being secured to flange B^2.

If need be, a guide-wheel, K, is secured to the tube A near the bottom end thereof, to

hold the tube vertically, such guide-wheel traveling along the side of the building when the device is moved. With such arrangement of parts a person on the ground may move the fire-escape along the building to where it may be wanted, and two or more of such fire-escapes may be operated on the same track.

To prevent any jarring when the cage reaches the top or bottom of its travel, I provide coil-springs M and N, located inside the tube, the former resting on weight C and the latter resting on top of cap A', both springs fitting the tube loosely. These springs form cushions top and bottom that prevent any jarring at the terminals.

What I claim is—

1. In a fire-escape, the combination, with cage, cable, and counter-balance, substantially as indicated, of upright tube for the counter-balance to operate in, said tube having closed ends with valves top and bottom, the top valve opening inward and the bottom valve opening outward, and an aperture through the top cap of the tube for the passage of the cable, the parts being arranged substantially as described, and for the purposes set forth.

2. In a fire-escape, the combination, with upright tube having lateral arm attached to the top and sheaves mounted on the arm for supporting the cable, of cage, cable, and piston, the latter operating inside of the tube and serving as a counter-balance to elevate the empty cage, a valve at the top of the tube opening inward, and a valve opening outward located at the bottom of the tube, substantially as set forth.

3. In fire-escapes, the combination, with tube having valves at its ends for the admission and escape of air, piston, cable, and cage, substantially as indicated, of spiral spring located inside the tube for cushioning the piston at the terminals of its stroke, substantially as set forth.

4. The combination, with upright tube, valves, counter-balance, cable, and cage, substantially as indicated, of brake-blocks made to embrace the cable, a spring for holding the blocks apart, and a cord for closing the brake-block, the parts being arranged substantially as described, and for the purposes set forth.

5. In a fire-escape, the combination, with a wheeled carrier, a tube having valves in its ends and secured to carrier, a piston located in the tube, and a cable attached to the piston and leading out of the tube, of a cage or car attached to the outer end of the cable, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 3d day of August, 1887.

MICHAEL NAYLOR.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.

Correction in Letters Patent No. 377,266.

It is hereby certified that the name of the patentee in Letters Patent No. 377,266, granted January 31, 1888, for an improvement in "Fire-Escapes," was erroneously written and printed "Michael Naylor," whereas said name should have been written and printed *Michael Naylon;* and that said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 6th day of March, A. D. 1888.

[SEAL.]

D. L. HAWKINS,
Assistant Secretary of the Interior.

Countersigned:

BENTON J. HALL,
Commissioner of Patents.