Oct. 22, 1946. E. C. LARSON 2,409,767

FIRE ESCAPE

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Fig. 1.

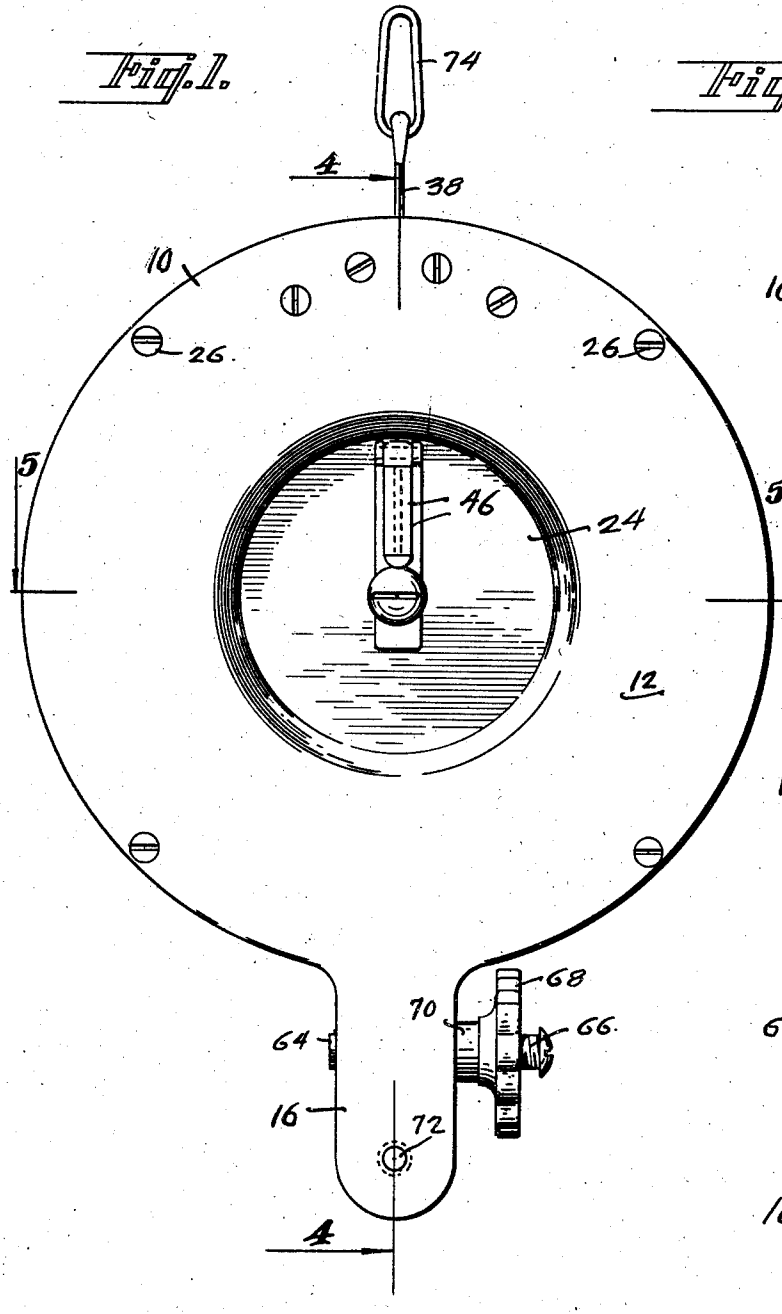
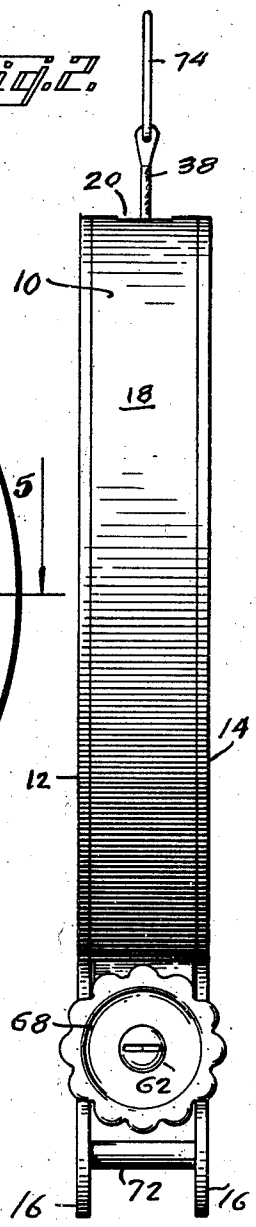


Fig. 2.



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Fig. 3.

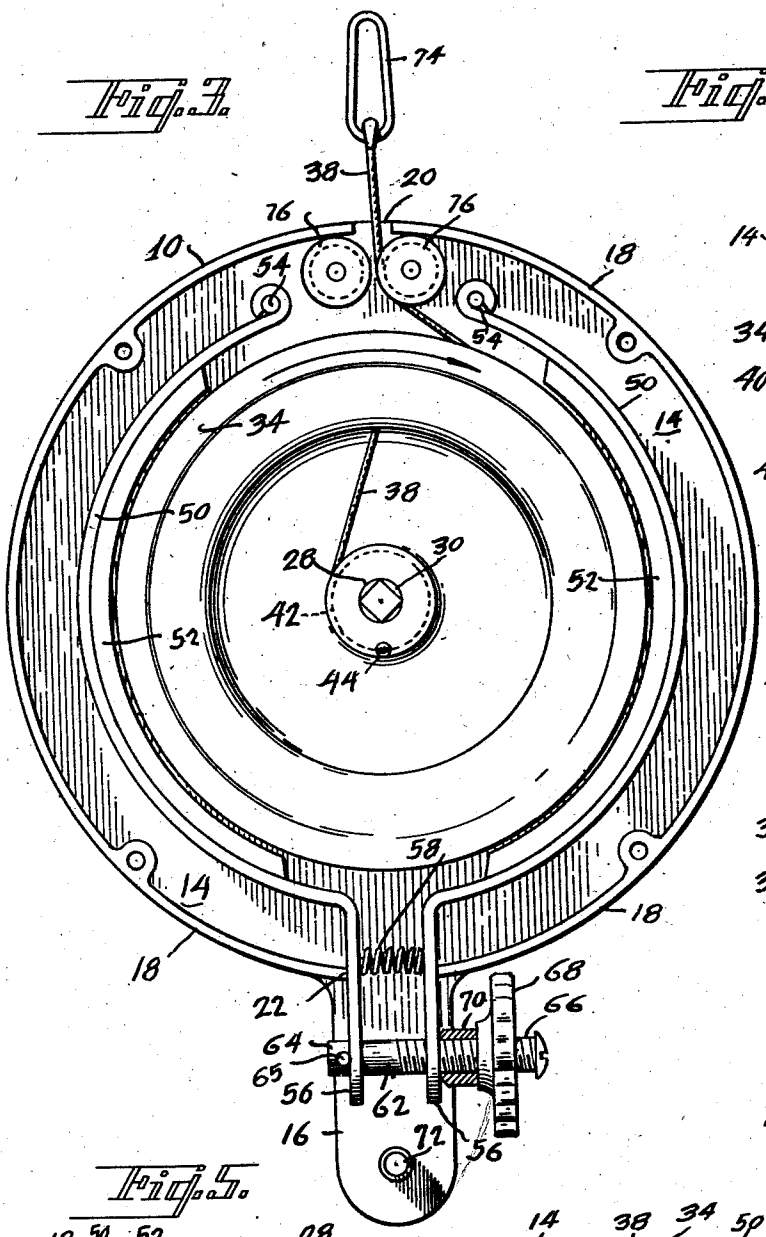


Fig. 4.

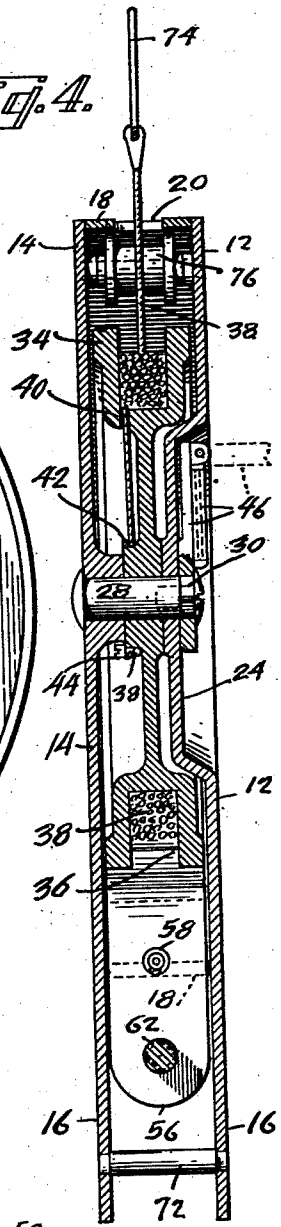
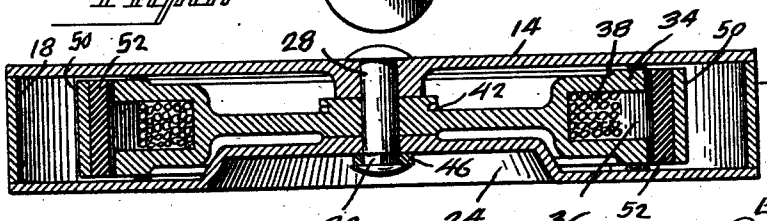


Fig. 5.



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FIRE ESCAPE

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Application August 30, 1945, Serial No. 613,521

1 Claim. (Cl. 254—154)

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The present invention relates to improvements in a fire escape wherein a flexible cable, rope, or stout cord, having suspension means at the top thereof, is wound upon a reel within a streamlined housing and operates in conjunction with braking elements mounted within said housing and substantially enclosing the periphery of said reel, and also with means for moving said braking elements into engaging relation with the periphery of said reel with varying degrees of pressure to control descent or lowering of a person suspended from a stirrup on the bottom of said housing.

The primary object of the present invention is to provide a new and improved portable fire escape having improved means for effectively controlling the lowering of a load suspended therefrom, such, for instance, as a person being lowered from a burning building.

Another object of the present invention is to provide a new and improved fire escape of the character set forth, having new and improved means for gradually and safely lowering a person from an elevation to the ground.

A further object is to provide a new and improved device of the type described which is substantially enclosed and stream-lined on the exterior to prevent contacts with other objects and projections which might tend to prevent prompt and efficient operation thereof.

A still further object is to provide a new and improved fire escape having a greatly simplified construction and efficient operation.

The invention consists in the particular details of construction and arrangement of parts as disclosed in the drawings forming a part of the present application, and in which—

Fig. 1 is a front elevation of my improved portable fire escape;

Fig. 2 is a right hand side elevation thereof;

Fig. 3 is a front elevation of the device with the front plate removed to disclose the arrangement of the interior thereof;

Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 1, in the direction indicated; and

Fig. 5 is a horizontal section taken on line 5—5 of Fig. 1 in the direction indicated.

Referring to the drawings:

The numeral 10 is used to designate in general a substantially circular housing comprised of front and back circular plates 12 and 14, respectively, each having a depending tab 16 on its lower edge arranged in spaced parallel relation to the other, said front and back plates 12 and 14, respectively, being also held in spaced and

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parallel relation by means of semicircular spacers or walls 18 whose opposite ends also are arranged in spaced relation to form opposite top and bottom openings 20 and 22, on the periphery of said housing.

The front plate 12 is provided with a centrally disposed circular recess or depression 24, the purpose of which will be hereinafter more fully set forth.

The plates 12 and 14 may be secured to the spacers 18 by means of flat headed screws 26 to retain a flush surface on the housing 10.

A short shaft 28 is rotatably mounted within the approximate centers of the plates 12 and 14 and has its ends extended exteriorly of the housing 10, with a squared end 30 extending into the recess or depression 24, for a purpose hereinafter set forth.

Rigidly mounted upon the shaft 28 and within the housing 10 and substantially concentric therewith, is a reel 34 having the usual central groove 36 within which is wound the inner end of a flexible cable, rope, or stout cord 38 whose outer end extends through the top opening 20 of the housing 10 while the inner end of said cable 38 passes through an aperture 40 within the groove 36 and into and around an annular groove 42 within the hub of the reel 34, where said inner end is firmly fixed by means of a suitable set screw 44.

A folding crank 46 is rigidly secured to the squared end 30 of the shaft 28, said folding crank normally lying within the recess or depression 24 of the front plate 12 so as to substantially streamline that side of said housing 10, said crank 46 being extendable, when required to wind the cord 38 on the reel 34, as indicated in dotted lines in Fig. 4 of the drawings.

A pair of preferably arcuate braking elements 50, preferably provided with brake shoes 52 of suitable braking material, are pivotally mounted at their upper ends as at 54 within the housing 10 with their depending portions substantially enclosing the periphery of the reel 34 and are provided with spaced and parallel extensions 56 projecting through the bottom opening 22 of the housing 10 and normally held against the sides of said opening 22, which thus operate as limiting stops, by a suitable spring 58 normally operating to prevent engaging relation of the braking elements with the periphery of the reel 34, as fully disclosed in Fig. 3 of the drawings.

A short shaft 62 is mounted between the lower extensions 56 of the braking elements 50, said shaft 62 having one end squared as at 64 and held against rotation and within position by a pin 65,

said shaft 62 being provided with a threaded portion 66 at the other end thereof and passing loosely through the opposite extension 56. A suitable hand wheel 68 is screwed upon the thread 66 and impinges a loose sleeve 70 which presses against the outer side of one extension 56 and moves the same toward the opposite extension when the wheel 68 is rotated upon its thread 66 in the right direction, and thereby move the braking elements into engaging relation with the periphery of the reel 34 with varying degrees of pressure to control unwinding of the cable 38 from the wheel or reel 34.

A suitable stirrup 72 is mounted between the tabs 16 of the housing 10 or plates 12 and 14 of which it is composed, upon which stirrup 72 may be hooked or otherwise secured a suitable harness, not shown, for suspending a person or load. Also, a suitable link 74 is secured to the upper or outer end of the cable 38 by means of which it may be suspended or anchored to the suitable support, not shown, during a lowering process. Sheaves or rollers 76 may be provided directly beneath the opening 20 to prevent the cable from unduly scraping the sides of said opening during a winding or unwinding operation thereof.

In operation:

The link 74 is hooked or otherwise secured to a suitable support, not shown, and the load to be lowered, such, for instance, as a person from a burning building, is suitably suspended or swung from the stirrup 72. As the person or load, not shown, descends, he controls rotation of the reel 34 and unwinding of the cable 38 by rotating the hand wheel 68, moving the braking elements 50, 52 into engaging relation with the periphery of the reel 34 until the proper rate of descent is obtained. By applying varying degrees of pressure of said braking elements against the reel 34, a desired rate of descent may at all times be obtained by the person descending, until he is safely deposited upon the ground.

It should be particularly noted that when the reel 34 is being rotated during a descent operation, the folded crank 46 rotates within the recess or depression 24 of the front plate 12 so that it will not contact objects or projections beyond the outer face of said front plate 12, and thus avoid interference with a successful and safe operation.

The cable 38 easily and quickly may be rewound upon the reel 34 by extending the folded crank 46 and rotating said crank in the usual and well known manner.

Having described my invention, I claim:

A portable fire escape comprising a housing formed of a flat back circular plate having a depending tab; a circular front flat plate having a centrally disposed depression therein and a depending tab on the lower edge arranged in spaced parallel relation with the tab of the back plate; semicircular spacers mounted between said plates and having their opposite ends arranged in spaced parallel relation with the ends of the opposite spacer to form top and bottom openings in said housing; a shaft rotatably mounted in the centers of said plates and having its ends extended exteriorly of said plates, one end of said shaft being squared and extended into the recess of said front plate; a folded crank mounted upon said squared end and normally lying within said recess; a reel rigidly mounted upon said shaft and within said housing and having a hub with an annular groove; a flexible cable wound upon said reel and having its inner end fixed within said annular groove and having its outer end extended through the top opening of said housing; a pair of arcuate braking elements pivotally suspended within said housing and substantially enclosing the periphery of said reel and having spaced parallel extensions extended through the bottom opening of said housing; spring means interposed between said parallel extension and arranged to normally prevent engaging relation of said braking elements with the periphery of said reel; means for moving said braking elements against the tension of said spring means and into engaging relation with the periphery of said reel in varying degrees of pressure; and a stirrup mounted between the depending tabs of said front and back plates.

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