T. F. CARPENTER. 2 Sheets—Sheet 1.

Fire-Escape.

No. 200,694. Patented Feb. 26, 1878.

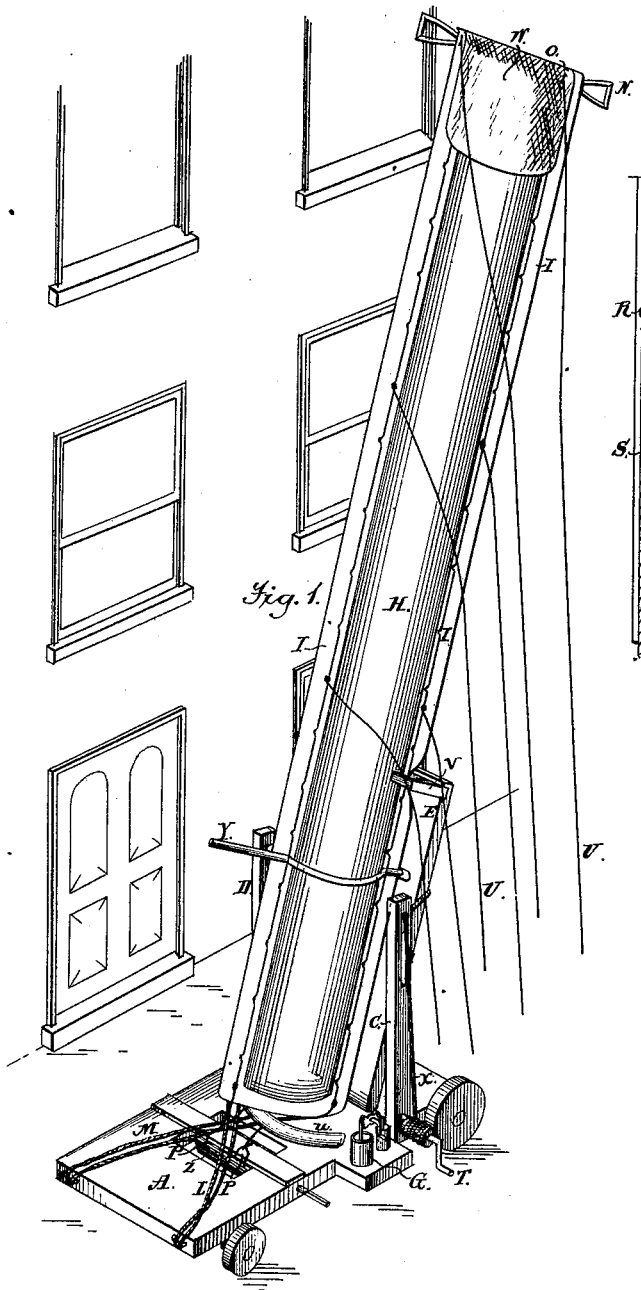


Fig. 1.

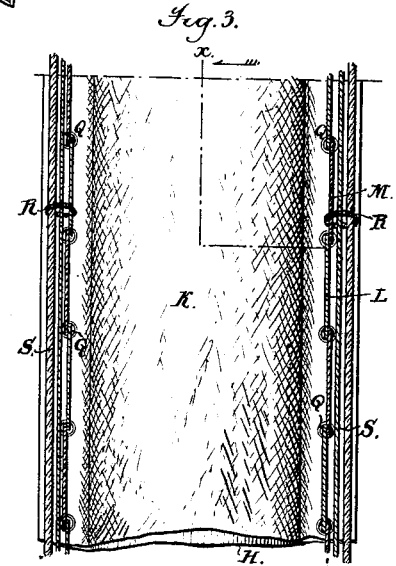
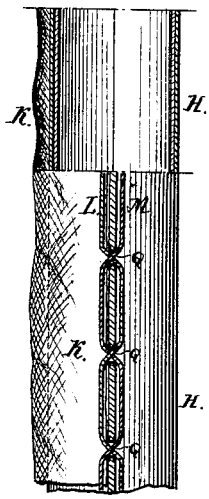


Fig. 3.

Fig. 4.



Attest;

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2 Sheets—Sheet 2.

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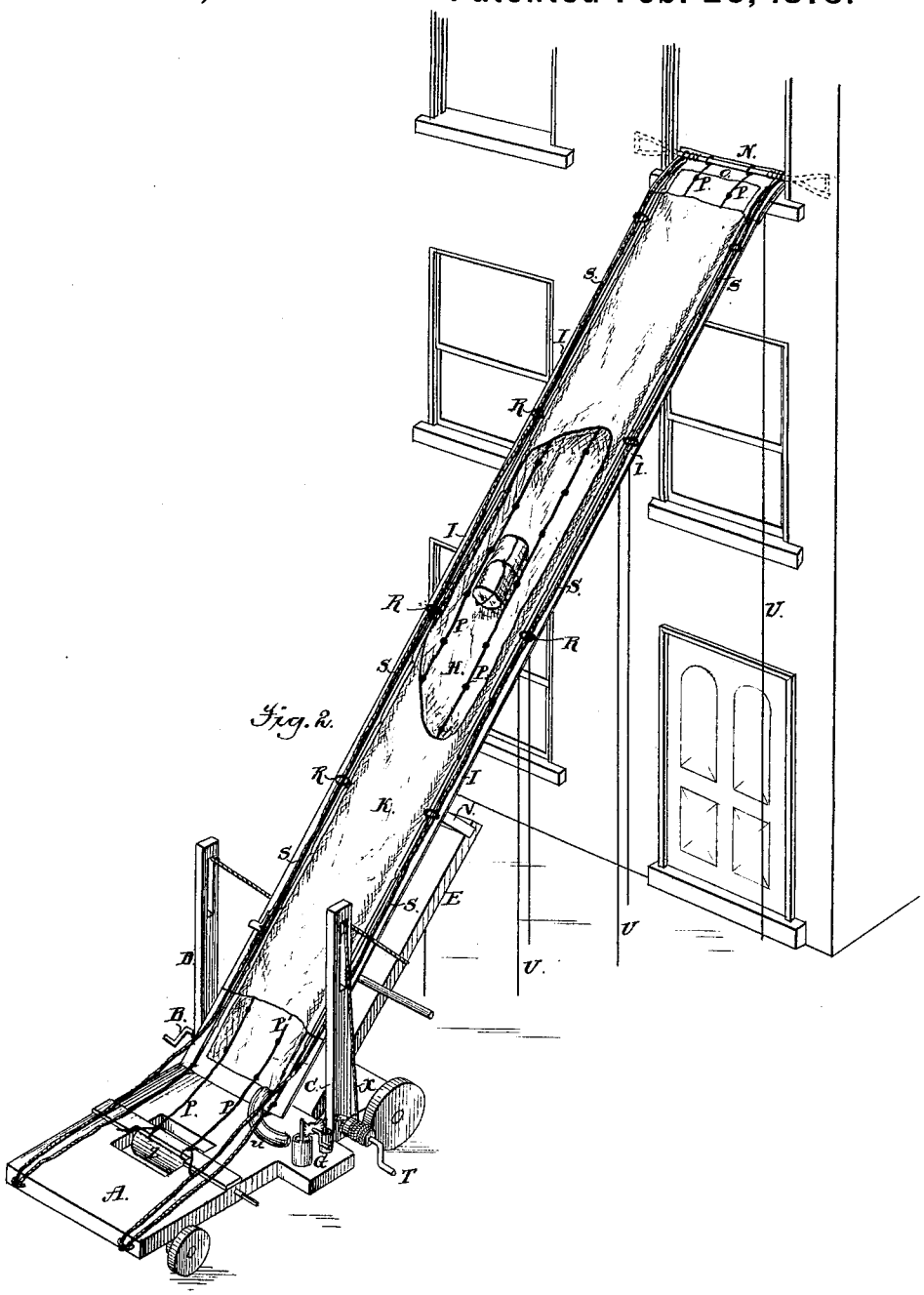

Fig. 2.

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UNITED STATES PATENT OFFICE

THOMAS F. CARPENTER, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **200,694**, dated February 26, 1878; application filed January 29, 1878.

To all whom it may concern:

Be it known that I, THOMAS F. CARPENTER, of the city, county, and State of New York, have invented certain new and useful Improvements in Life and Property Saving Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of my invention is to produce an apparatus which can be readily elevated to and safely secured in a window or other space or part of the building from which escape is to be made, by which persons or property may be safely conveyed to the ground or other place secure from danger; and it consists in the apparatus and its various parts, as will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a perspective view of an apparatus containing my invention, showing it about to be secured in the window of a building. Fig. 2 is a perspective view of an apparatus containing my invention secured in the window ready to convey persons or property to the ground. Fig. 3 is a plan view of a portion of the tube and part of the ropes, a portion of the covering being broken away. Fig. 4 is a section of the same when stiffened on line *x x*, Fig. 3.

A is a platform, mounted upon wheels in any well-known way, and provided with two uprights, C D. H is a tube, closed at its ends, constructed from any suitable flexible material, and made air-tight in any well-known way. It is preferably made with an inner tube, closed at both ends, over which two pieces of canvas impervious to air are secured together a short distance from their edges, so as to leave flanges I O. Over this tube, and extending its entire or nearly its entire length, is a loose covering, K, of flexible material, such as canvas, which is fastened thereto by ropes L M, laced through holes Q, at some distance apart, one end of said ropes being secured to the flange O, or to a cross-bar, N, the other end extending beyond the end of the tube, the upper side of the tube and the flexible covering forming a flexible chute, as shown in Fig. 2. The edges of the holes Q may be protected by overcasting thimbles or other well-known devices for this purpose.

The cross-bar N is secured to the flange O of the tube in any convenient manner, is somewhat longer than the ordinary width of windows of buildings, but not longer than their ordinary height, and acts as an anchor to secure the apparatus. Secured to this bar N, or to the flange O, are ropes P, which extend through the flexible chute between the covering K and tube H to the platform A. These ropes may be knotted, if desired, to assist persons in descending.

S are ropes extending outside of the covering K to the platform A, which are secured at one end to the cross-bar N or flange O, and are held in place by stays R, secured to them and to the ropes L M.

E is a movable support, pivoted at its lower end to the platform A, and provided with a bar, V, to form a rest for the tube H. This support is raised or lowered by windlasses B T, to which is secured a rope, X, passing from the windlass B, through a slot in standard D, over pulleys beneath the support E, thence over pulleys, through a slot in the standard C, to the windlass T. Each of these windlasses is provided with pawl and ratchet to hold it in any desired position.

The two windlasses may be connected together or independent of each other, as desired.

G is an air-pump, secured to the platform A, and connecting with the tube H by a pipe, *u*, by which air may be forced into the tube H to stiffen the same. Either the tube H or pipe *u* is provided with a valve to allow the air to escape at the proper time from said tube.

U are guy-ropes, which are secured to the tube H on its flanges I O, to direct or steady said tube, as desired. W is a piece of leather or suitable material placed beneath the tube H, to protect that part of it from wear that comes in contact with the building when in use. Y is a lever, curved to conform to the tube H when stiffened, and fastened thereto in any suitable manner.

The tube, its covering, and the ropes are folded or laid in a small compass upon the platform A or support E, ready to be conveyed to the place where the apparatus is to be used.

In operating it the tube, covering, ropes, &c., are placed in a position to allow air to be forced into the tube to stiffen it. The air-pump is then worked to fill the tube H with air and compress it sufficiently to stiffen said

tube, so that it can be raised or lowered and moved in any desired direction. After being so stiffened, this tube is raised by means of the support E, rope X, and windlasses B T until the bar N is in such a position that it can pass through the window or other part of the building from which escape may be made, the tube H with the bar N being turned by the lever Y for this purpose, one position when turned being shown in Fig. 1, where the platform A and said tube are standing in the direction of the length of the street or face of the building—a preferable position for using the apparatus in narrow streets. The tube H is then lowered and moved forward until the bar N has passed through the window or other space in the building, when it is turned by the lever Y and lowered until said bar rests against the framing of the window or walls of the building inside of the same, as shown in Fig. 2, the leather W preventing the sharp corners of the building from injuring the tube. The air is then exhausted from the tube H, the ropes L M securely fastened to the platform A, and the latter drawn away from the building and firmly held to straighten out said tube and stiffen its sides.

In the drawings I have shown a roller, Z, to which the ropes L M may be attached and wound thereon, a pawl and ratchet holding them in position when taut; or these ropes may be drawn tight and secured to any fixed object. In this condition the tube H sags a little in the center, and the flexible covering K is loose over the same, forming a flexible chute, as shown in Fig. 2, in which a portion of said covering is broken away to show the ropes P and the descent of a package. Persons can then enter or be placed in the flexible chute between the flexible covering K and the tube H, and safely descend to the platform A. The ropes P may be used by persons to retard their descent.

The spaces between the contiguous holes Q afford ample means of supplying air to the flexible chute between the flexible covering and the tube.

Persons can also descend safely to the platform A upon the outside of the canvas covering by using the ropes S. Articles, when placed in the chute between the flexible covering and the tube, can also be safely conveyed to the platform A.

If desired, a netting can be placed at the end of the chute to receive the persons or articles as they descend from the building, which netting breaks their descent, and is an additional safeguard against injury.

A rope-ladder may be formed by securing rounds to the ropes S either over the flexible covering K or to ropes on the under side of the tube H, so that firemen or other persons can readily ascend for any desired purpose, either to extinguish the fire or assist in the saving of lives and property.

It is obvious that the construction of the apparatus described may be varied to a great extent by any skilled mechanician without departing from my invention.

Any well-known form of device for forcing air into the tube H may be employed instead of that shown in the drawings, and it may be carried separately from the tube H, and connected thereto when the apparatus is to be used.

The construction of the support E may be varied, or it may be entirely dispensed with, the tube H, when stiffened, being raised, lowered, or directed by hand or otherwise.

The tube H, with the flexible covering K, ropes L M S P, and bar N, may be used without a platform, A, or wheels, and may be carried in any suitable and convenient manner, as well as the air-forcing device.

Instead of the cross-bar N, other anchoring devices may be employed.

Although I have shown my apparatus capable of being used with buildings two and three stories high, it can be made so that it will afford escape from buildings of any height.

By means of my invention a sure and effective means is provided for raising and properly securing a fire-escape, safe and effective means for conveying persons and property from buildings, which overcomes the great objections to the well-known fire-escapes, such as ladders, ropes, &c., by means of which few persons, and especially women and children, can descend safely to the ground, and which afford no practical means of saving property.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A flexible tube capable of being filled with and stiffened by air, which can be raised, lowered, moved, and secured in a window or other space in a building, substantially as described.

2. In combination with a tube capable of being filled with air and stiffened thereby, a flexible loose covering, substantially as described.

3. The combination of the flexible tube, capable of being stiffened by air forced therein, with devices for fastening it in a window or other space in the building, and to the ground, substantially as described.

4. The tube H, provided with a protecting-piece, W, substantially as described.

5. The tube H, closed at both ends, combined with a device for filling the same with air, substantially as described.

6. The combination of the tube H, platform A, support E, and means for raising and lowering the same, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS F. CARPENTER.

Witnesses:

M. B. PHILIPP,

GEO. H. GRAHAM.