No. 755,833. PATENTED MAR. 29, 1904.

E. W. APPELMAN.

FIRE ESCAPE.

APPLICATION FILED MAY 27, 1903.

NO MODEL.

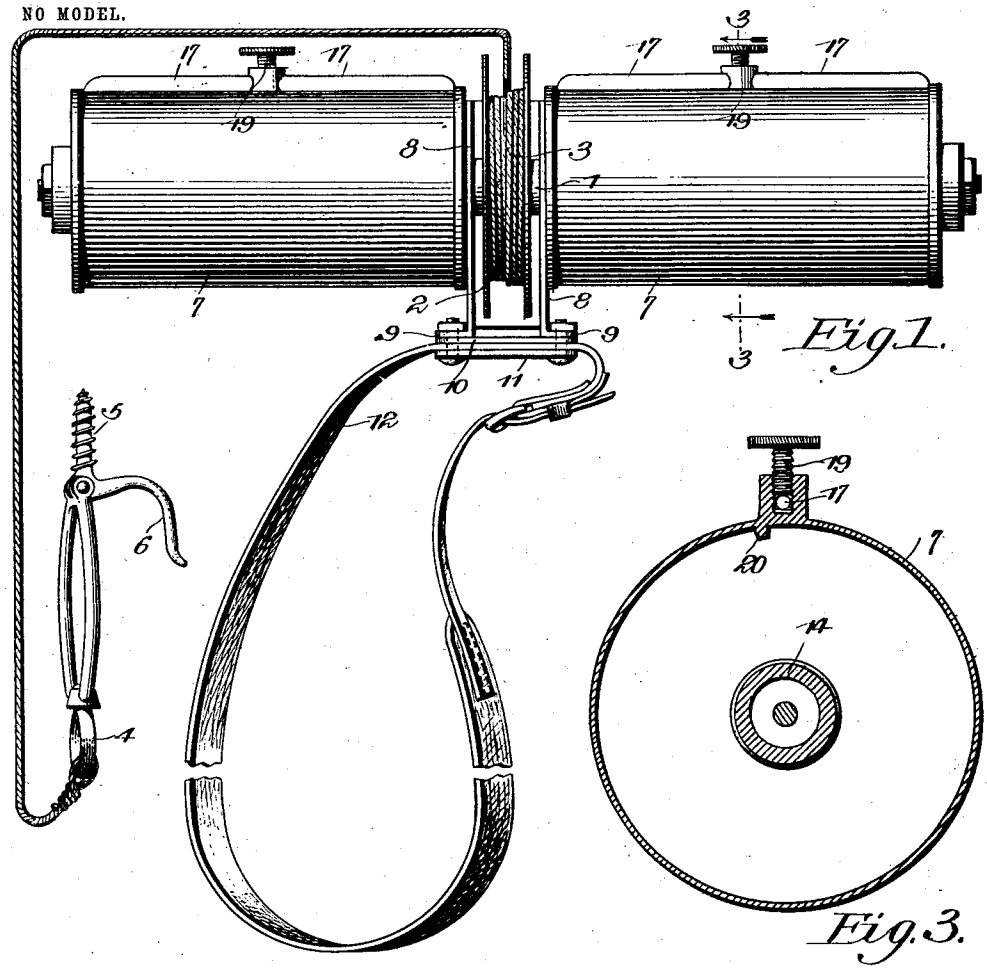


Fig. 1.

Fig. 3.

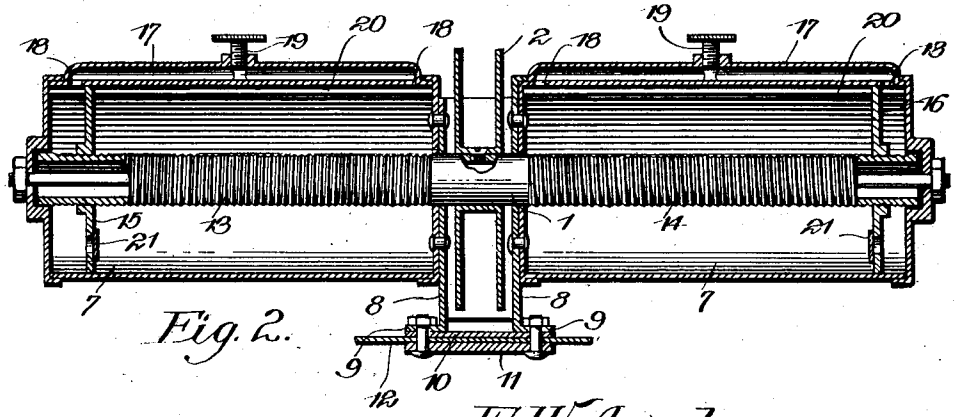


Fig. 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 755,833. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

ERASTUS W. APPELMAN, OF CLERMONT, IOWA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 755,833, dated March 29, 1904.

Application filed May 27, 1903. Serial No. 158,986. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS W. APPELMAN, a citizen of the United States, residing at Clermont, in the county of Fayette and State of Iowa, have invented a new and useful Improvement in Fire-Escapes, of which the following is a specification.

My invention relates to fire-escapes, and has for its objects to produce a device of this character which will be simple of construction, efficient in operation, one which may be manufactured and sold at a minimum cost, and one in which the speed of unwinding of the life-line from the drum may be readily controlled.

With these and other objects in view the invention comprises the novel details of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of a fire-escape constructed in accordance with my invention. Fig. 2 is a central longitudinal sectional elevation of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 1 as viewed in the direction of the arrow.

Referring to the drawings, 1 indicates a normally horizontal shaft, which is by preference hollow for the sake of lightness, and 2 is a drum or spool fixedly associated in any suitable manner with the shaft at its longitudinal center. This drum has normally wound upon it a life-line 3, preferably composed of wire and adapted when unwound from the drum during the operation of the device to rotate the drum and likewise the shaft 1 for the purpose which will presently appear. The life-line 3 is provided at its free end with a ring 4, swiveled to the end of a screw 5, adapted for engagement with the window-sill, said screw having formed upon it a sill-hook 6.

7 7 indicate a pair of sheet-metal air-cylinders mounted upon the shaft 1, one at either side of the drum 2, and to the inner end of each cylinder is riveted a plate 8, which projects below the cylinder and is provided with an outwardly-projecting flange 9.

10 is a plate which is secured to the flanges 9 of the plates 8 by rivets or the like, which also engage a clamp-plate 11, between which and the plate 10 is clamped a strap 12, which during the use of the device is secured around the body of the operator.

The shaft 1 is externally screw-threaded within and throughout the length the cylinders 7, as at 13 and 14, the threads 13 being left-handed, while the other threads, 14, are right-handed. Engaging with the threaded portion 13 of the shaft within the left-hand cylinder 7 is a piston-head 15, and upon the threaded portion 14 within the right-hand cylinder 7 is a similar piston-head 16. These heads are in threaded engagement with the threads of the shaft and are adapted when the shaft is rotated, owing to unwinding of the line 3 from the drum, to travel along the shaft from their normal position at the outer ends thereof inward toward the longitudinal center of the shaft, thus compressing the air within the cylinders and controlling the speed of unwinding of the line 3, as will be readily understood. In order that the compression of the air within the cylinders may be properly regulated according to the weight of the operator, each cylinder has mounted upon its normally upper side an escape-tube 17, which extends longitudinally of the cylinder and communicates with the interior of the same at its opposite ends through the medium of perforations 18 and allows the air to pass from one end of the cylinder to the other during the inward travel of the piston, the rapidity of the flow of the air being controlled by a valve 19 in the form of a screw tapped into the air-tube 17 and operable for regulating the size of its central air-duct. Thus it will be seen that when the screw 19 is manipulated to permit the air to flow freely from the inner end of the cylinder to the outer end thereof the piston-head 15 will travel more freely and the line 3 will unwind more rapidly from the drum, whereas if the valve is regulated to retard the passage of air a reverse action will follow.

In order to prevent rotation of the piston-heads with the shaft and to cause them to travel longitudinally of the shaft, each cylinder has formed upon its inner wall longitudinally thereof a rib 20, which is engaged by a

notch formed in the edge of the piston-head; but it is to be understood that any other means may be employed for the attainment of this end.

After the line has been unwound from the drum during the operation of the device the operation of again winding the same upon the drum will cause the rotation of the shaft 1 in the reverse direction and serve to move the piston-heads to their normal position at the outer ends of the cylinders. During this return movement of the heads the air should escape freely from in advance of them to their rear in order that the drum may be rotated more rapidly for winding the line, and in order to admit of this free passage of the air and the free operation of the drum I provide each of the piston-heads with one or more flap-valves 21, which open to admit the passage of the air during the return movement of the heads, but which of course close to prevent passage of the air during the inward travel of the heads.

From the foregoing it will be seen that I produce a device which is simple of construction, efficient in operation, and capable of ready manipulation and one which in practice will admirably perform its functions, and in attaining these ends it is to be understood that I do not limit myself to the details of construction herein shown and described, inasmuch as various changes may be made therein without departing from the spirit or scope of my invention.

While I have described the use of air in connection with my device, it will be understood, of course, that air or other fluid may be employed.

Having thus described my invention, what I claim is—

In a fire-escape, the combination with a shaft, of a pair of cylinders mounted thereon, a drum fixed upon the shaft between the cylinders, a line wound upon the drum and adapted in unwinding to rotate the shaft, a pair of movable heads mounted upon the shaft one within each of the cylinders and operable by the rotation of the shaft to compress a fluid in the cylinders, means for attaching the described device to a person, an attaching device connected with the free end of the line, a pair of fluid-ducts one extending longitudinally of each of the cylinders and communicating therewith at opposite sides of the head, and means under constant control of the operator for regulating the passage of fluid through the ducts.

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

ERASTUS W. APPELMAN.

Witnesses:
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