

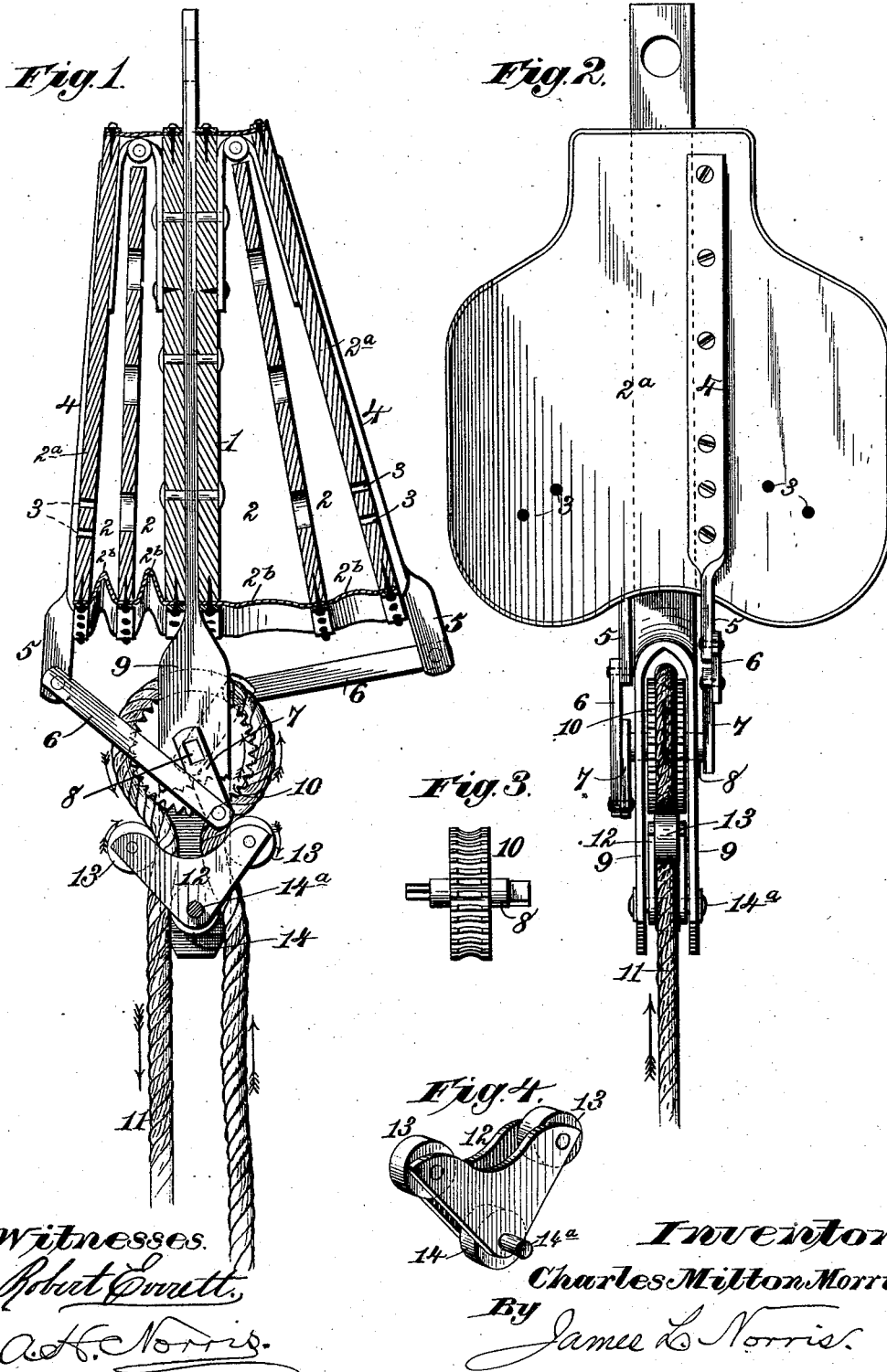
(No Model.)

C. M. MORRISON.

FIRE ESCAPE.

No. 305,950.

Patented Sept. 30, 1884.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES MILTON MORRISON, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO WILLARD A. MORRISON AND LEWIS E. MORRISON, BOTH OF SAME PLACE.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 305,950, dated September 30, 1884.

Application filed August 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MILTON MORRISON, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to fire-escapes, and the purpose thereof is to provide an apparatus by which a person may be lowered from a burning building without shock or injury, the speed of descent being retarded by air which enters and escapes from one or more air-chambers which are expanded and collapsed by the movement of the lowering-rope.

The invention consists, essentially, in a fire-escape in which the speed of the lowering mechanism is controlled by an expanding and collapsing air chamber or chambers.

Referring to the drawings forming part of this specification, Figure 1 is a central longitudinal section illustrating my invention. Fig. 2 is a front elevation of the parts shown in Fig. 1. Fig. 3 is a detail elevation of the rope-pulley detached. Fig. 4 is a detail perspective of the anti-friction pulleys and the frame in which they are journaled.

In the said drawings, the reference-numeral 1 indicates a central diaphragm, upon each side of which is formed an air-chamber, 2, comprised within the wall 2^a and the collapsible bellows end 2^b.

For convenience and cheapness of construction, the wall 2^a is hinged to the diaphragm 1 and provided with small air-passages 3.

Upon each hinged wall 2^a is attached a plate, 4, having its end 5 projecting beyond the collapsing end. To these projecting ends are attached pitmen 6, having their ends pivoted upon crank-arms 7, carried by a shaft, 8, which is journaled in bearings 9, extending from the central diaphragm, 1. The shaft 8 carries a pulley, 10, having a grooved periphery, which is corrugated to give a suitable friction to the rope 11, which runs over said pulley.

Upon the extended ends of the bearing-plates 9, and below the rope-pulley 10, is mounted a V-shaped frame, 12, and in the upper ends of the divergent arms of said frame are journaled anti-friction rolls 13, each of which may, if desired, have a grooved periphery to receive

and guide the lowering-rope 11. A third pulley, 14, may be journaled at the apex of the frame 12, if preferred, said pulley having a construction similar to that of the pulleys 13. The lowering-rope 11 is carried over the pulley 10, as shown in Fig. 1, and the ends of said rope are passed through the frame 12 in such a manner that the rope runs over and bears against the inner or adjacent faces of the anti-friction rolls 13, and against the outer and opposite faces of the roll 14, journaled upon the pivot-bolt 14^a, which supports the lower friction-roll, 14.

The crank-arms 7 are so mounted upon the shaft 8 that they form an angle with each other of more than ninety degrees and less than one hundred and eighty degrees, whereby, as will be seen in Fig. 1, the expansion of one air-chamber begins a little before the collapse of the other is accomplished. It will be readily understood that this arrangement is necessary to avoid a succession of shocks to the lowering-rope and insure its smooth and uninterrupted descent. The reason of this is the fact that as the crank-arms approach toward parallelism with the pitmen operated by them, the "throw" of said pitmen is greatly diminished, and if a single air-chamber is used the retarding power thereof can only be preserved by giving to the actuating crank-arm an increase of speed which shall supplement the decreased throw thereof. The same result would also ensue if a double air-chamber were employed and the crank-arms placed in the same right line; but by arranging said arms in the manner shown, whereby the expansion of one chamber begins before the collapse of the other is fully accomplished, and vice versa, the retarding force is always constant, or substantially so. After the crank-arms have traveled over an arc of about forty-five or fifty degrees, beginning from the point where their acting distance is the greatest, the throw effected by each arm is so small as to be practically of no effect, and it is at this point that the opposite arm should begin to exert its greatest force. This result I effect by arranging the cranks in the manner I have described.

By my invention I provide a fire-escape which is always in readiness, which can be used without any preliminary instruction,

which is adapted to safely lower any weight smoothly and safely from any height, and which can be manufactured at small expense.

It is well known that no fire-escape is practically successful in which some previous instruction as to the manner of using is necessary, since in a panic or during a fire at night, when a person is roused suddenly from sleep, a momentary loss of self-possession may render such an escape worse than useless. My invention wholly obviates these objections.

The central diaphragm, 1, may be suspended from any convenient point, and the lowering-rope may, if desired, be provided with loops or other holding devices for the aid of persons descending thereby.

I do not confine myself to the particular construction and arrangement of parts shown

and described, for the reason that I believe I am the first to control the speed of the lowering mechanism of a fire-escape through the medium of an expansible and collapsible air chamber or chambers.

I therefore claim as my invention—

A fire-escape composed, substantially, of a lowering mechanism and an expanding and collapsing air chamber or chambers, whereby the speed of the lowering mechanism is retarded and controlled, substantially as and for the purpose set forth.

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

CHARLES MILTON MORRISON.

Witnesses:

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