(No Model.) 3 Sheets—Sheet 1.

W. B. DOOLITTLE.

FIRE ESCAPE.

No. 324,670. Patented Aug. 18, 1885.

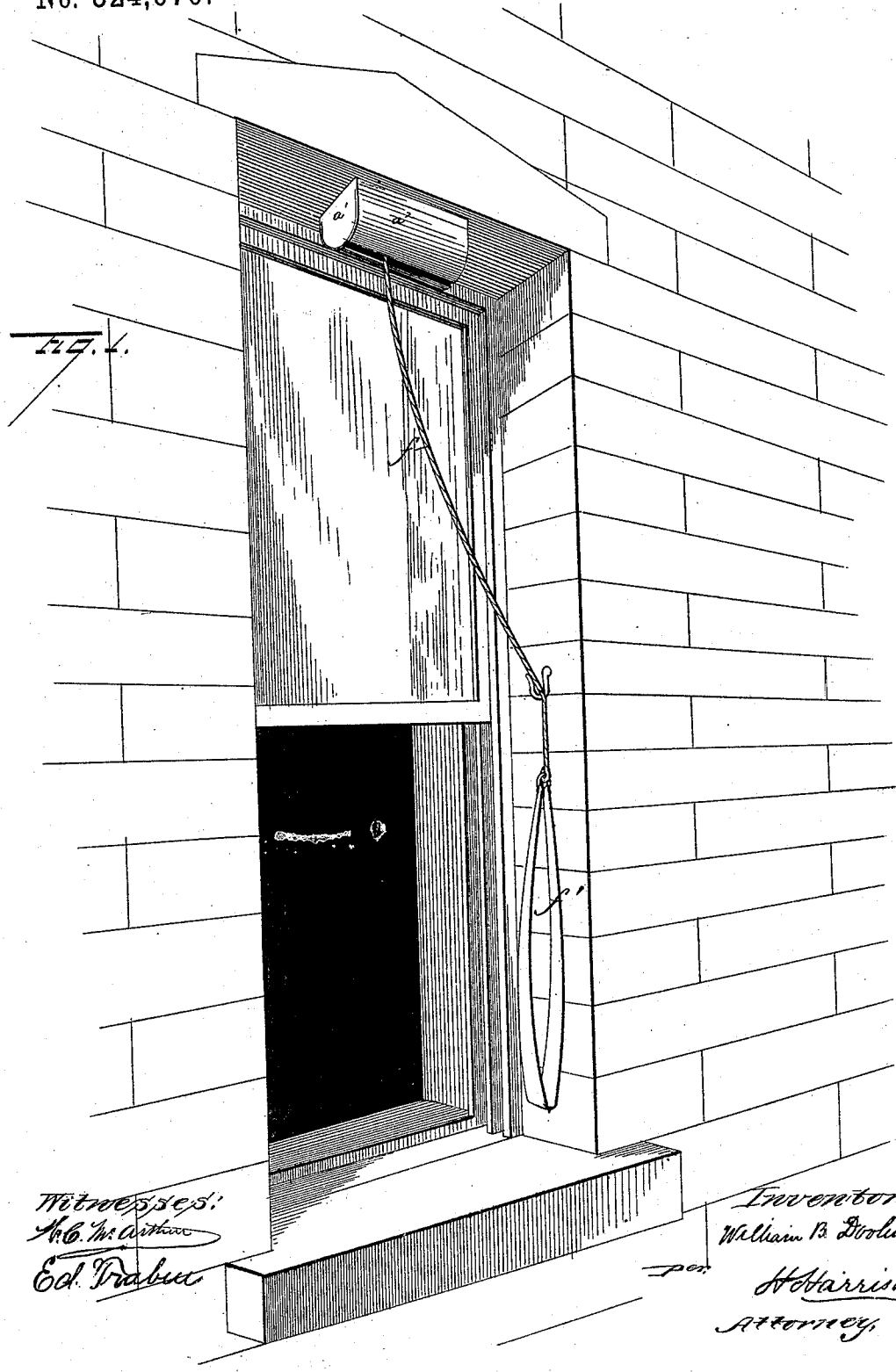


Fig. 1.

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(No Model.)

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W. B. DOOLITTLE.

FIRE ESCAPE.

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Fig. 2.

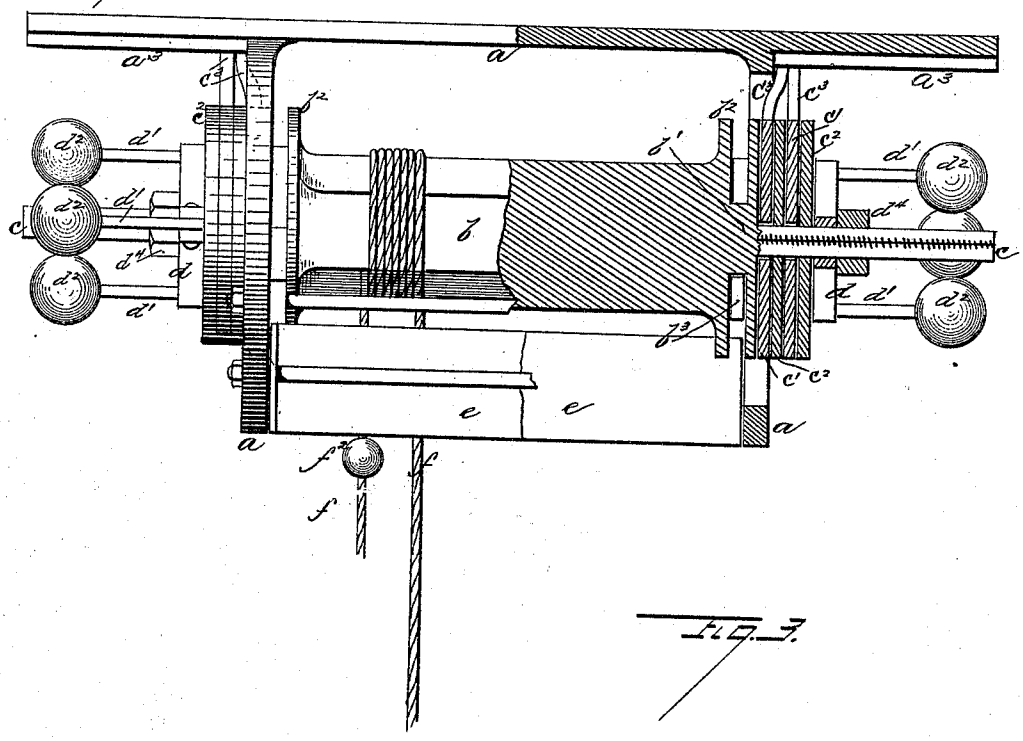
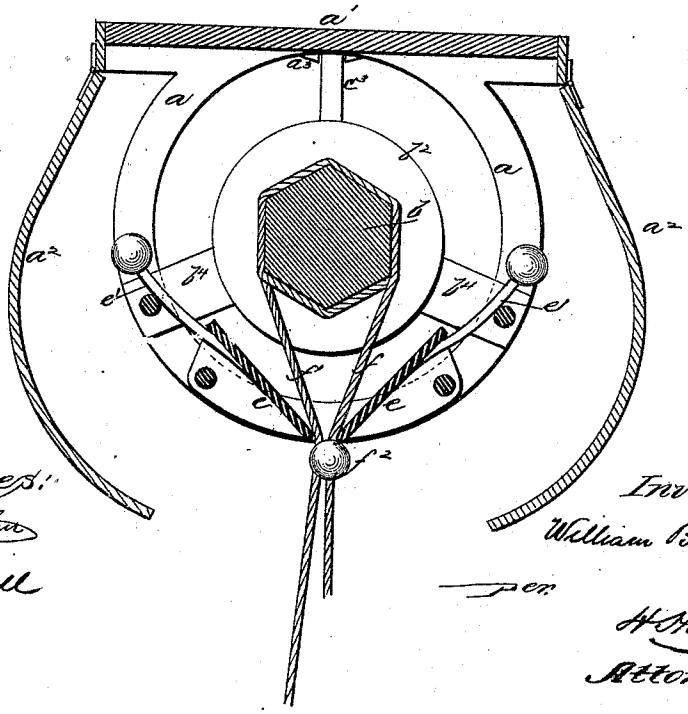


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

W. B. DOOLITTLE.

FIRE ESCAPE.

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Fig. 4.

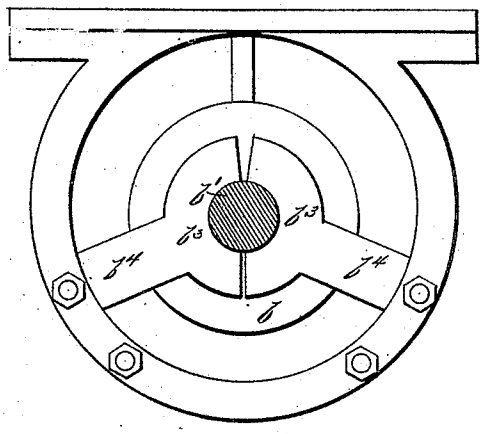


Fig. 5.

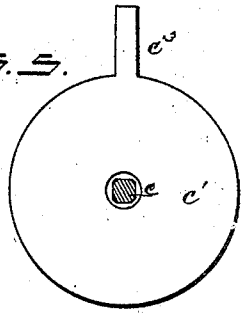


Fig. 6.

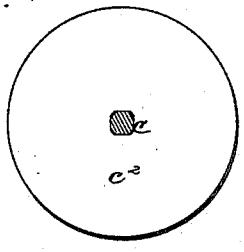


Fig. 7.

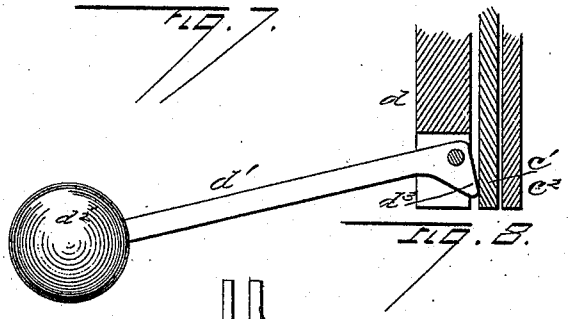
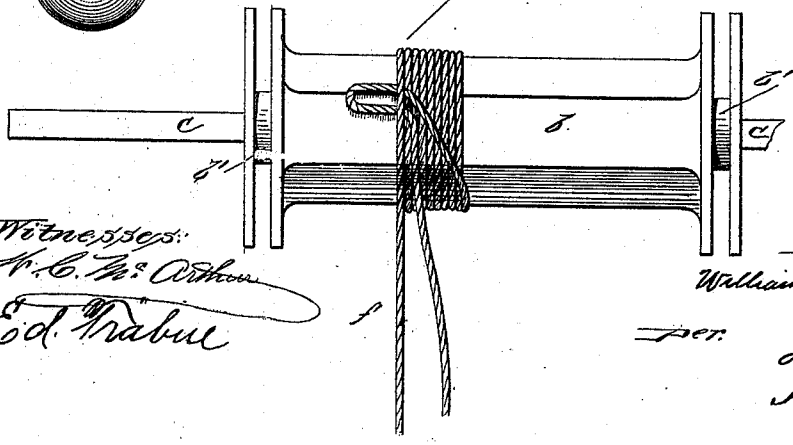


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM B. DOOLITTLE, OF CHICAGO, ILLINOIS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 324,670, dated August 18, 1885.

Application filed June 22, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. DOOLITTLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification, to wit:

This invention relates to fire-escapes; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of a window, showing my invention in position for use. Fig. 2 is a side elevation of the device with one end sectioned. Fig. 3 is a transverse section through the reel and its case. Fig. 4 is a section through one of the friction-bearings or journal-boxes. Figs. 5 and 6 are detail views of the stationary and revolving disks. Fig. 7 is a detail view of the governor; and Fig. 8, a side view of the reel, showing the manner of winding the escape-line when the device is first adjusted.

a represents the main frame of my fire-escape, which is of any desired size, form, or material, and is in Fig. 1 shown secured to the upper part of a window-frame outside of the sash, but will be placed at a similar position inside the sash, upon the outer wall beside the window, or at any other place which will be convenient. This frame is preferably inclosed in a suitable case, a', which preserves it from the weather, and is provided with hinged doors a^2, which fall aside when the apparatus is in use, so as not to interfere with the rope.

In the main frame is journaled a many-sided reel, *b*, of proper size to contain the rope or cable needed at a window of given height. This reel is at each end provided with a spindle, b', on each side of which is a deep peripheral flange, b^2. These spindles rest in journal-boxes b^3, each of which is made in two parts, divided vertically, and provided with an arm, b^4, pivoted upon an adjacent portion of the main frame below the center of the reel, as clearly shown in Fig. 4. By reference to this figure it will be at once understood that any weight upon the reel, tending to pull it downward, at once causes the half-boxes to bind upon the spindle, and the greater the weight the greater friction is exerted, and this is a material aid in preventing a too rapid descent when the escape is in use.

From each end of the reel, beyond its journals, extends a square shaft or arm, *c*, upon which are placed a series of flat disks, c' c^2. The disks c' are formed with projecting arms c^3, which are engaged with grooves or stops a^3 on the main frame to hold them stationary, and are at their centers provided with openings of sufficient size to permit the arm or shaft *c* to turn freely therein. The other disks, c^2, have a square hole in their centers, which fits the shaft closely and causes these disks to turn with the reel, as will be seen in Figs. 5 and 6. As clearly shown in Fig. 2, these disks c' c^2 are placed on the shaft alternately, and outside of them are placed the spider-frame *d*, each carrying a series of hinged arms, d', having weights d^2 at their outer ends and shoulders or projections d^3 at their inner ends, as in Figs. 2 and 7. Nuts d^4 are secured upon the shafts to retain the parts in place. It will be understood that the disks c' c^2 present large frictional surfaces as each alternate one moves or remains stationary. The revolutions of the reel, it will be at once seen, tend to throw outward by centrifugal force the governor-arms d', the inner shouldered ends of which press the friction-disks together with greater or less force, according to the speed, thus forming a self-adjusting friction-brake, which, in connection with the journal-boxes, will give brake-power enough for any weight desired. The number of disks used is of course not material, and can be varied to suit.

In the lower part of the main frame are two longitudinal stop boards or arms, *e*, hinged and each provided with weighted arms e', which hold these stops, as shown in Fig. 3, in such position that they nearly meet at their lower edges beneath the reel, a small space being left between them for the passage of the rope. It will be seen that these stops allow of the rope passing freely down, but prevent its being drawn up too far, as will be presently explained. The escape-line *f* is of rope, chain, wire cable, or other material best suited to the

purpose in view, and is at each end provided with a belt or loop, f', to be secured to the body of the person using it, and near each end the rope is also provided with a small ball or stop, f^2. This rope or cable is wound several times around the reel, the number of turns being sufficient to prevent slipping when a person is suspended from one end, and one end of the cable (the shortest one) is looped under the main part, as in Fig. 8, where it is held and wound upon the reel with the other till the whole is wound up and only the end is exposed, where it is within easy reach, as in Fig. 1. The person desiring to use it simply secures the belt to his body and jumps off the window-sill, and the friction-journal and disks prevent a too rapid fall. The cable is first wound upon the reel in such manner that when the longer end is near the ground the shorter end is freed from its clasp under the main portion and falls down within reach from the window-sill, the two ends of the line hanging from opposite sides of the drum and the hinged stop-arms yielding freely to this downward passage. By this time the first person has reached the ground, and if, through fright or other reasons, he attempts to walk away without unfastening the loop or belt, the stop on the short end of the line engages the hinged stop-arms on the reel-frame and brings him to a halt. When he is disengaged, a second person takes the belt on the upper end, and descends in the same way, the line rolling on and off the reel-drum freely, and the device is thus used by a large number of people without delay for rewinding or other causes. The angles on the multifaced drum prevent the line from slipping, and the brakes are perfectly automatic and adjust themselves to the weight on the cable.

It is evident that this device may be made in any form to fit in any place, and may, if desired, be fitted in a compact shape for the use of travelers, and in this case, as but one person is likely to use it, the hinged stop-arms are omitted and the line made fast to the reel at one end.

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

1. In a fire-escape, the combination, with a reel and its journals, of journal-boxes divided vertically in two parts and pivoted on the main frame at a point lower than the center of the reel, substantially as and for the purpose set forth.

2. In a fire-escape, the combination, with a reel provided with an axial shaft at one or both ends, of a series of disks fixed upon and turning with said shaft and a series of stationary disks placed alternately between the others, substantially as and for the purpose set forth.

3. In a fire-escape, the combination, with a reel provided with an axial shaft at one or both ends, of a series of disks upon said shaft, alternate disks being stationary, and a frame also secured upon the shaft and provided with weighted levers, the inner ends of which bear against and force the disks in contact, substantially as and for the purpose set forth.

4. In a fire-escape, the combination, with the reel-shaft, of a series of alternate fixed and loose disks thereon, and means, substantially as herein described, for pressing these disks together in accordance with the weight suspended, substantially as and for the purpose set forth.

5. In a fire-escape, the combination, with the main frame and a reel journaled therein, of a series of disks upon the reel-shaft, each alternate one of which moves with said shaft and the others provided with arms engaging a stop on the frame to hold them stationary, and a spider-frame on said shaft provided with a series of weighted hinged arms, each provided with a shoulder on its inner end to bear against the disks as the arms fly out in turning, substantially as and for the purpose set forth.

6. In a fire-escape, the combination, with the main frame and a reel journaled therein, of a pair of hinged and weighted stop-arms in the frame below the reel yielding freely to the downward passage of the line, and an escape line or cable rolling on or off the reel in either direction and provided near each end with a ball or stop, substantially as and for the purpose set forth.

7. In a fire-escape, the combination, with a reel provided with suitable journals and journal-bearings for the same, made in two parts and hinged in the main frame below the axial line of the reel, of a series of alternate fast and movable disks on the reel-shaft, and a series of weighted governor-arms bearing upon said disks with greater or less force in accordance with the speed, substantially as and for the purpose set forth.

8. In a fire-escape, a reel having an escape line or cable coiled several times around the reel and its shorter end looped under and held by the main portion, in the manner and for the purpose herein described.

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

WILLIAM B. DOOLITTLE.

Witnesses:

W. C. McARTHUR,

ED. TRADUE.