

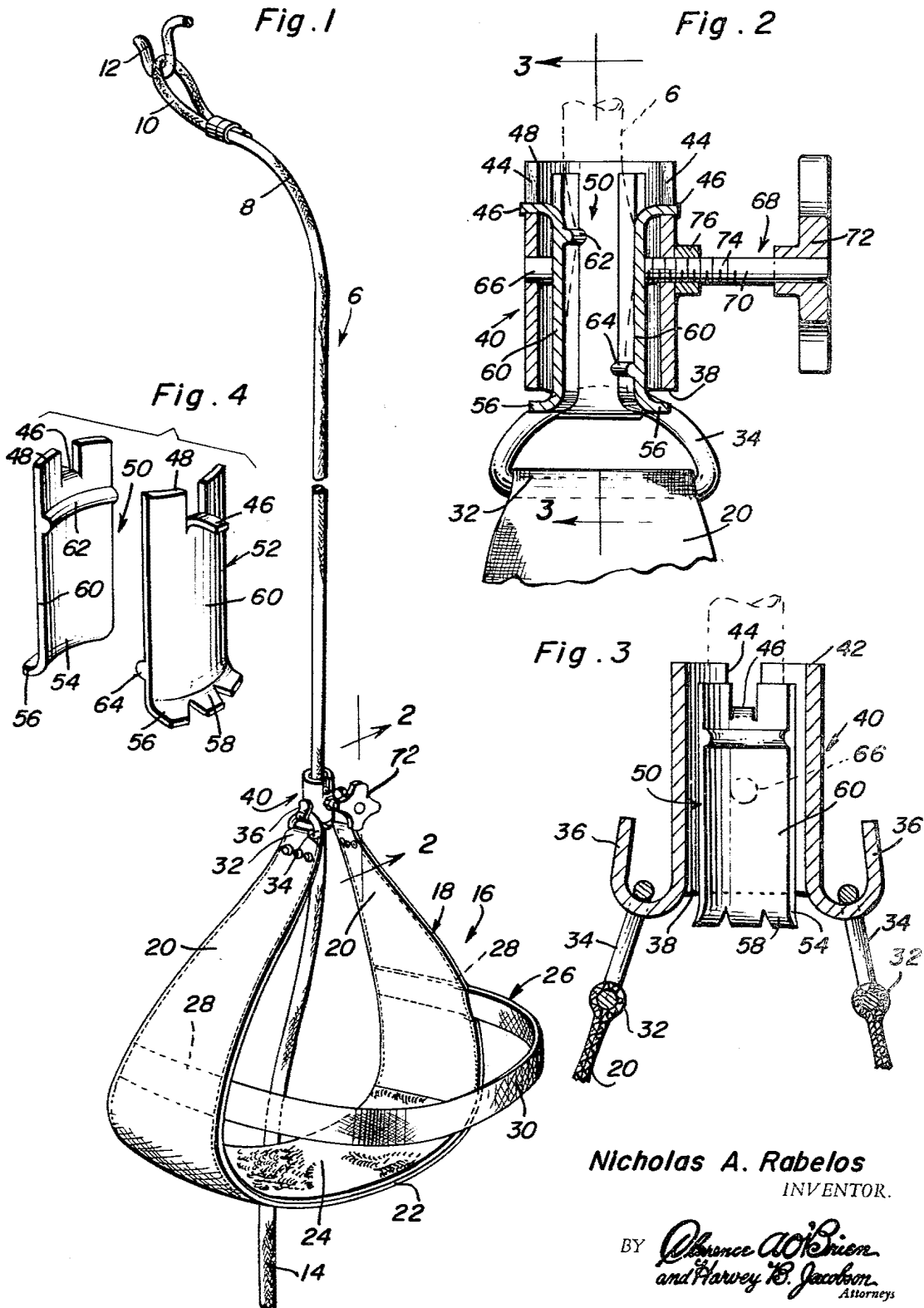
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FIRE ESCAPE DEVICE

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FIRE ESCAPE DEVICE

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ABSTRACT OF THE DISCLOSURE

A descending manually controllable sleeve is slidable on a suspended support rope of requisite length. A sling serves to harness and seat the escapee and is operatively hung from the sleeve. Rope grips are built into the sleeve and frictionally grip the rope and are controlled by a knob-equipped hand regulated setscrew.

This invention relates to an emergency fire escape device by way of which trapped persons are enabled to safely descend from a burning building and has to do, more particularly, with a suspended support rope, a sling-type seating harness, and means operatively mounting the harness on the rope.

Briefly, the support rope is preferably but not necessarily made from nylon and has a loop at the upper end which can be readily attached to and hung from an indoors anchoring hook. This rope is of requisite cross-sectional dimension and length that it can be passed outwardly through an open window so that the free lower end can and will be close to ground level. This rope, when not in use can be coiled into compact form and kept near a predetermined exit window or otherwise readied for accessible use. At least one sleeve can be fitted for ready use on the rope. To the ends desired the bore of the sleeve is of a diameter to properly accommodate the rope and also to contain and enclose a pair of complemental grips. These grips are fashioned into companion jaws and are expressly designed adapted to clampingly and frictionally grip the rope in a manner to provide a brake for the sleeve. More particularly, these jaw-like grips are tiltably mounted within the confines of the sleeve and are grippingly applied and released by a knob-equipped setscrew which is readily accessible to and controllable by the user. The lower end of the sleeve has exterior hanger hooks which function to support an occupant harness. This harness is made of canvas and embodies a seating sling and an attached complemental restraining strap which crosses the user's back and assists in keeping him safely seated while descending the rope.

In carrying out the principles of this invention the sleeve is provided at a lower end with diametrically opposite outstanding upturned hooks which function to position and retain D-rings carried by upper free ends of the aforementioned sling. This aspect of the concept is such that the sling can be readily attached to and detached from the sleeve. The sleeve can be retained in position on the rope and clamped in readiness for use and the sling can stay hitched thereto or if preferred, stored nearby for use when needed and often depending on whether the device is going to be used in a two-story home, a high rise apartment house, office building, or elsewhere.

The invention features not only a sling-type harness and mounting sleeve but, in addition, novel means which is encased in the sleeve, for regulating and controlling the action of the sleeve. To this end, the aforementioned gripping jaws are pivotally hung from notches provided in the upper end of the sleeve. Both jaws have flanged lower ends and the opposed inner surfaces have

arcuate transverse ribs which are so spaced and arranged that they serve to bend the rope in a manner which achieves a satisfactory friction clamping and descent controlling result.

Another object of the invention is to equip the sleeve on one side with a setscrew whose inner end engages and regulates the action of a coating one of the jaws and whose outer end is provided with a suitable easy-to-operate hand knob by way of which the jaw clamping and releasing steps can be reliably controlled by the user.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part heretof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a view in perspective of a fire escape rigged and readied for use and constructed in accordance with the principles of the present invention.

FIG. 2 is an enlarged fragmentary view with parts in section and elevation taken on the plane of the section line 2—2 of FIG. 1.

FIG. 3 is a similar view on a similar scale taken at right angles to FIG. 2 and on the section line 3—3 of FIG. 2.

And FIG. 4 is an exploded perspective view showing the companion or paired rope gripping and clamping jaws removed from the sleeve in which they are normally and operatively enclosed.

By way of introduction to the description of the details of the invention it may well be pointed out that the herein disclosed fire escape device is such in construction that it lends itself to use in homes, high rise apartment houses, office buildings and wherever devices in this field of endeavor have been or are susceptible of feasible use. It will simplify the presentation of the instant disclosure to disclose a preferred and simplified adaptation as for example that which is illustrated in FIG. 1 and which can best be understood when taken in conjunction with the other views of the drawing.

With further reference to FIG. 1 the support rope is denoted by the numeral 6 and it is preferably made of nylon of suitable cross-sectional dimensions and of appropriate length depending on whether the use will be in an ordinary two-story home or a building requiring a relatively long rope. The upper end portion is provided with a securer loop 10 which may be anchored or fastened in place inside a room in any acceptable manner. For purposes of the disclosure an indoors hook is shown at 12 and it can be assumed that this is appropriately mounted near a window (not shown) so that when an emergency arises it will be ready to accommodate the loop 10 and to permit the rope proper to be passed out through a window so that the lower end portion 14 will terminate at ground level.

The harness 16 is made up of two component parts secured together in the ready-to-use relationship shown in FIG. 1. The main component of this harness is denoted as a sling 18 and it is made of an appropriate grade of canvas. The upwardly narrowing and tapering arms of the sling are denoted at 20 and the bottom connecting the same is denoted at 22. This connective portion 22 is provided interiorly with an appropriately constructed and attached lamination or layer 24 which can be of canvas or some other material and which functions in providing a satisfactory seat for the occupant. The second component comprises a strap 26 also of canvas and which is U-shaped and which assumes a generally horizontal

plane when being used. This strap has its end portions 28 superimposed upon and stitched or otherwise connected to the median parts of the upstanding arms 20. The sling when in a substantially vertical position positions the U-shaped strap in a substantially horizontal position and the bight portion 30 provides a back strap. In other words this back strap 26 assists in seating and restraining the user in the sling when descending to the ground or other landing area. The extreme upper end portions of the arms are fashioned into suitably riveted hems 32 which are provided with links here referred to as D-rings 34.

In actual practice the D-rings are intended to be attached to diametrically opposite outstanding upwardly opening adapted hooks 36 formed integrally with the lower or bottom open end 38 of a suitable sleeve 40. This sleeve is of a diameter to encircle the rope in a manner to move up and down thereon as shown in FIG. 1. The upper end 42 is provided at diametrically opposite points with notches 44 which serve to seat outwardly projecting, suspending and fulcruming lugs 46 provided at the respective upper ends 48 of duplicate spaced parallel rope embracing and gripping jaws. The jaw at the left in FIG. 4 is denoted at 50 and the one at the right at 52. Both jaws are approximately the same in construction. They are slightly distinguishable however, as will be later pointed out. The lower end portion or bent end 54 of each jaw is provided with an outstanding positioning and retaining flange 56 which can be serrated to provide serrations 58 if so desired. These serrated flanges are located below the open bottom of the sleeve and serve to assist in locating the jaws within the confines of the bore of the sleeve. Each jaw comprises a vertically elongated plate 60 which is concavo-convex or which can be said to be transversely curved and arcuately shaped to conformingly embrace the rope in the manner shown in FIG. 1. The upper inward surface of the jaw 50 is provided with a semi-circular integral rib 62 which is spaced from and parallel with a similar integral semi-circular rib 64 on the lower interior surface of the jaw 52. These ribs bite into the rope and tend to bend and crimp the same to provide a friction brake action as suggested in phantom lines in FIG. 2. Sometimes this gripping action is referred to as "snubbing" the rope.

It will be noted that there is a plug 66 in the upper half portion of the sleeve at the left in FIG. 2 on which a median part of the jaw 50 can fulcrum or rock. The jaw 52 is operated by a setscrew 68 whose outer end 70 is provided with a wheel-type knob 72. This knob is manually controllable to regulate the threaded shank portion 74 which is screwed through a nut and screw-threaded hole 76 and whose inwardly projecting end is engageable with the jaw 52 in a manner to tilt and operate the same.

FIG. 1 shows the rope 6 and the manner in which the slidable connector 40 is mounted thereon. It also shows how the D-rings are hooked over the adapted hooks 36 to enable the user to seat himself before undertaking the descent to ground level. When seated the knob 72 is within convenient reach of the user and it can be assumed that the jaws 50 and 52 are normally clamped and that the user loosens or slightly releases the jaws to the extent desired to permit him to ride downwardly to safety.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A fire escape device comprising an elongated sleeve adapted to be mounted for retention and descension on a support rope, a pair of correspondingly elongated plates located within the confines of said sleeve, said plates being arcuately curved and providing interior concave rope embracing surfaces, said plates constituting rope gripping jaws and having upper ends which are pivotally suspended from diametrically opposite upper end portions of said sleeve, the lower ends of said plates projecting downwardly through and beyond a corresponding lower end of said sleeve and having laterally directed outstanding assembling and displacement preventing flanges, means carried by the lower end of said sleeve for supporting an attachable and detachable harness, and additional means mounted on one side of an upper end portion of said sleeve and operatively engageable with an adjacent one of said jaws and controllable in a manner to clamp and release said jaws at will.

2. The fire escape device defined in and according to claim 1, and wherein the means carried by the lower end of said sleeve comprises a pair of diametrically opposite outwardly projecting upwardly opening hanger hooks.

3. The fire escape device defined in and according to claim 2, and, in combination, a readily attachable and detachable harness embodying a stirrup-like occupant seating sling having upstanding arms terminating at upper ends with attached D-rings said D-rings being separably connectable with their respectively cooperable hanger hooks.

4. The fire escape device defined in and according to claim 3, and wherein the means on said one side of the upper end of said sleeve comprises a setscrew at right angles to the longitudinal axis of said sleeve, said one side having a screw-threaded hole, the inner threaded end of said setscrew being screwed through said hole and projecting into the bore of the sleeve and having end thrust operating contact with said adjacent jaw in a manner to (1) apply and clamp said jaw and (2) release the same as may be desired, the outer end of said setscrew having a hand actuatable operating knob.

5. The fire escape device defined in and according to claim 4, and wherein the concave surface of one jaw is provided adjacent its upper end with an integral horizontal rib and the concave surface of the other jaw is provided adjacent its lower end with a similar integral horizontal rib, said ribs being longitudinally spaced and parallel and being adapted to bind against and kink and snub that portion of the rope which is clamped between the respective ribs.

6. A fire escape comprising an elongated open-ended sleeve adapted to be slidably mounted on a support rope, a pair of companion plates located within the confines of said sleeve, said plates being arcuately curved and providing opposed inwardly disposed concave rope embracing surfaces, said plates constituting rope gripping jaws and having upper ends provided with outwardly projecting lugs, said sleeve having a pair of diametrically opposite keeper notches opening through the respective upper end portions of said sleeve, said lugs being seated in and pivotally hung from the respectively cooperable keeper notches, said plates having lower end portions projecting downwardly through and beyond a corresponding lower end of said sleeve and embodying assembling and retaining flanges, means carried by a lower end of said sleeve for supporting an occupant seating harness, and additional means cooperable with one side of said sleeve, said additional means comprising a setscrew disposed at right angles to the longitudinal axis of said sleeve, said one side of the sleeve having a screw-threaded hole, the inner threaded end of said setscrew being screwed through said hole and projecting into the bore of the sleeve and having end thrust operating contact with an adjacent one

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of said jaws and controllable in a manner to clamp and release said jaw at will.

7. The fire escape defined in and according to claim 1 and wherein the concave surface of one jaw is provided adjacent an upper end of said jaw with an integral rib and the concave surface of the other jaw is provided adjacent its lower end with a similar integral rib, said ribs being spaced apart and being adapted to bind against and kink and snub that portion of the rope which is clamped between the respective ribs.

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