J. N. JERSILD.

FIRE ESCAPE APPARATUS.

APPLICATION FILED JULY 2, 1915.

1,200,198.

Patented Oct. 3, 1916.

2 SHEETS—SHEET 1.

Fig. 1

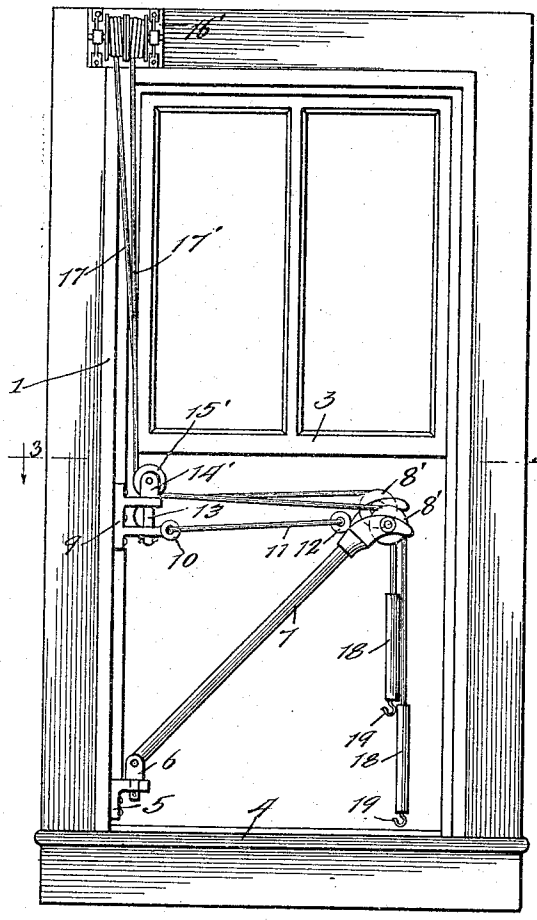


Fig. 2.

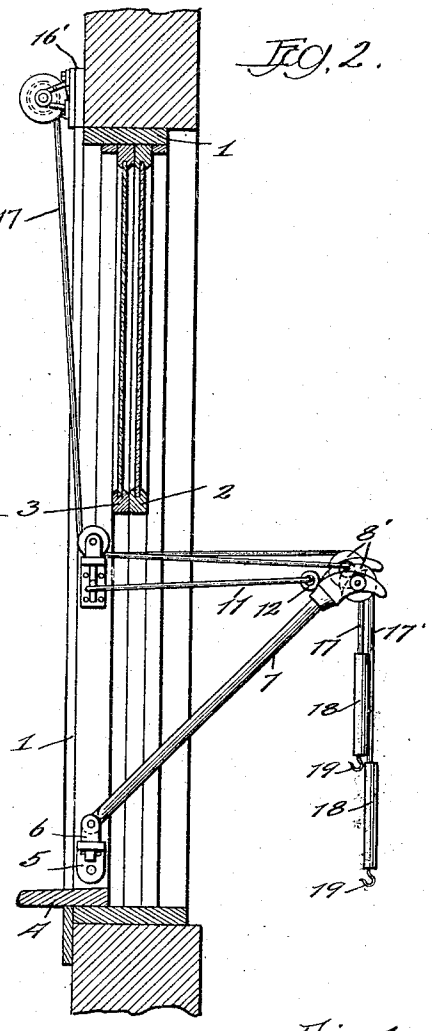


Fig. 3

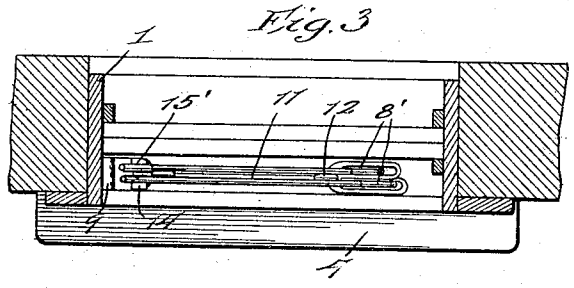
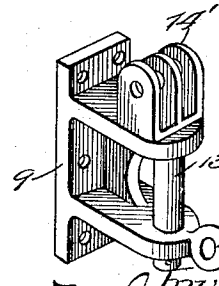


Fig. 4.



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FIRE ESCAPE APPARATUS.

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2 SHEETS—SHEET 2.

Fig. 5.

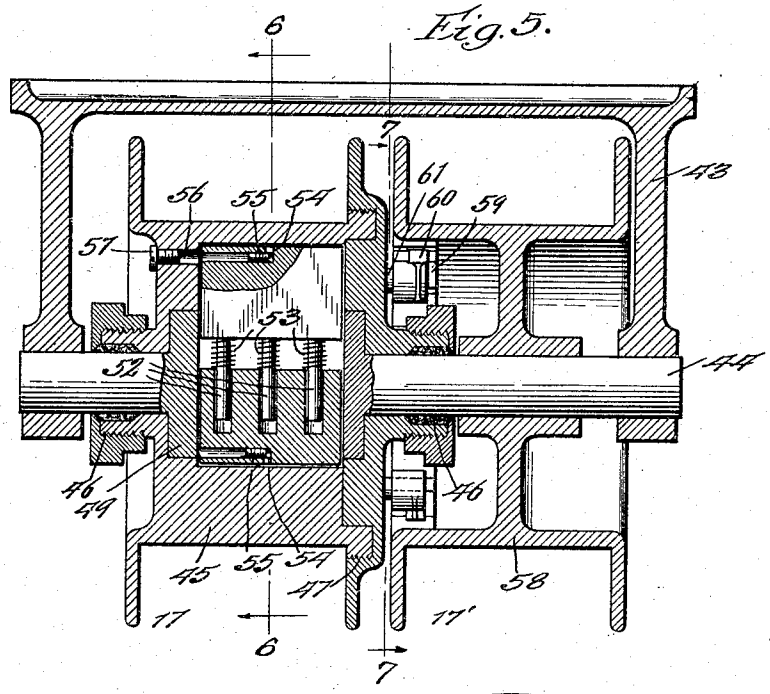


Fig. 6.

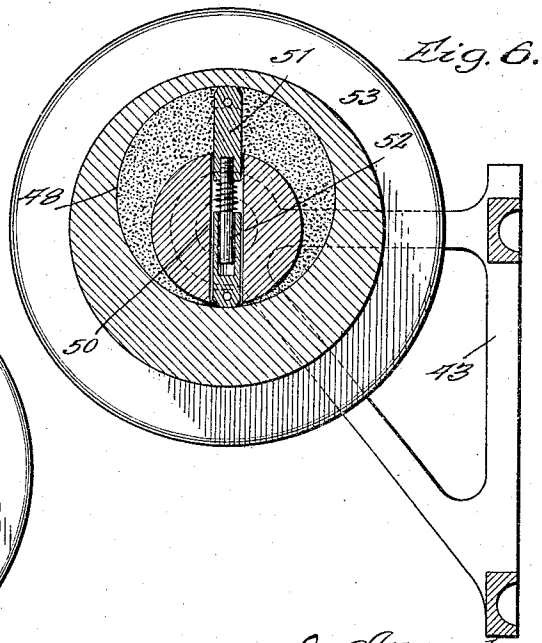
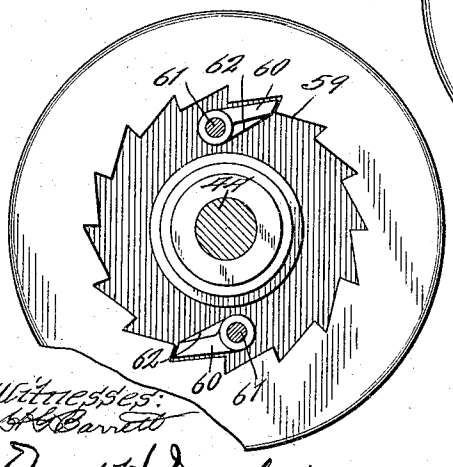


Fig. 7.



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UNITED STATES PATENT OFFICE.

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FIRE-ESCAPE APPARATUS.

1,200,198. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed July 2, 1915. Serial No. 37,706.

To all whom it may concern:

Be it known that I, JENS N. JERSILD, a citizen of the United States, residing at Neenah, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Fire-Escape Apparatus, of which the following is a specification.

This invention relates to that class of fire escape apparatus which is adapted to be located adjacent a window or other opening and which comprises a cable for lowering a person to the ground at a predetermined rate of speed and means for automatically rewinding the cable so that it may be again used.

The object of the invention is to provide a fire escape apparatus of simple and inexpensive construction which will always be in condition for instant use and which when not in use may be so disposed as to be inconspicuous.

Further objects of the invention are to provide the apparatus with regulating means, whereby it can be easily and quickly adjusted for lowering the cable to a certain level; to provide for rewinding the cable automatically; and to mount the apparatus in a neat and convenient manner in a window frame or similar opening so that it can be instantly placed in operative position to hold the cable free from engagement with the window sill and other projections on the face of the building.

These and other objects will be apparent as the invention is better understood by reference to the following specification when read in connection with the accompanying drawing, in which—

Figure 1 is an elevation showing my invention secured to a window frame and ready to be swung downwardly into operative position; Fig. 2 is a vertical section through a window frame with my invention disclosed in operative position; Fig. 3 is a horizontal section on the line 3—3 of Fig. 1; Fig. 4 is a detail in perspective of the cable-guiding bracket; Fig. 5 is a vertical section through the cable-winding means; Fig. 6 is a vertical section on the line 6—6 of Fig. 5, and Fig. 7 is a vertical section on the line 7—7 of Fig. 5.

Referring to the drawing, in which like numerals of reference denote corresponding parts in the several figures, 1 indicates a window frame of usual construction supporting the upper and lower sashes 2 and 3, respectively. Secured to one side of the frame 1 adjacent sill 4 is a bracket 5 in which a bifurcated member 6 is pivotally mounted. Pivotally secured between the arms of the member 6 is a jib 7 in the other extremity of which a pair of pulleys 8′ are rotatably mounted. It will be apparent from the foregoing that the jib 7 is movable in two directions and may, therefore, be swung downwardly from an upright position adjacent the frame 1 and outwardly through the window when the lower sash 3 is raised. A bracket 9 is secured to the frame 1 about midway of its height and is provided with an eye 10 to receive the cable 11, which is secured to an eye 12 on the jib 7, whereby a downward movement of the latter is limited. The bracket 9 is adapted to receive a shank 13 of a bifurcated member 14′ in which a pair of pulleys 15′ are rotatably mounted. The cable-winding means, indicated generally as 16′, is disposed adjacent the top of the frame 1 and the cables 17 and 17′ are wound thereon in the manner presently to be described, pass around the pulleys 15′ and 8′ and are provided at their extremities with coverings 18, preferably of rubber, and hooks 19, so that they may be passed and secured about the body of a person to be lowered. Obviously belts of any desirable form may be substituted for the rubber coverings 18.

The cable-winding means indicated generally as 16′ consists (Figs. 5 to 7) of a frame 43 of any suitable conformation and adapted to support a shaft 44, which is held against rotation. Loosely mounted on the shaft 44 is a drum 45, stuffing boxes 46 being provided at either end thereof. The drum 45 is preferably made in two parts, threadedly secured together at 47, as indicated in Fig. 14. Within the drum 45 a chamber 48 is formed which is eccentric with respect to the shaft 44 and adapted to be filled with a non-compressible liquid or semi-liquid substance which has a comparatively low freezing point and a comparatively high boiling point.

The shaft 44 is provided with an enlarged portion 49 within the chamber 48 and is slotted at 50 to receive a vane comprising the oppositely disposed members 51 mounted on the pins 52 and held in engagement with the walls of the chamber 48 by the springs 53 disposed about the pins 52. As the shaft

44 remains stationary it will be apparent that if an attempt is made to rotate the drum 45 the speed of rotation will be limited by the rate of flow of the liquid past the members 51 and in order that the rate of speed may be adjustable to a certain degree I provide slots 54 in the members 51 and place the screws 55 in coöperative relation therewith, so that the slots 54 may be partially or wholly closed. An opening 56 in the drum 45, which is normally closed by a screw 57, provides for access to the regulating screws 56.

Loosely mounted on the shaft 44 adjacent the drum 45 is a second drum 58, which is provided with an internal ratchet 59 adapted to coöperate with a pair of pawls 60, mounted on studs 61 secured to the drum 45, and forced into engagement with the teeth of the ratchet 59 by the springs 62. It will be apparent from the foregoing that the drums 45 and 58 are freely movable in opposite directions with respect to each other but that either drum will be moved by the other when rotated in a direction which allows the pawls 60 to operatively engage the teeth of the ratchet 59.

In the normal arrangement of the apparatus the cables 17 and 17′ are wound on the drums 48 and 58, respectively, in the same direction. If a person then descends on the cable 17 the drum 45 will be rotated to carry the pawls 60 in an anti-clockwise direction, viewing Fig. 16, the pawls idling over the teeth of the ratchet 59 and the speed of movement being limited by the passage of the fluid in the eccentric chamber 48, past the edges of the members 51. When the end of the cable 17 is released a second person may descend on the cable 17′. This will cause the ratchet 59 to rotate in an anti-clockwise direction, viewing Fig. 16, and will, through the engagement of the teeth of the ratchet 59 with the pawls 60, rotate the drum 45 in the same direction, winding the cable 17 thereon. The movement of the drum 59 will, of course, be retarded in the same manner as the drum 45. When the person attached to the cable 17′ reaches the ground the end of the cable 17 will have reached its uppermost position and is ready for the third person to descend. The descent of the third person will rotate the drum 45 in a clockwise direction, viewing Fig. 16, and the engagement of the pawls 60 with the teeth of the ratchet 59 will cause the drum 58 to rotate in the same direction, winding the cable 17′ thereon. The cycle of operations may be repeated indefinitely so long as there are persons to descend alternately on one or the other of the cables 17 or 17′. It will be necessary, of course, should the apparatus be used for practice merely or should the building and apparatus be still in condition for occupancy after a fire to rewind one of the cables by hand in order to place the apparatus in its normal condition ready for emergency use.

It will be apparent from the preceding description that I have devised a fire escape apparatus of simple and inexpensive construction which, when not in use, is not conspicuous but which, when occasion arises, may be quickly placed in commission and which will lower persons to a place of safety at a fixed rate of speed and with a minimum amount of danger, automatically returning after each operation so as to be available for further use if other persons are still in need of the apparatus. The character of the apparatus is such that it is not liable to disarrangement from neglect or careless use and is not easily tampered with by irresponsible persons.

It will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention, or sacrificing any of its material advantages, the forms hereinbefore described being merely preferred embodiments thereof.

I claim:

1. In a fire escape apparatus, the combination of a shaft, a pair of independently movable drums rotatably mounted thereon, means within one of said drums to limit the speed of rotation thereof, and connecting means between said drums.

2. In a fire escape apparatus, the combination of a shaft, a pair of drums rotatably mounted thereon, means within one of said drums to limit the speed of rotation thereof, cables wound on each of said drums, and connecting means between said drums, whereby the cable on one of said drums may be unwound without disturbing the cable in the other drum but in succeeding operations the drum connected to the unwound cable will be actuated to rewind the cable as the cable connected to the other drum is unwound.

3. In a fire escape apparatus, the combination of a shaft, a pair of drums rotatably mounted thereon, one of said drums being provided with a chamber eccentrically arranged with respect to said shaft and adapted to contain a liquid, means carried by said shaft and coöperating with said liquid to retard the speed of rotation of said drum, an internal ratchet on one of said drums, and a pawl on the other of said drums forming a driving connection therebetween.

4. In a fire escape apparatus, the combination of a shaft, a pair of drums rotatably mounted thereon, one of said drums being provided with a chamber eccentrically arranged with respect to said shaft and adapted to contain a liquid, means carried by said shaft and coöperating with said liquid to

retard the speed of rotation of said drum, means for adjusting said last-mentioned means to vary the rate of retardation, an internal ratchet on one of said drums, and a pawl on the other of said drums forming a driving connection therebetween.

5. In a fire escape apparatus, the combination of a shaft, a pair of drums rotatably mounted thereon, one of said drums being provided with a chamber eccentrically arranged with respect to said shaft and adapted to contain a liquid, a vane slidably mounted on said shaft and coöperating with said liquid to retard the speed of rotation thereof, openings in said vane to allow the passage of liquid, means for varying the size of said openings, cables on said drums, an internal ratchet on one of said drums, and a pair of pawls on the other, the said drums forming a driving connection therebetween.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."