No. 773,000. PATENTED OCT. 25, 1904.

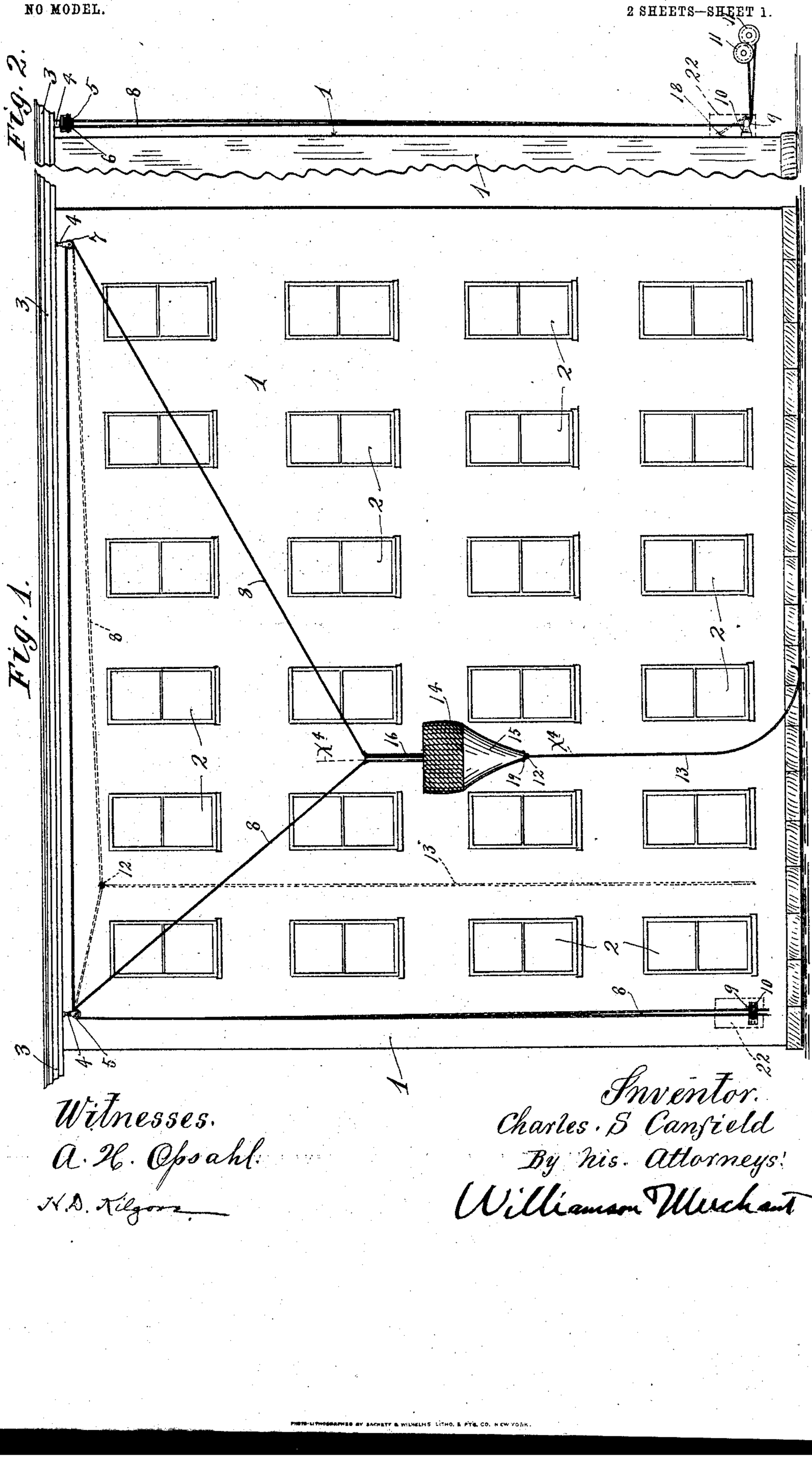
C. S. CANFIELD.

FIRE ESCAPE.

APPLICATION FILED JAN. 4, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
A. H. Opsahl.
N. D. Kilgore.

Inventor.
Charles S Canfield
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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

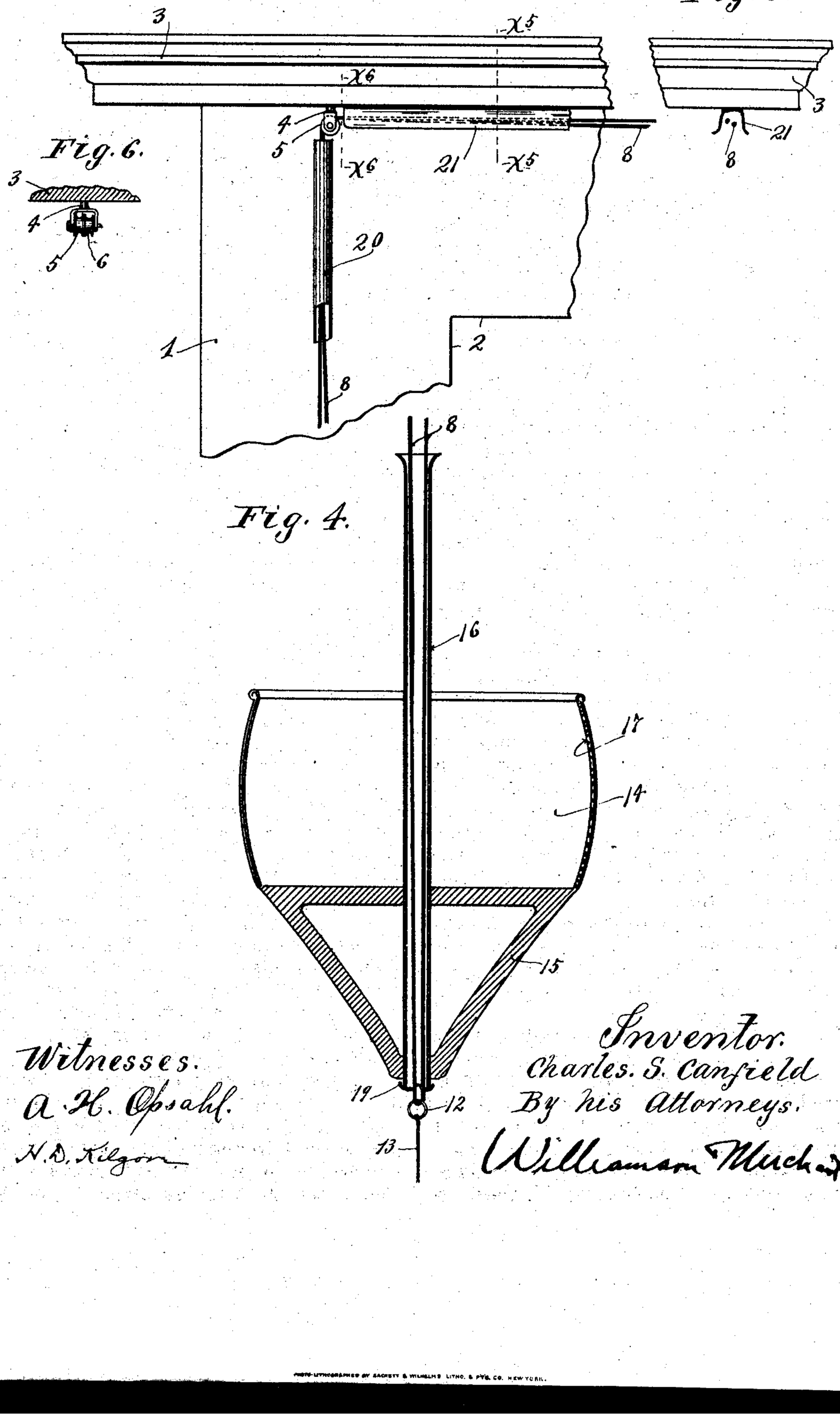

Fig. 5.

Fig. 6.

Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES S. CANFIELD, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO ELISHA C. BUTLER, OF MINNEAPOLIS, MINNESOTA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 773,000, dated October 25, 1904.

Application filed January 4, 1904. Serial No. 187,626. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. CANFIELD, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, 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 appertains to make and use the same.

My invention relates to fire-escapes, and has for its object to provide a simple, efficient, and easily-operated apparatus or device especially adapted for application to very high buildings and by means of which persons may be removed from the windows of high stories or by means of which firemen or other persons may be elevated from the ground to any window of the building for the purpose of fighting fire or for other purposes.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a view in elevation, showing a building having applied thereto my improved fire-escape. Fig. 2 is a side elevation of the parts shown in Fig. 1 and some other parts, a portion of the building being broken away. Fig. 3 is an enlarged view in front elevation, showing a portion of the building and a portion of the fire-escape. Fig. 4 is an enlarged vertical section through the carriage or basket of the fire-escape apparatus, taken approximately on the line $x^4 x^4$ of Fig. 1. Fig. 5 is a detail in section on the line $x^5 x^5$ of Fig. 3, and Fig. 6 is a detail in section on the line $x^6 x^6$ of Fig. 3.

The numeral 1 indicates a building several stories high, having windows 2 and a projecting cornice 3. For the application of my improved fire-escape to the building a pair of brackets 4 are rigidly secured to and supported from the upper portion of the building at distant points. With a building having a projecting cornice, such as illustrated in the drawings, the brackets 4 are conveniently supported directly from the cornice. One of the said brackets 4 (as shown the left-hand member as viewed in Fig. 1) is provided with a pair of laterally-spaced and independently-movable sheaves 5 6, while the right-hand bracket 4 is provided with but a single sheave 7. A wire cable 8 runs from the ground over the sheave 6, thence over the sheave 7, and thence back over the sheave 5, and again to the ground. The lower ends of the cable 8 run under and are guided by a pair of independent sheaves 9, mounted in a bracket 10, secured to the lower portion of the building approximately in vertical line with the left-hand bracket 4. The ends of the said cable 8 are wound upon a pair of independently-rotatable windlass-drums 11, which may be mounted and operated in any one of several different ways, as will be hereinafter more fully described. On the lower transversely-extended portion of the cable 8 is a loose ring 12, to which is attached a guy-rope 13, which rope is long enough to extend from the top of the building to the ground, and is preferably in the form of a light wire cable.

The body 14 of the car or basket is preferably round in horizontal cross-section and bulged outward at its sides and provided with the conical depending bottom 15, which prevents it from catching on window-sills and other projecting portions of the building. A vertical tube 16 extends axially through the car or basket 14 and projects above the same with its lower end rigidly secured to the said conical bottom 15. This car or basket may be made in a great many different ways, but should be made of non-combustible material. Advisably it would have a cast-iron bottom and a wrought-iron body, the inner sides of the latter being lined with asbestos, as indicated at 17.

The fire-escape apparatus above described may be handled in a great many different ways. Under one system which might be employed the lower ends of the cable 8 would be attached to the building, as indicated at 18 in Fig. 2, and the windlass-drums 11 would be

mounted on a truck forming part of a city fire-department equipment, and in this case the car or basket would be carried by the same truck which carries the windlass-drums, and the said windlass-drums in such case might be driven from an engine or other source of motive power. When the car is detached from the cable 8, said cable should be drawn taut before its ends are secured, as indicated by dotted lines in Fig. 2. The guy-ropes should remain attached to the ring 12, and the said ring will remain attached to the intermediate portion of the cable. Upon arriving at the fire with the truck carrying the windlass-drums and car the ends of the cable 8 should be released from their hooks or holders 18 and should be attached to the windlass-drums 11 or to cables already attached thereto. Then by means of the guy-rope 13 the lower transverse portion of the cable 8 is drawn down and the guy-rope is run through the tubular standard or stem 16 of the car or basket and the downwardly-drawn portion of the said cable 8 is drawn through the said tubular stem, as shown in Fig. 4. A suitable lock or fastening, which is conveniently afforded by a bent bar 19, is passed through the loop formed by the downwardly-drawn portion of the said cable 8. This being done and the car being allowed to drop onto said bar 19, said car will not slip upon the cable 8, but be carried thereby both vertically and transversely of the building by the proper manipulations of the cable 8, as will presently be more fully described.

Instead of having a comparatively strong and heavy cable, which is necessary to support the car or basket with a heavy load, permanently attached to the building above described a comparatively light cable might be applied to the building and a heavier cable might be carried on the windlass-drums of the portable truck. In this case upon arriving at the fire the heavy cable on the windlass-drums would be attached to the ends of the light cable and by the proper movements of the windlass-drums the light cable would be wound onto one thereof and the heavy cable would be drawn into its place over the several guide-sheaves on the building. This should of course be done before the car or basket is attached, and it will of course be understood that the relatively heavy cable will be drawn through the ring 12 under the above operation, so that the guy-rope may be used to draw downward the transversely-extended lower portion of the substituted heavy cable. It is also evident that the ring 12 must be of such diameter that it may be freely drawn through the axial tube or standard 16 of the car. It will further be understood that the light cable may be replaced on the guide-sheaves by an operation reverse from that above described.

With the car attached as above described it is evident that it may be drawn to any window of the building which is located between vertical lines intersecting the two sheave-supporting brackets 4. As is evident, if the cable be wound at the same rate of speed onto or from the two windlass-drums 11 the car or basket will be moved vertically, while if one of the drums is run faster than the other the car will be moved not only vertically but transversely of the building. In this way, as is evident, the car may be brought opposite to any window, may be made to take a zig-zag vertical course, and may be made to clear or pass out of line with any window from which flames may be escaping. This, as is evident, is a very important feature, as in fires in high buildings it is very frequently necessary to reach a window directly above a window from which flames are bursting. In fact, with the above apparatus it is possible to give the car a universal movement in a vertical plane within the limits of the car's possible extreme vertical and lateral travel. The car itself is so constructed that persons within the same may quite safely pass through considerable flame.

When a cable is to be permanently attached to a building, it is desirable to protect the same from the action of water and ice, and this may be done by passing the vertically-extended portions of the cable through a protecting-tube 20 and shielding the horizontal portion of the said cable by a channel-shaped shield 21, as shown in Figs. 3 and 5. The tube 20 should be rigidly secured to the walls of the building, while the shield 21 may be secured to the projecting cornice thereof.

As already indicated, the device will be found very serviceable for elevating an attached hose, as well as firemen, to various points on the building where they may properly fight the fire. The device may also be found serviceable for other purposes than fighting fires, although it would probably seldom be installed for any other purpose. When it is once installed, however, it will be found serviceable for various purposes, such as painting the building, washing outside the windows, and for effecting repairs which require the workmen to be on the outside of the building at elevated points. As also already indicated, the car may be kept as a permanent or local part of the fire apparatus. In practice the attached lower ends of the cable would advisably be locked within a cabinet or box 22. (Indicated only by dotted lines in Figs. 1 and 2.)

As compared with fire-escapes, such as ladders, constructed of metal and applied to the outer sides of the building this fire apparatus is of small cost and is believed to be much more efficient for reasons already pointed out and for other reasons which are obvious.

It will of course be understood that the fire-escape described is capable of a large range of modification within the scope of my invention as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a fire-escape, the combination with guide-sheaves supported from the upper portion of a building at different points transversely thereof, of a cable extended back and forth over the said guide-sheaves, with its ends extending to the ground, a guy-rope loosely attached to a transversely-extended portion of said cable, a car or basket having a tubular standard through which the supporting-cable may be drawn by said guy-rope, and means for detachably securing the car to that portion of the cable which is drawn through the standard thereof, substantially as described.

2. In a fire-escape, the combination with guides supported from the upper portion of a building at different points transversely thereof, of a cable extended back and forth over said guides with its two ends extending to the ground at approximately the same point, a guy-rope loosely attached to the transversely-extended portion of said cable, a car or bucket having a centrally-located passage through which the supporting-cable may be drawn by said guy-rope, and means for detachably securing said car to that portion of the cable which is drawn through the central passage thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES S. CANFIELD.

Witnesses:

ELISHA C. BUTLER,

F. D. MERCHANT.