No. 859,266. PATENTED JULY 9, 1907.

F. S. ULERY.

INDIVIDUAL FIRE ESCAPE.

APPLICATION FILED JUNE 7, 1906.

3 SHEETS—SHEET 1.

Fig. 2.

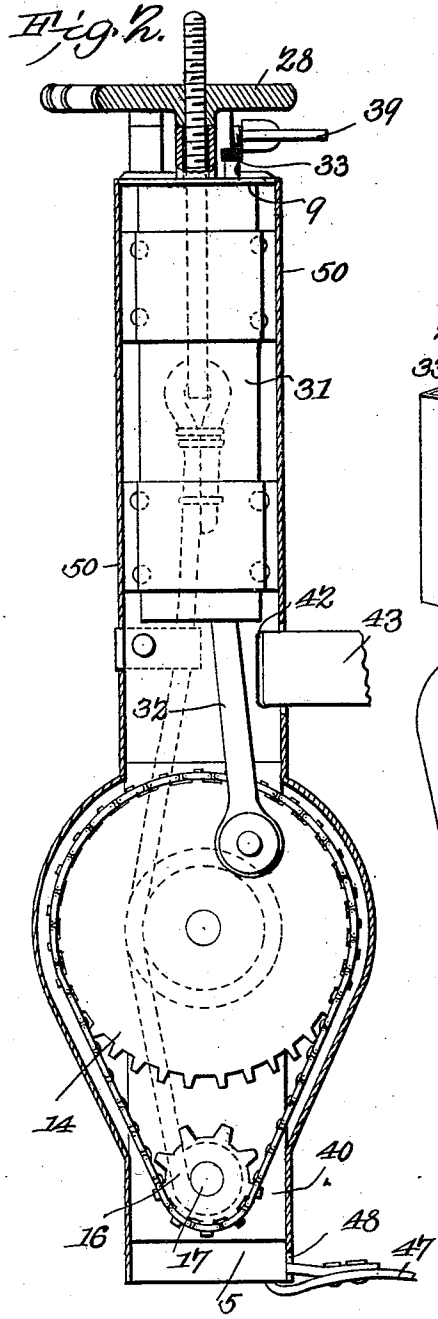


Fig. 5.

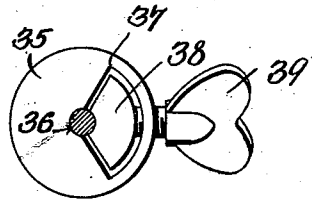


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 3.

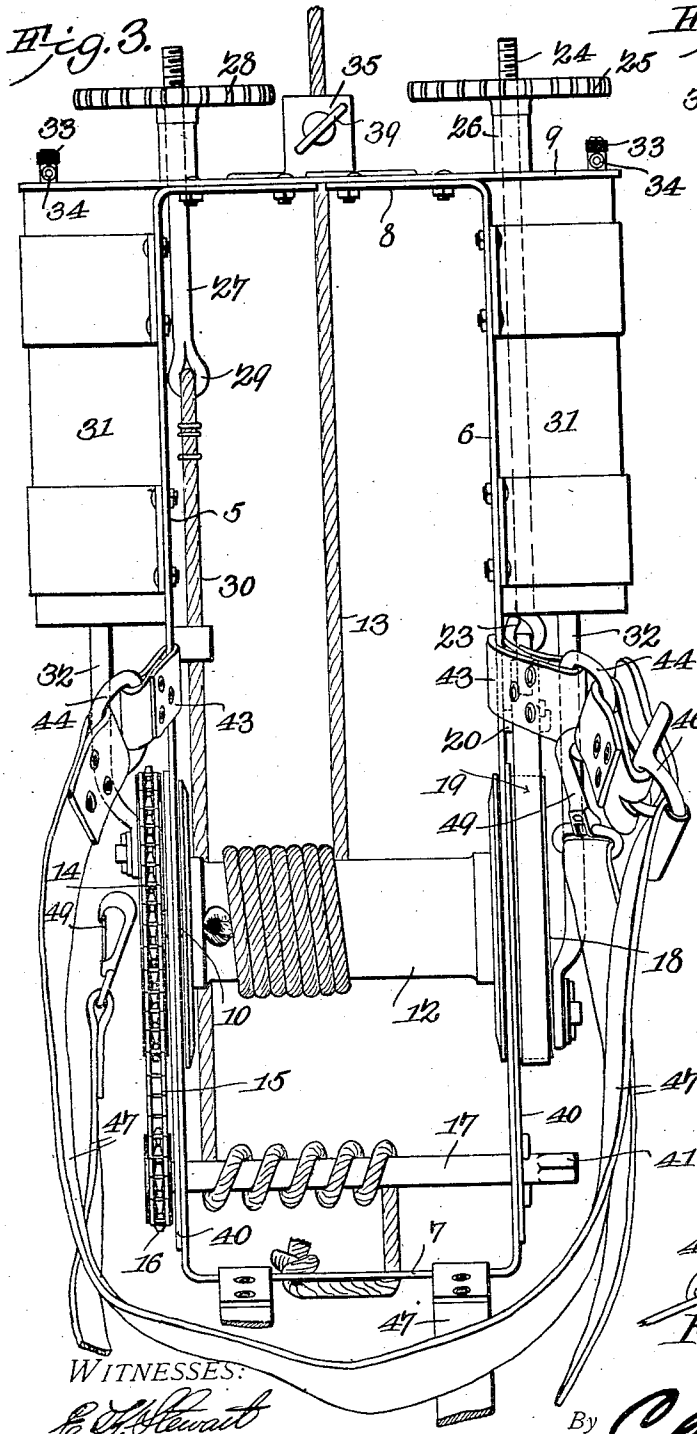
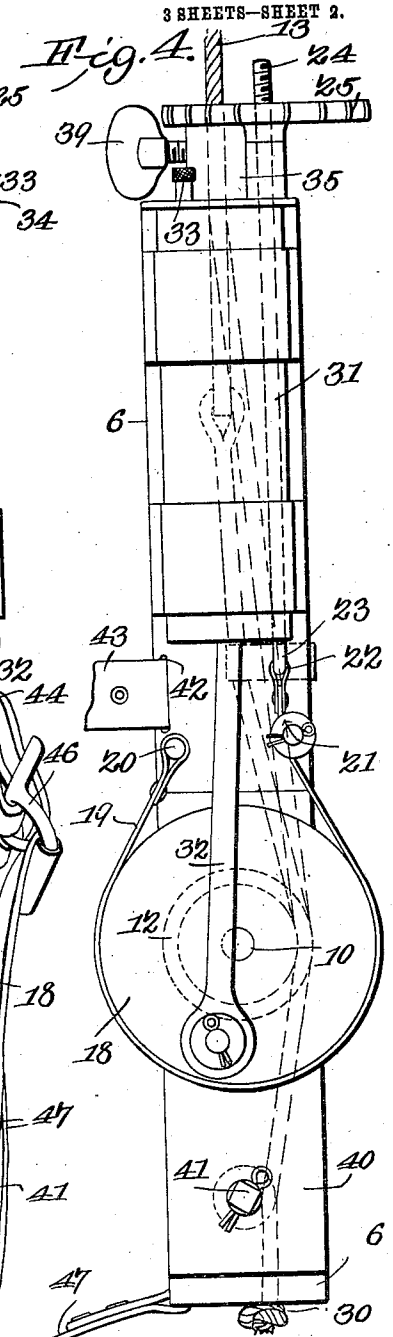


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 6.

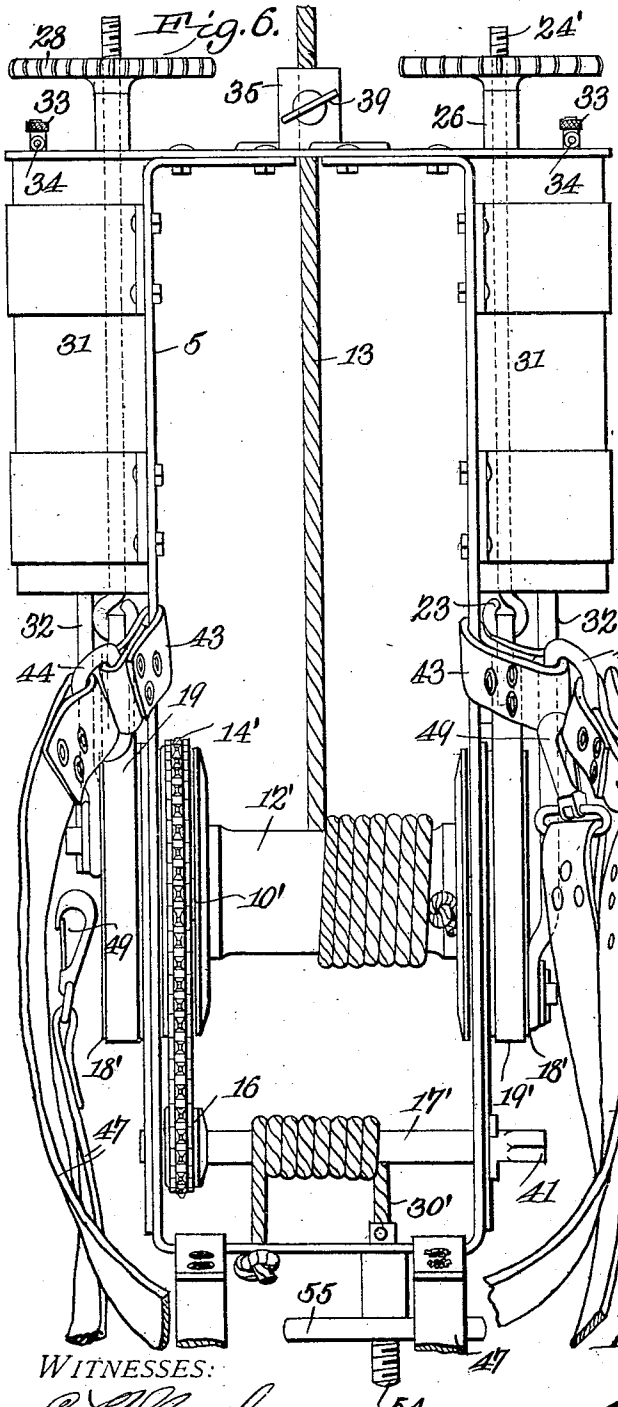


Fig. 8.

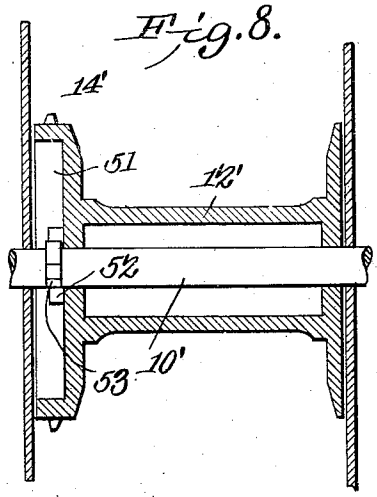
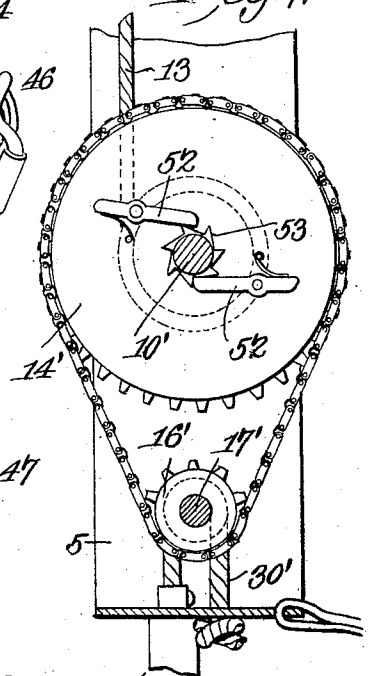


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK S. ULERY, OF HOOPESTON, ILLINOIS.

INDIVIDUAL FIRE-ESCAPE.

No. 859,266. Specification of Letters Patent. Patented July 9, 1907.

Application filed June 7, 1906. Serial No. 320,660.

To all whom it may concern:

Be it known that I, FRANK S. ULERY, a citizen of the United States, residing at Hoopeston, in the county of Vermilion and State of Illinois, have invented a new and useful Individual Fire-Escape, of which the following is a specification.

This invention relates to fire-escapes and has for its object to provide a strong, durable and portable device of this character to assist the inmates in the upper stories of burning buildings and similar structures to reach the ground in safety.

A further object of the invention is to provide a portable fire-escape in which the operating mechanism is inclosed in a casing or housing and provided with attaching straps whereby the same may be readily adjusted on the operator and quickly removed so that the device may be successfully used for rescuing all the inmates of the building.

A further object is to provide a pneumatic governor for controlling the rapidity of descent of the machine and further to provide manually operated brake mechanism to assist in controlling the movement of the same.

A still further object is to generally improve this class of devices so as to increase their utility, durability and efficiency as well as to reduce the cost of manufacture.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, and illustrated in the accompanying drawings, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a perspective view of an individual fire-escape constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a front elevation. Fig. 4 is a side elevation of the machine. Fig. 5 is a top plan view of the cable engaging brake. Fig. 6 is a front elevation illustrating a modified form of the invention. Fig. 7 is a vertical sectional view of a portion of the device shown in Fig. 6. Fig. 8 is a transverse sectional view of the winding drum.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved device consists of a substantially U-shaped supporting frame comprising parallel side bars 5 and 6 connected by end bars 7 and 8, the adjacent ends of the bars 8 being secured together by a transverse cap-piece 9 as shown. Journaled in the side bars 5 and 6 is a shaft 10 and disposed between the side bars and mounted for rotation with the shaft is a drum or reel to which is secured in any suitable manner one end of a supporting cable 13 the opposite end of which is designed to be attached to a bed, bureau or other suitable support in any particular room of the burning building. Keyed or otherwise rigidly secured to one end of the shaft 10 is a sprocket-wheel 14 the teeth of which engage a sprocket chain 15, which latter also engages a pinion 16 secured to one end of a winding shaft 17. Secured to the opposite end of the shaft 17 is a wheel or disk 18 the periphery of which is smooth or uninterrupted for engagement with a brake band 19 whereby the rotation of the drum may be regulated and the rapidity of descent of the machine controlled at the will of the operator.

One end of the brake band 19 is secured to a pin or stud 20 extending laterally from one of the spaced bars of the frame while the opposite end thereof encircles the wheel 18 and bears against a pin or roller 21 spaced from the pin 20 as shown. The free end of the band 19 terminates in a loop 22 adapted to receive the hooked end 23 of a rod 24 the free end of which passes through the cap-piece 9 and is provided with terminal threads 24 for engagement with a hand-operating wheel 25 spaced from the plate 9 by a sleeve or collar 26. Disposed on the opposite side of the machine is a similar rod 27 having one end thereof threaded for engagement with a hand-wheel 28 and its opposite end provided with a terminal loop 29 for attachment with a rope or cable 30. The cable 30 is wrapped around the winding shaft 17 and adjacent end thereof threaded through spaced openings in the lower cross-bar 7 of the supporting frame, as shown, so that by rotating the hand-wheel 28 the convolutions of the rope or cable 30 will frictionally engage the shaft 17 and thus retard the descent of the machine.

Secured in any suitable manner to the side bars 5 and 6 at the upper end of the frame are air cylinders or dash pots 31 in which are mounted for reciprocation suitable pistons, the rods 32 of which are eccentrically mounted on the sprocket wheel 14 and disk 18, respectively. Secured to the cap-piece 9 are exhaust valves 33 which communicate with cylinders 31 and are provided with suitable openings or apertures 34 so that by rotating the valves 33 the amount of air expelled from the cylinders may be regulated at will and thus increase or decrease the resistance offered by the air within the cylinders and consequently control the rapidity of rotation of the winding drum. Secured to the cap-piece 9 at a point intermediate the hand-operated wheels 25 and 28 is a collar 35 having a central opening 36 formed therein for the reception of the supporting cable 13 and provided with a segmental recess 37 in which is seated a brake block 38. Threaded in the walls of the collar 36 is a clamping screw 39 which engages the block 38 and forces the latter into frictional engagement with the supporting cable thereby to exert a braking action on said cable.

The side bars of the frame are preferably reinforced and strengthened by auxiliary plates 40 through which extends the shaft 17, the latter being provided with a

winding head 41 by means of which the cable 13 may be rewound on the drum 12 to permit the device to be successfully used for rescuing the inmates of the building.

The side bars of the supporting frame are formed with elongated slots 42 for the reception of strap sections 43 each provided with a terminal loop 44 as shown. Fastened to the loops 44 is a strap 45 adapted to encircle the waist of the operator, said strap being provided with a buckle 46 by means of which the strap may be adjusted to fit the operator. Associated with the strap 45 are leg engaging straps 47 one end of each of which engages a slot 48 in the lower cross-bar 7 while its opposite end is provided with a terminal snap-hook 49 adapted to detachably engage the adjacent loop 44 whereby said straps may be readily detached after the operator has descended or reached a place of safety.

The operating mechanism is preferably inclosed in a suitable casing or housing 50 so as to protect the same from dust and other foreign matter and also to prevent the rotating parts from engaging the wearing apparel of the user.

In operation one end of the cable 13 is attached to a bed or other suitable support within the room thereby to hold the same against accidental displacement. The operator then attaches the casing or housing by means of the straps 45 and 47 and lowers himself out of the window. If the rapidity of the descent is too great the same may be controlled by operating the valve 33 or rotating the hand-wheels 25 and 28, and if it is desired to sustain additional weight, as for instance to carry a second person, the movement of the machine may be further retarded by adjusting the clamping screw 39, as will be readily understood. After the operator has reached the ground in safety the device may again be used by elevating the same with the cable 13, the latter being re-wound on the drum 12 by rotating the winding head 41 with a wrench or similar tool.

In Figs. 6 to 8 inclusive of the drawings there is illustrated a modified form of the invention in which the supporting cable may be re-wound on the drum to permit the descent of successive persons without the necessity of operating the pistons or other auxiliary parts. In this form of the device the drum 12′ is loosely mounted on the operating shaft 10′ and is provided at one end thereof with a sprocket-wheel 14′ operatively connected with a smaller sprocket-wheel 16′ on the winding-shaft 17′ through the medium of a sprocket-chain as shown, said sprocket-wheels being arranged within the frame and disposed adjacent to one of the longitudinal side bars of the latter. The sprocket-wheel 14′ is formed with an annular recess 51 and seated in said recess and pivotally mounted on the sprocket-wheel are oppositely disposed spring actuated pawls 52 adapted to engage the teeth of a ratchet-wheel 53, the latter being secured to or formed integral with the shaft 10′ as shown. It will thus be seen that when the device is lowered to permit the descent of a person the pawls 52 will engage the ratchet 53 and cause the drum 12′ to rotate with the shaft. When the drum is rotated in the opposite direction the pawls 52 will ride idly over the teeth of the ratchet-wheel thus permitting the supporting cable to be re-wound on the drum 12′ when the shaft 17′ is rotated without rotating the shaft 10′ or operating the pistons and auxiliary devices. A friction disk 18′ is preferably secured to the opposite ends of the shaft 10′ while a threaded rod 24′ is extended longitudinally of the frame on each side of the latter and operatively connected with a brake-band 19′ engaging said disks. In this form of the device one end of the auxiliary cable 30′ is secured to the adjacent end of the frame with its intermediate portion coiled around the winding shaft 17′, the opposite end of said cable being secured to a threaded rod 54 projecting through the frame and operated by a hand-wheel 55 to effect the tightening of the cable on said winding-shaft, the device being otherwise the same as the construction illustrated in Figs. 1 and 2 of the drawings.

From the foregoing description it is thought that the construction and operation of the device may be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. In a fire-escape, a substantially U shaped frame, a perforated plate secured to one end of the frame and having its opposite ends extended laterally beyond the side thereof, a drum journaled in the frame, a pneumatic governor associated with the drum and bearing against the free ends of the plate, a supporting cable secured to the drum, and passing through the perforation in the plate, a shaft for winding the cable on said drum, a housing for the operating mechanism, and attaching straps carried by the frame and extending through the walls of the housing.

2. In a fire-escape, a substantially U shaped frame comprising spaced side bars provided with elongated slots and connected at one end by a plate the opposite ends of which are extended laterally beyond the side bars, there being a perforation formed in said plate, a drum journaled in the frame, cylinders secured to the side bars and bearing against the extensions of the connecting plate, pistons operating within the cylinders and connected with the drum, rotary valves for regulating the exhaust from the cylinders, a supporting cable secured to the drum and passing through the perforation in the plate, a shaft for winding the cable on the drum, a strap threaded through the slots in the side bars of the frame and adapted to encircle the waist of the operator, and leg engaging straps carried by the frame and detachably secured to the waist engaging strap.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANK S. ULERY.

Witnesses:
JOHN L. HAMILTON,
D. D. GILMON.