(No Model.) 2 Sheets—Sheet 1.

F. VAUGHAN.

FIRE ESCAPE.

No. 279,053. Patented June 5, 1883.

Fig. 1.

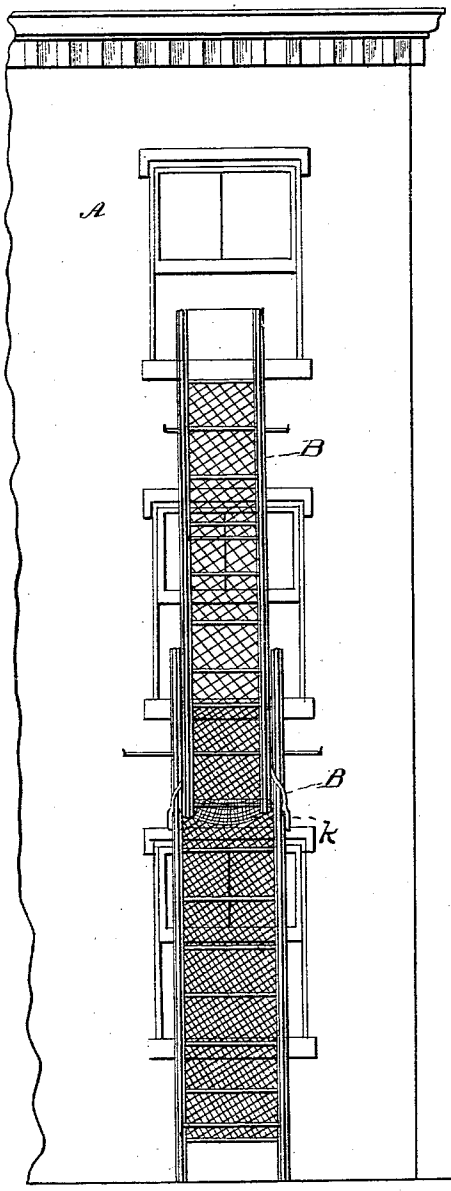
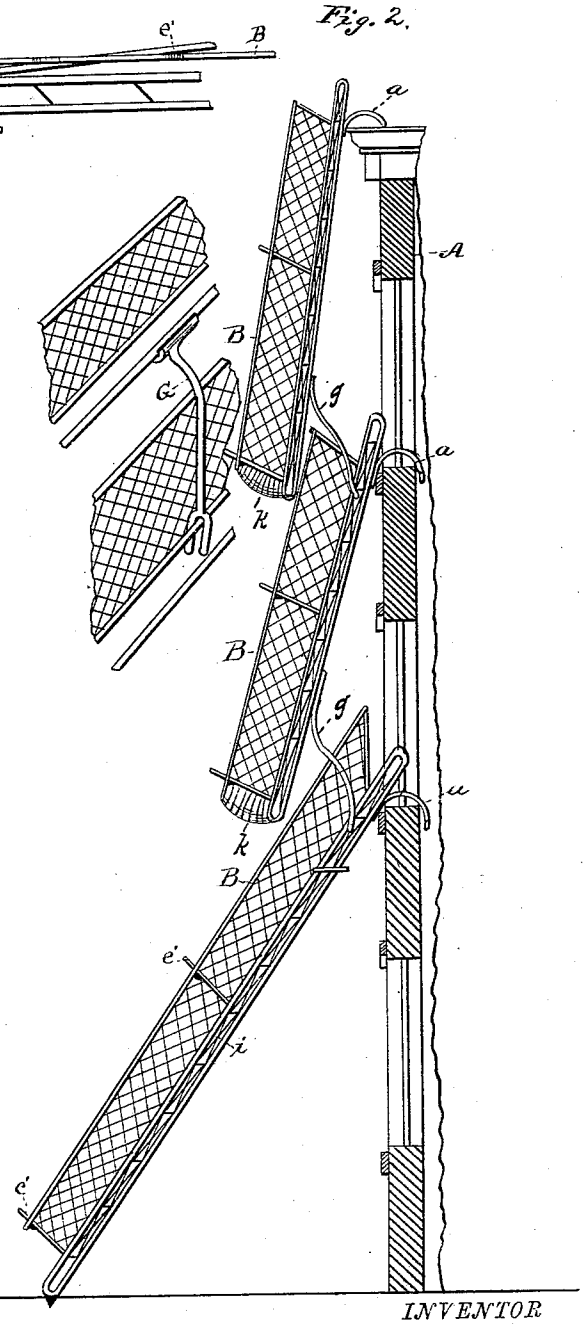


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

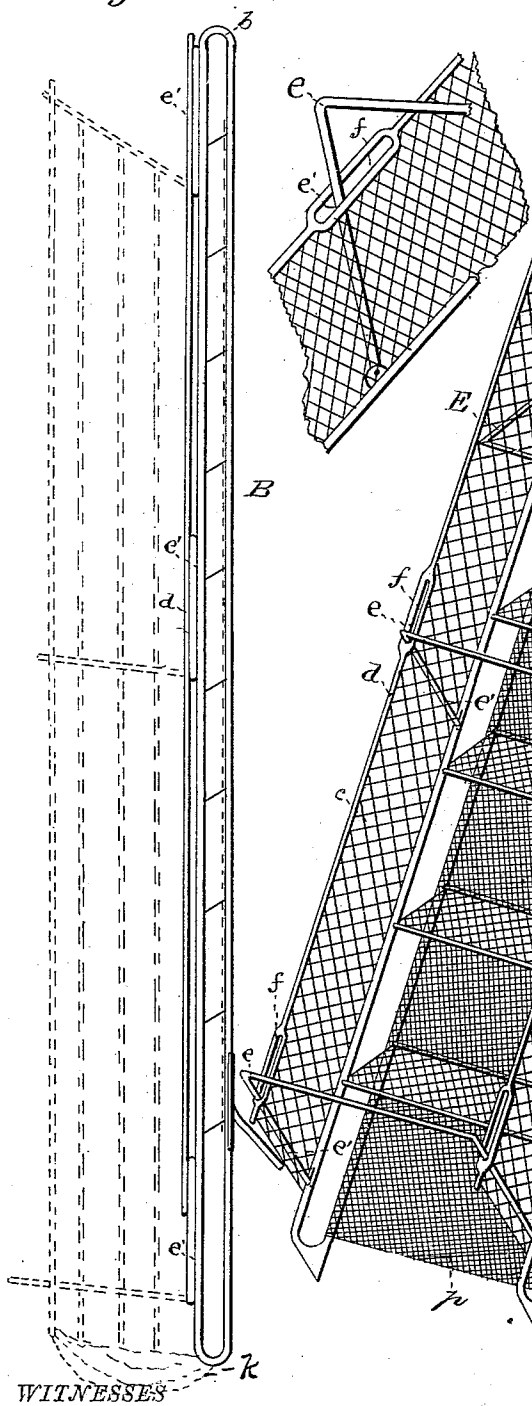

Fig. 4

Fig. 5.

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UNITED STATES PATENT OFFICE.

FRANK VAUGHAN, OF ELIZABETH CITY, NORTH CAROLINA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 279,053, dated June 5, 1883.

Application filed January 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK VAUGHAN, of Elizabeth City, in the county of Pasquotank and State of North Carolina, have invented certain new and useful Improvements in Adjustable Sectional 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 drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention has for its object to provide an improved fire-escape ladder by superposing ladders one above another to any desired height, and in furnishing means for securing each ladder to the other, when they are held in said superposed manner, in such position as to permit persons to pass between them; and to this end it consists in providing the side extensions of the ladder with side guards to prevent persons from falling off laterally; also, in providing the back of the ladders for their whole length with net-work to prevent falling through, the ladders being elevated one above the other in such manner that the top of each is made to rest beneath and be secured to a window of each story of a house, the bottom of the ladders inclining out at a sufficient angle to allow easy descent thereof and not to interfere with persons getting out of a window from one story by those descending from a story above. Each ladder has an independent hanging support, and by the means which joins one ladder to the other to form a continuous height an independent base-support is also obtained for each ladder, each independent section of the ladder bearing its own weight. The ladders are also provided with lateral platforms secured to the side extensions to enable a person to stand thereon to assist in raising the ladders up.

In the drawings, Figure 1 represents a front view of the structure when erected against a house. Fig. 2 is a side elevation thereof. Fig. 3 is a side view of a length of ladder, showing the manner of folding down the side guards when the ladder is not in use. Fig. 4 is a perspective view of the ladder complete. Fig. 5 is a detail view of portions thereof.

Referring more particularly thereto, A is a house, and B the ladder proper. The side extensions of the ladder, at the top ends, have secured thereon hooked-shaped or grapple irons *a* for hooking onto the sill of a window. The extensions *b* are provided with safety-guards *c*, extending their whole length, consisting of an arrangement of net-work arranged thereon by means of long iron rods *d*, working on transverse rods *e*, said rods being termed "transverse" in that they extend transversely across the ladder, but are bent to form upright portions *e'*. The ends of the rods *e'* are fastened to the top sides of the extensions *b* in a hinge-like manner, the object being that when the ladder is not in use the rods *e'* can be pushed forward in the slots *f* and the side guards folded up, the rods *d* resting on and adjacent to the sides of the ladder, and when the ladders are to be used the side guards can readily be raised up by drawing up the rods *e'* by the use of the transverse portion *e*, the rods being fastened to the side extensions in a hinge-like manner and provided with a projection for retaining the guard-rods when up.

g are curved-shaped irons provided at the top ends with a concave side which fits around the bottom side of the ladder extensions *b*, and securely screwed or riveted thereto at a point somewhat below the middle. The bottom end of these irons is bifurcated, and it is designed that when one ladder is placed above another the fork-shaped end will fit around the sides of the extensions, which furnishes the connecting means for one ladder to the other, the meshes of the side guards not interfering, as the forked end can go through said meshes and be made to embrace the side extensions, and gives to each superposed ladder a base-support. Of course these irons are unnecessary on the bottom ladder. Persons coming down this fire-escape can easily step from one ladder to the other, the distance between being sufficient to enable a person to pass out at one window while others are coming down from the windows above, thus forming a continuous escape-ladder. Across the back sides of the ladders is secured a strong net-work, *h*, to prevent persons descending from falling through. Near the lower round of the ladder, between the bag and the round, we leave a hole for

persons to pass through. The sides of the ladder are formed like a double banister, having light trusses *i* alternating between the two for strengthening the same; or they may be made in any suitable form. The ends of the bottom ladder are made somewhat pointed to bite into the ground.

At E E are shown side platforms, which may be used on any or all of the ladders for the purpose of enabling one to stand thereon to assist persons in their descent, it being made of strong wire net-work supported from beneath by a brace, or not, and designed to fold down to the sides of the ladder. The steps of the ladders incline somewhat down to facilitate rapid descent in one continuous stream from all the windows by one of my continuous escape-ladders without difficulty. Women and children escaping by ladders often lose their grip and fall, either sidewise through the ladder or straight to the ground. With my improved ladder such accidents are provided against. The safety appearance of my ladder lends courage to nervous persons, and thus better enables them to act instantaneously for their escape.

It is obvious that the ladder may be made of any suitable material, lightness, strength, compactness, and facility of handling being the primary object. It will be further seen that the ladder, when not in use, occupies no greater space than the ordinary ladder, the side guards folding longitudinally on the frame entirely out of the way. The sections of the ladder are interchangeable, and of course may be adjusted to any height of story.

It may be observed that the base-supports may be socketed or fastened by other means than by being bifurcated; or the sections of ladders may be kept apart by other means than those shown, as my invention is mainly in superposing sections of ladder one upon the other, so that persons may pass from one to the other, and each to be independent of the other, and providing safety-guards therefor, and therefore I do not desire to be confined to the details of construction shown.

The operation is as follows: The ladder-escape is first hooked to the sill of the window, the hooks or grapple-irons being fastened some distance from the ends of the ladder, which, when in position, causes the ladder to project well up into the window, by means of which persons escaping may readily lay hold and swing themselves around into position for descending. The second section or ladder being now in position, the base-supports, being fastened well up toward the center of the ladder, form a strengthening-stay, by which the ordinary spring is prevented. These stays or supports are bifurcated at their lower ends to straddle the frame of the ladder to prevent lateral movement, and by their position persons descending may use them for hand-rails while passing from one ladder or section to the other, they holding the ladder sufficiently apart to permit persons passing under and between them. All the sections of the ladder except the bottom are provided with a bag or stop, K, for the purpose of arresting the fall of persons, should they accidentally slip or lose their hold on the ladder. This bag may be of the ordinary net-work. Means of escape is thus provided for all the stories of the house from the same ladder and at the same time without interference of one section with the other, and escape thus rendered comparatively easy.

Having described my invention, what I claim is—

1. A ladder for fire-escapes, having a floor of net-work or other suitable material, and side guards made movable, so as to be placed in position when the ladder is in use, and adapted to be folded down when not in use, as described.

2. A fire-escape ladder provided with fastening-hooks or grapple-irons, the said hooks being fastened to the ladder, so as to make the ends project well up into the window, in combination with the concaved and forked irons, said irons secured to near the bottom of one ladder, and adapted to embrace the sides of the ladder beneath, substantially as described.

3. The combination, in an escape-ladder, of two or more sections, each being adapted to be hooked to the window of a house at one end, the other end having raised supports for resting on its next adjacent section, by which passages from the windows are formed, and from one section of the ladder to the other, as described.

4. An escape-ladder consisting of a series of sections, making a continuous ladder when in position, each section being superposed one above the other, and made interchangeable and detachable, said sections being provided with arresting-bags for the purpose of safety, as described.

5. The combination, with a fire-escape ladder, of the series of sections superposed one above the other, each having independent sustaining-hooks and bifurcated base-supports, said supports serving the double purpose of stiffening the frame of the ladder and holding it in position on its next adjacent section, and being so curved or formed as to permit passage between the sections, as described.

6. The combination, in a fire-escape ladder, of the series of sections, each section having independent sustaining-hooks and base-supports, located as described, of the lateral side steps or platforms, and the arresting safety-bags, all adapted for joint operation, for the purposes described and shown.

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

FRANK VAUGHAN.

Witnesses:

B. F. MORSELL,

EDWARD E. ELLIS.