No. 753,326. PATENTED MAR. 1, 1904.

J. E. SMITH.

FIRE ESCAPE.

APPLICATION FILED AUG. 21, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

FIG. 3.

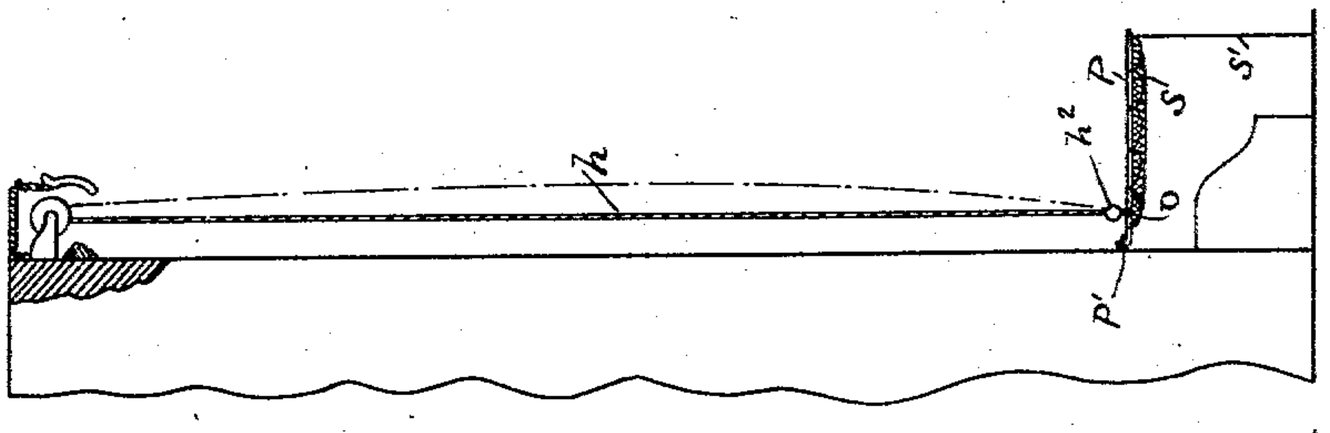


FIG. 2.

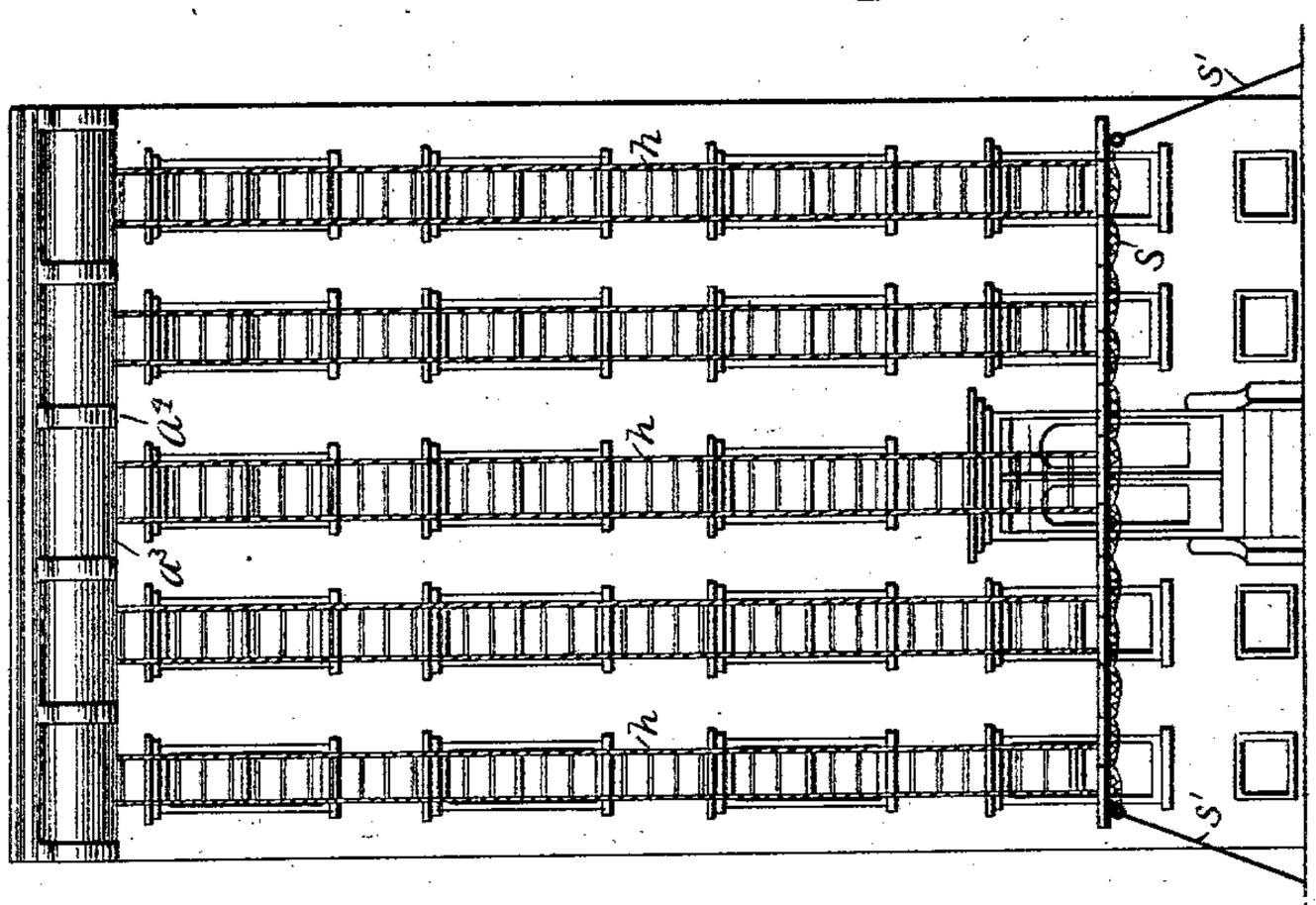
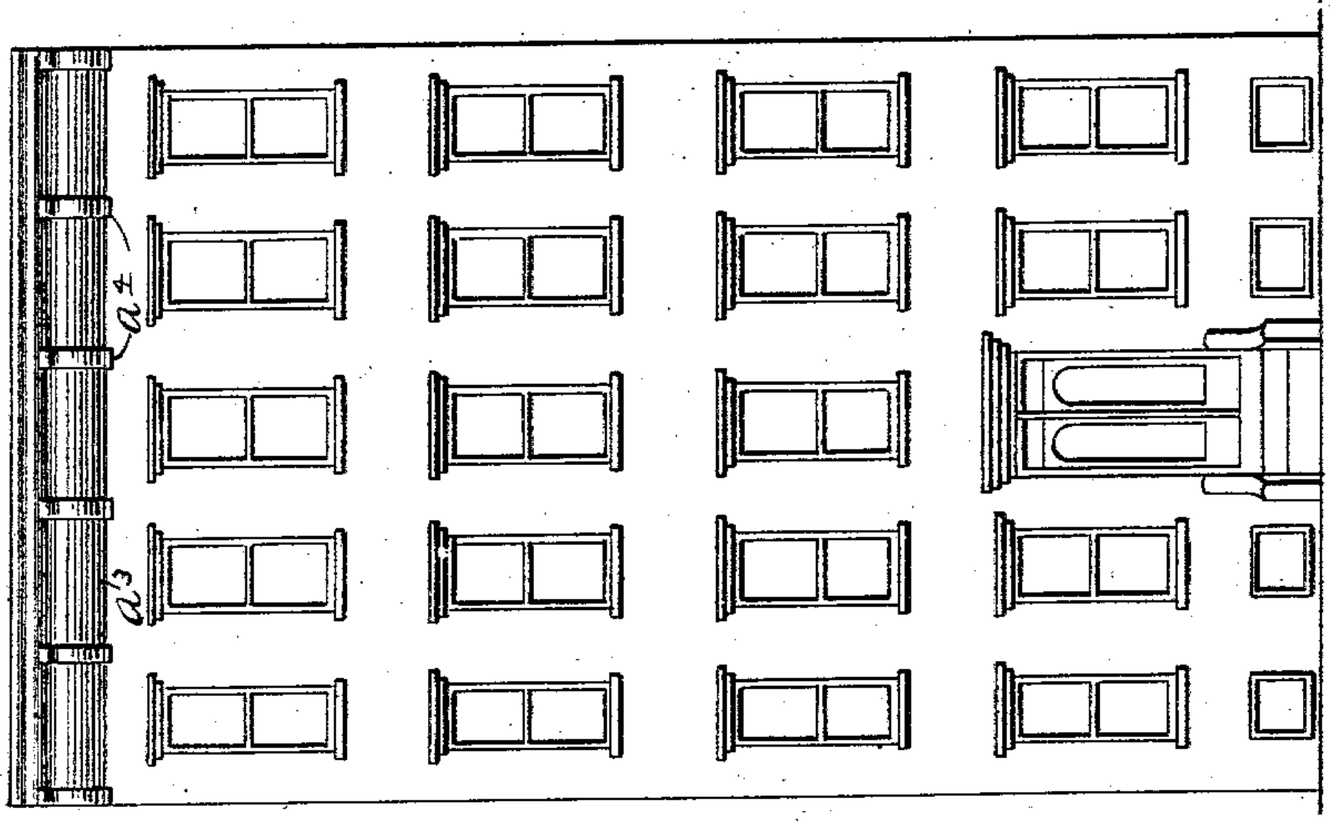


FIG. 1.



Witnesses
Albert C Leitch
John Knight

James Eliphalet Smith Inventor

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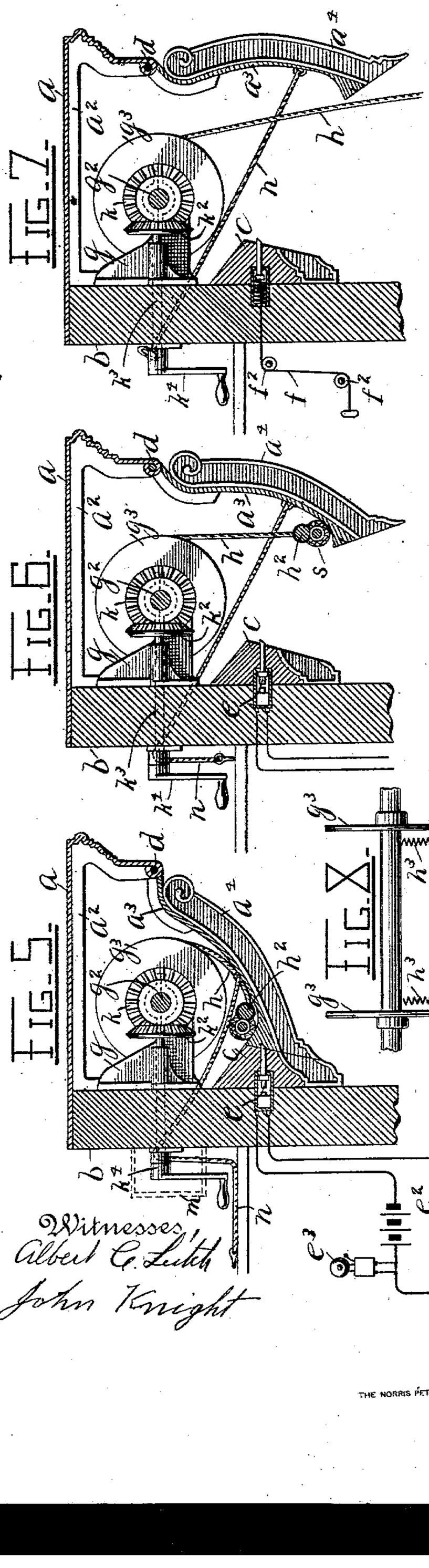
NO MODEL. 3 SHEETS—SHEET 2.



Witnesses,
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No. 753,326. PATENTED MAR. 1, 1904.

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FIRE ESCAPE.

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NO MODEL. 3 SHEETS—SHEET 3.

FIG. 3.

Witnesses
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John Knight

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UNITED STATES PATENT OFFICE.

JAMES ELIPHALET SMITH, OF FLATBUSH, NEW YORK.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 753,326, dated March 1, 1904.

Application filed August 21, 1903. Serial No. 170,299. (No model.)

To all whom it may concern:

Be it known that I, JAMES ELIPHALET SMITH, a citizen of the United States, and a resident of Flatbush, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to the construction of an improved automatic fire-escape, such as might be installed upon buildings where great efficiency is desired without the usual disfigurement caused by ordinary fire-escapes.

The object of my invention is to provide a fire-escape which shall be normally out of sight, but adapted to be brought instantly into operative position when required by the actuation of simple releasing mechanism, preferably being under the control of suitable electrical devices located at convenient parts of the building.

One of the principal features of my invention is that when desired all the exits (windows, &c.,) on at least one side of the building will be instantly provided with means of escape for the occupants of the building and that this will be effected by a single operation.

My invention consists, broadly speaking, of the combination of a fire-net and a plurality of flexible ladders reeled upon a shaft or drum located in a suitable housing at or near the roof of a building, together with means for retaining the ladders and net in reeled condition when not in use, and means for releasing the same when required, the ladders and net descending to or near the ground by gravity, avoiding all obstructions in their descent by an outward sweep. (Shown in dotted lines in Fig. 3.)

The invention further consists in the specific construction and arrangement of parts, as will hereinafter be described.

In the accompanying drawings, Figure 1 is a general view of the front of a building fitted with my fire-escape, showing the relative proportions of the releasing cornice or housing and building when the fire-escape is reeled up ready for immediate use, the cornice or housing being closed. Fig. 2 is a general view of the front of the building fitted with my improvement when the cornice has been opened and the fire-escape released, so that every point of egress has been provided with a quick and positive means of escape. Fig. 3 is a side view of Fig. 2, in which I have shown in dotted lines the course taken by my fire-escape in its descent and the manner of securing the free ends of ladders and life-net. Fig. 4 is an enlarged front view of a part of a building fitted with my improvement with a portion of the cornice or housing broken away, showing ladders and net descending by gravity and method of furling net and tautening rods upon rod or bar to which free ends of ladders are secured. Fig. 5 is a sectional view on the line A B looking in the direction indicated by the arrow, showing the housing closed and the ladders and net reeled and ready for immediate use. Fig. 6 is a sectional view through the same plane, showing the housing partly open and ladders and net being carried beyond center of gravity by a specially-constructed deflecting-lip on the lower end of hinged member of housing, thus providing for the outward sweep which I have shown in dotted lines in Fig. 3. Fig. 7 is a sectional view through the same plane, showing housing or hinged member fully open and the ladders and net taking an outward and downward course by gravity. Fig. 8 is a view of part of the shaft and flanges for receiving the ladders, showing springs which I may attach to the shaft and ends of the ladder nearest the same for the purpose of relieving said shaft from undue stress caused by the ladder "fetching up;" and Fig. 9 is a perspective view of the lower part of a building fitted with my improvement, showing the method of holding the ladders rigidly at a predetermined distance from the building by suitable tautening-bars and how I make use of same in supporting the life-net.

Referring to the drawings by letter, a is a stationary part of housing of any suitable construction or material, preferably that which I have shown, secured to the house or wall b in the usual manner and stiffened by ribs a^2, placed at suitable intervals.

a^3 is the hinged member of the cornice or housing, also provided with stiffeners a^4, placed

at suitable intervals, representing brackets when cornice is closed.

c is a jamb to receive hinged member of cornice a^3 when closed.

d is a hinge the construction of which is to be determined by the amount of stress to which it may be subjected.

e is a latch, preferably electric, for holding hinged member of cornice in place when closed and releasing same when the circuit is completed by pushing button e^2, which also causes bell e^3 to ring. I may also supply means for causing bell e^3 to ring continuously while cornice is open, also means for cutting same off when desired, thus alarming occupants of building. I may also use a direct pull-wire *f*, led up by fair-leaders f^2 from any convenient place in the building, as I have shown in Fig. 7.

g is a bracket for supporting shaft g^2, upon which are mounted flanges g^3 directly over windows for receiving ladders.

h indicates steel-wire ropes, having one end fastened to rod h^3 and the other to shaft g^2 by springs h^3.

h^4 indicates metallic bars of suitable weight spaced about fourteen inches apart, connecting the two ropes *h* and forming the rungs of the ladder.

h^2 is a continuous bar attached to the free ends of ladders and of sufficient weight to cause ladders to unreel and descend immediately upon being released by latch *e*. I will tap into the bar h^2 near the ends for the purpose of mounting swivel-eyes *o*, adapted to receive tautening-bars *p* in the manner shown, tautening-bars *p* consisting of round steel bars of sufficient cross-section turned up at one end for the purpose of engaging eyes *p'*, located in the wall of building. I may attach rod p^2 to the outer end of the tautening-bars, as shown in Fig. 9, for the purpose of relieving the other parts of undue stress, as would be caused by a heavy body descending.

s is a net of any desired material, laced to the bar h^2 at the rear, and to the two tautening-bars *p* at either end the rope *t*, of sufficient length, is used to further strengthen the net *s*.

k and k^2 are beveled gears, *k* being mounted on shaft g^2 and k^2 on a shaft k^3, on the other end of which is a portable crank k^4 for winding ladders upon shaft g^2 between the flanges g^3. I will provide a portable cover *m* for weather ends of shaft, as shown in Fig. 5, large enough to stow crank k^4 when detached, if so desired. If I find gears *k* and k^2 cause too much friction, thus retarding the unreeling of ladders, I may throw them out of gear by drawing shaft k^3 back far enough to disengage wheel k^2 after ladders have been reeled upon shaft ready for use.

n is a lanyard for restoring hinged members of cornice to closed position, as shown in Fig. 5. This lanyard passes through the wall *b* and between the ladders, passing over the bar h^2. As many of these may be provided as found necessary.

When the fire-escape has been released, either electrically or otherwise, and has descended as far as possible automatically, the tautening-bars *p* for securing rigidity and spreading the life-net are released or unfurled by unwinding the several turns of the rope *s'* and opening the bars out as far as the ropes on the front of the net will allow and engaging the hooked ends of the bars *p* nearest the wall in the eyes previously arranged in said wall for the purpose. The same ropes *s'* that were formerly used for furling are now hooked or made fast to some stationary object in the manner shown, so that they will exert a stress in opposite directions, thus serving the double purpose of "hauling down" the tautening-bars and stretching the net.

Having described my invention, I claim—

1. In a fire-escape, the combination of one or more flexible ladders adapted to descend by gravity, and a life-net secured to the free ends of said ladders.

2. In a fire-escape, the combination of one or more flexible ladders adapted to descend by gravity, a life-net secured to the free ends of said ladders and means for spreading said net.

3. In a fire-escape, the combination of a rotating shaft or drum, two or more flexible supports wound thereupon, the free ends of said supports carrying a common transverse bar or rod, a life-net attached to said bar or rod, and means for spreading said net.

4. In a fire-escape, the combination of a rotating shaft or drum, two or more flexible supports wound thereupon, a transverse bar or rod attached to the free ends of said flexible supports, a life-net applied to said transverse bar or rod, locking and releasing means for said supports and attached parts, and means for spreading said net when in released position.

5. In a fire-escape, the combination of a suitable housing preferably located at or near the roof of a building, a horizontal shaft mounted therein, a plurality of flexible ladders reeled upon said shaft, a rod or bar connecting all the ladders together at their free ends, a movable member or cover hinged to said housing and adapted when closed to support said rod or bar and retain ladders in reeled condition, a deflecting-lip carried by said hinged member or cover and a suitable releasing mechanism, all substantially as and for the purpose set forth.

Signed at Brooklyn, in the county of Kings and State of New York, this 5th day of August, A. D. 1903.

JAMES ELIPHALET SMITH.

Witnesses:
ALBERT C. LEITCH,
EDWARD R. COLHOUN.