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Servais

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[54] **WINDOW ESCAPES**

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[52] **U.S. Cl.** **182/73;** 254/158; 254/160

[51] **Int. Cl.** **A62b 1/14**

[58] **Field of Search** 182/5, 6, 7, 73, 75, 191, 182/193, 192; 254/158, 160, 151

[56] **References Cited**

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[57] **ABSTRACT**

Escape through the window of a burning building is facilitated by a life line harnessed to the escapee; the life line is attached to a reel having its periphery (not its center) supported for rotation inside a split housing, all arranged to neatly fit the wall of an apartment; descent at a safe speed is assured by cylinder-and-rod type shock absorbers operated by the rotating reel.

5 Claims, 7 Drawing Figures

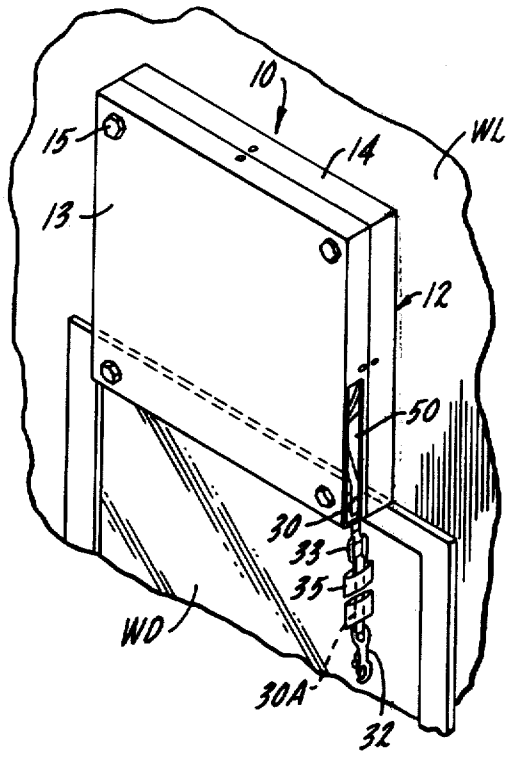


fig.1.

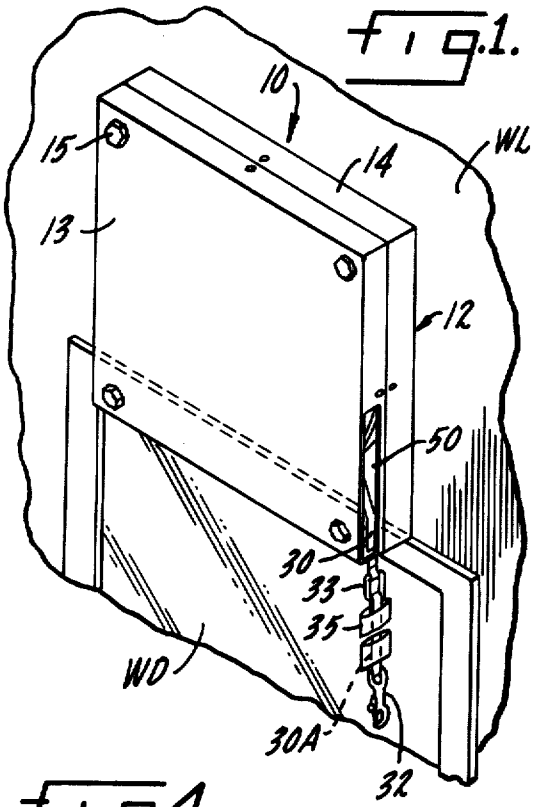


fig.2.

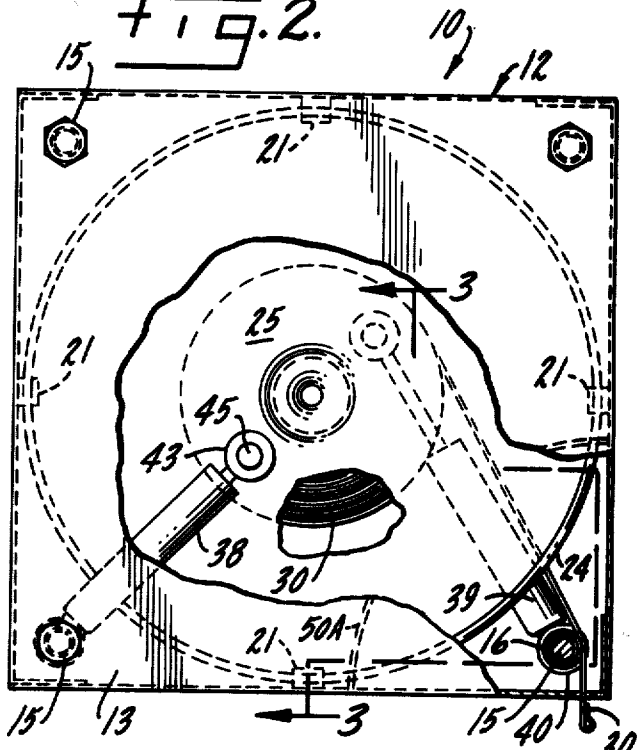


fig.4.

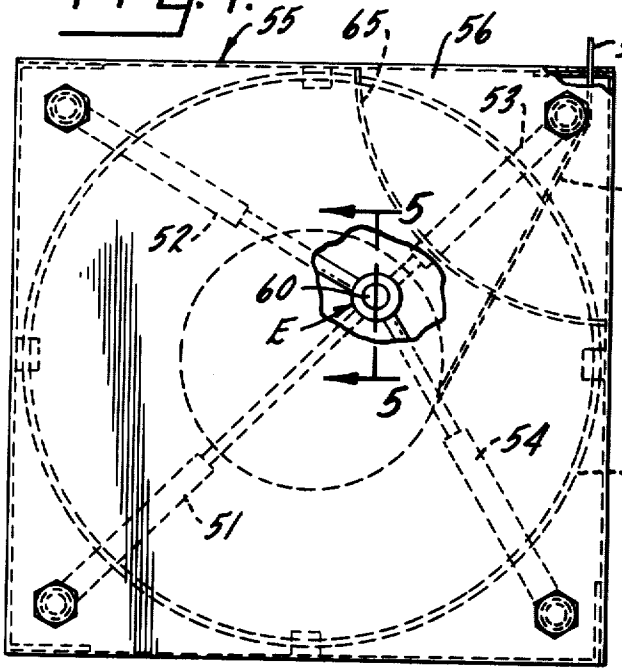


fig.7.

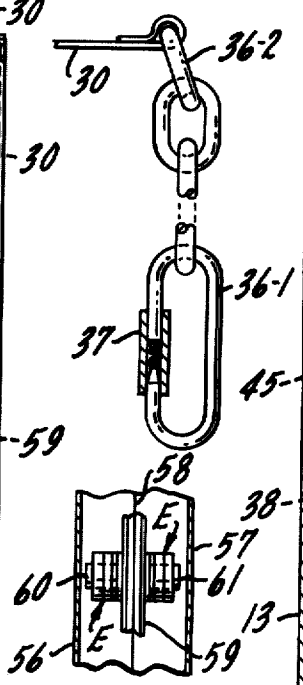


fig.3.

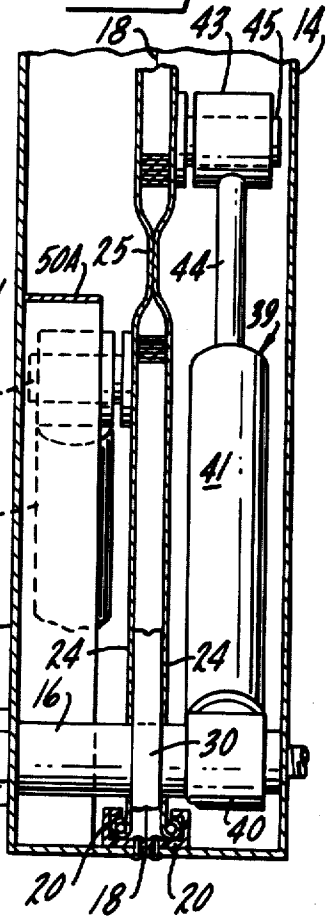


fig.6.

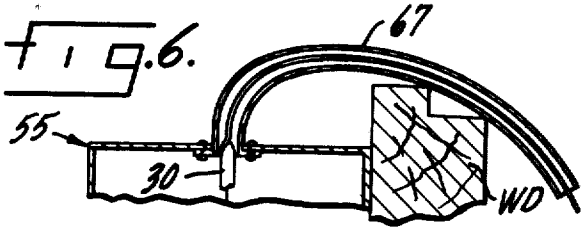


fig.5.

WINDOW ESCAPES

This invention relates to escape equipment for facilitating window escape from a burning building.

Ir has already been proposed to enable escape from a building on fire by means of a life line attached to a reel; a reasonably safe speed of descent is assured by a piston-type shock absorber reciprocated by the rotating reel. The proposals have been embryonic. No consideration has been given either to the manner of accommodating the equipment to the average apartment dwelling or the fact that the panicky person needs a harness requiring little thought for attachment. Accordingly, the objects of the present invention are to accommodate window escape apparatus to an apartment dwelling (and office occupancy as well), to enable the apparatus to operate effectively, and to enable the occupant easily and quickly to harness himself while preparing for the leap for life.

The objects set forth above are achieved by using a centerless reel, supported for rotation solely by a plurality of guides mounted within a housing in engagement with the periphery of the reel. As a result, there is no projecting axle or spindle support interfering with operation of the shock absorbers. The housing, and the reel guides as well, are split complemental halves, enabling the equipment to be neatly nested for unobtrusive wall mounting, either above, below, or at the side of a window opening. The life line is preferably a length of steel straping which, being flat, can be wound to a considerable length on the reel, compared to a cable. The harness is such as to be passed around the chest, beneath the arms, and secured by a hook-to-link attachment with which most persons are familiar.

In the drawing:

FIG. 1 is a perspective view of one embodiment of the invention, mounted above a window;

FIG. 2 is a front plan view of the embodiment shown in FIG. 1;

FIG. 3 is a fragmentary sectional view, enlarged on the line 3—3 of FIG. 2;

FIG. 4 is a front plan view of a modification;

FIG. 5 is a fragmentary detail view on the line 5—5 of FIG. 4;

FIG. 6 is a detail view of the modifications; and

FIG. 7 shows another form of harness.

One embodiment of the escape unit of the present invention is shown at **10** in FIGS. **1, 2** and **3,** comprising a housing or cabinet **12** formed of two complemental, substantially identical half-sections **13** and **14** which, in assembled form, are secured by screws **15** or other suitable fasteners to the wall WL of an upper story dwelling above the window WD. The shanks of the screws inside the housing are provided with spacers **16.**

As shown in FIG. **3** the sections are mated at a parting line **18.** Each section, at the parting line, is provided with a plurality of opposed L-shaped guide elements **20,** riveted in place, one being the mirror image of the other.

Collectively, the guide elements afford four guides **21,** FIG. **2,** defining a constricting channel or race for the peripheral edges of the flanges **24** of a ferrous metal reel **25.**

The plane of the reel **25** is centered on the parting line **18,** FIG. **3.** It has no axle or center support but rotates on the circle circumscribed by the four guides **21.** Accordingly, the guide elements are of low friction material such as Nylon or Teflon, or powdered metal elements which are either impregnated or compounded with a low friction material such as graphite or molybdenum disulfide. In any event, the guides are of a material which will afford a low friction race for rotatably supporting the reel **25** and hence may be of bearing metal such as bronze.

The reel has a life line wound thereon, preferably in the form of flat steel strapping **30,** FIGS. **1** and **2,** of a length corresponding to the drop height of the floor where the escape unit is installed. Since the life line is flat it will not tangle easily and a considerable length can be wrapped on the reel. Accordingly, the space between the flanges of the reel is narrow, of a width corresponding substantially to the width of the line or tape **30.** The life line could be of cable form, but a cable does not pack as neatly or compactly as the steel strap. In any event, as shown in FIG. **3,** the life line engages the spacer **16** in a free-running relation.

The free end of the life line, the end portion not secured to the reel, is shown dangling in FIG. **1.** This dangling length **30A** is sufficient to fit around the chest. It terminates in a securing element in the form of a spring type hook **32** adapted to be coupled to a mating element in the form of a link **33.** The length of the life line between the two securing elements thus afforded is covered by a tough, resilient sheath **35** to prevent the life line from cutting the escapee.

The dangling or free end of the life line could be a length of chain **36,** FIG. **7,** secured to the tape or strap **30** in the manner shown; the snap fastener may also be different form, characterized by a spring-biased slide **37** which when opened enables link **36-1** to be hooked to link **36-2.**

Rotation of the reel is retarded by a plurality of fluid-charged shock absorbers **38** and **39,** two in number according to the embodiment shown in FIGS. **1, 2** and **3.** The securing ring or eye **40** at the end of each cylinder as **41,** FIG. **3,** is pivoted for articulation on the spacer **16;** the securing eye **43** at the opposing end of each rod **44** is pivoted for articulation on a pin or stub shaft **45** secured by spot welding in an eccentric position on the related flange of the reel **25.**

In use, during the flight for life, the user "buckles" the life line around his chest and escapes through the window. During descent the reel, of course, rotates and the life line unwinds but the shock absorbers extend and compress due to the eccentric attachment to the reel. As the speed of descent increases so does the opposition of the shock absorbers; equilibrium is reached and a safe speed is attained.

Advantageously the dangling length of life line may be stuffed into an opening **50,** FIG. **1,** in the lower right-hand quadrant of the front section **13** of the housing, isolated from the rest by a divider **50A.** The divider will not interfere with the shock absorber **38** since shock absorber **38** does not operate in that quadrant. The opening **50** may be covered or rendered dust-proof in any suitable fashion.

Taking into account the most limited mentality in an emergency, the attachable end **30A** of the life line could be festooned at the front of the housing. In any event, graphic instructions can be displayed on the front of the housing.

A four cylinder unit may be constructed, using cylinders of less capacity (1-5/16 inch diameter) and therefore of smaller diameter compared to cylinders **38** and

39 (2 inch diameter) which will diminish the lateral width of the housing and therefore the distance it projects from the wall. This is shown in FIG. 4, the unit comprising four cylinders **51, 52, 53** and **54.** The housing **55** is essentially the same as above described, comprising mating sections **56** and **57,** FIG. **5,** joined along parting line **58** on which a reel **59** is centered and guided in the manner above described. The same kind of life line may be wound on the reel.

The eyes or mounting rings of the cylinders, FIG. **4,** are articulated, in effect, on the spacers **16.** However, the eyes of the cylinder rods, designated schematically at E, FIG. **5,** are collectively articulated on a pair of pins **60** and **61** spot welded to the opposed reel flanges at an eccentric position as shown in FIG. **4.**

The unit shown in FIG. **4** is to be mounted beneath the window (see FIG. **6**) in that the divider **65** separating the storage area for the free end of the life line is located in an upper quadrant. In this adaptation of the invention (mounted beneath the window opening) the extended or free end of the life line, coming off the reel, is encased in a plastic guard **67** so that it will be free-running across the lower edge of the window frame as shown in FIG. **6.** This part of the life line may also be stuffed into the storage compartment defined by the spacer **65.**

It will be seen from the foregoing the escape unit of the present invention is constructed for installation adjacent the window of an apartment or office. The two sections of the housing are joined along a parting line and are mirror images except in the instance of embodying a storage compartment for the free end of the life line.

The reel has no center support but is supported for rotation by guides which define a race for the periphery of the reel. The guides are complements, one on each side of the parting line, facilitating assembly and saving on cost. Since the reel does not turn on an axle, it can be more inexpensively manufactured; furthermore, there is no protruding hub or stub interfering with motion of the shock absorbers.

The shock absorbers are self-contained; the guides may be composed of rustproof material; the life line may be of a length sufficient for the drop to ground level, no more and no less; and the harness is easily fitted, all consistent with an escape unit for urban living, requiring no maintenance.

I claim:

1. Apparatus facilitating escape from the window of an upper story dwelling comprising a housing, a reel inside the housing containing a wound length of life line, a body-support harness attached to the free end of the life line, shock absorber means comprising a rod and a fluid-charged cylinder together having opposed ends, one such end being anchored pivotally to the interior of the housing and the other end being pivotally attached in eccentric relation to the reel, and guide means secured in spaced relation to the interior of the housing and rotatably supporting the periphery of the reel.

2. Apparatus according to claim **1** in which the housing consists of substantially identical complemental sections joined along a parting line, the circumference of the reel being centered substantially on the parting line of the housing sections, and each of the guides consisting of two substantially identical complemental parts respectively attached to the housing sections at the parting line edges thereof.

3. Apparatus according to claim **1** in which the life line is a flat steel strap, and in which the harness has securing elements comprising a link and a separate spring-biased catch.

4. Apparatus according to claim **1** in which the harness is stored inside the housing.

5. Apparatus according to claim **1** in which said guide means includes a plurality of guides.

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