

No. 696,508.

Patented Apr. 1, 1902.

W. STEWART.  
FIRE ESCAPE.

(Application filed Jan. 31, 1902.)

(No Model.)

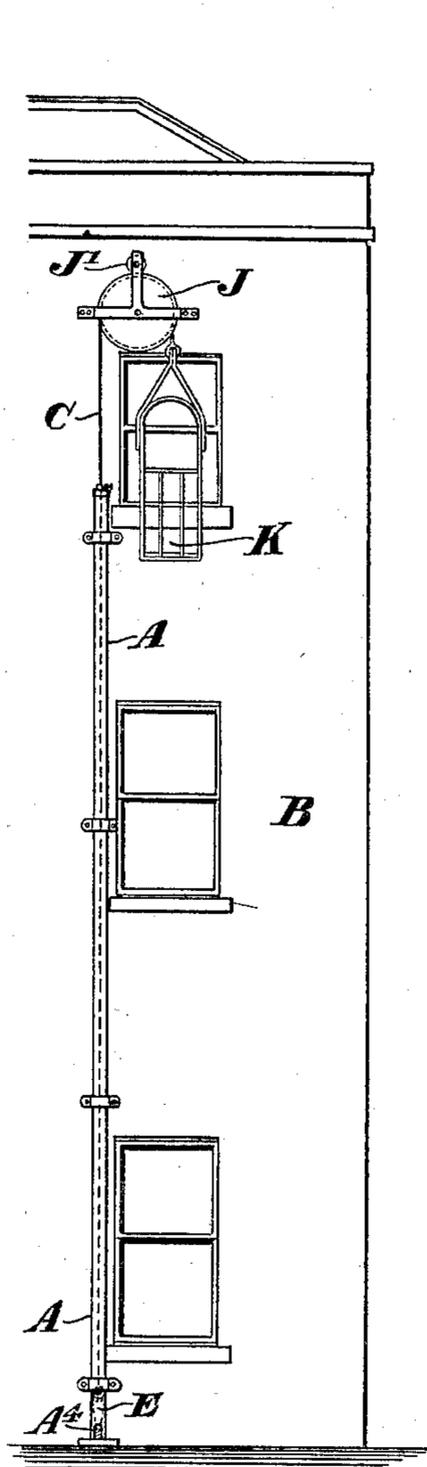


Fig. 1.

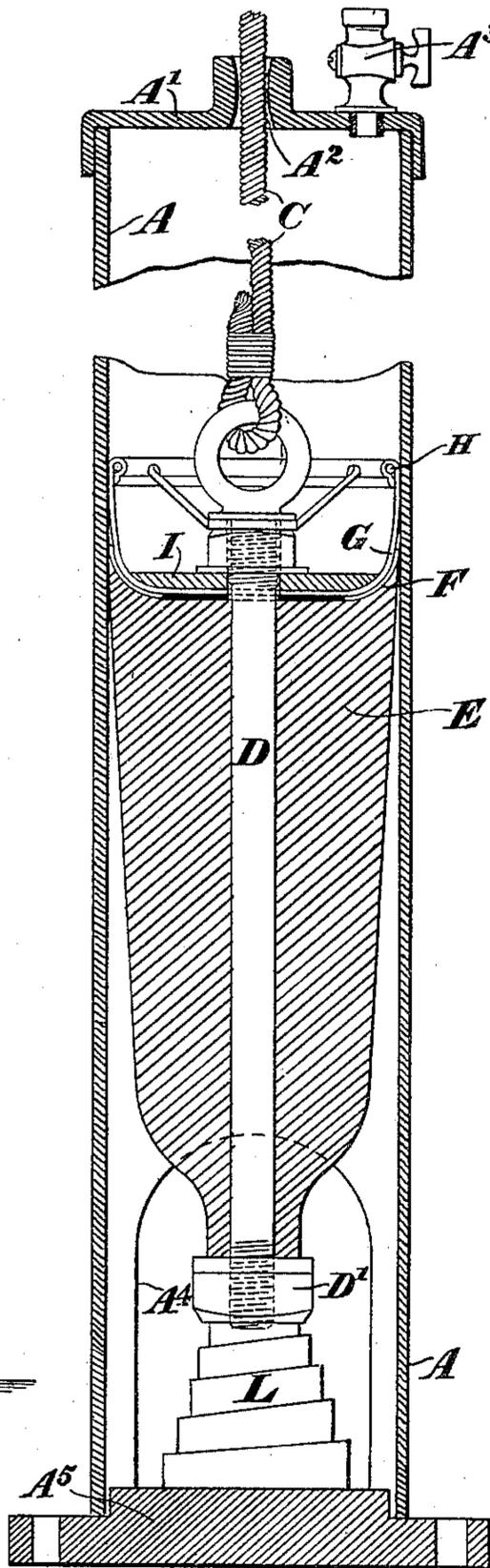


Fig. 2.

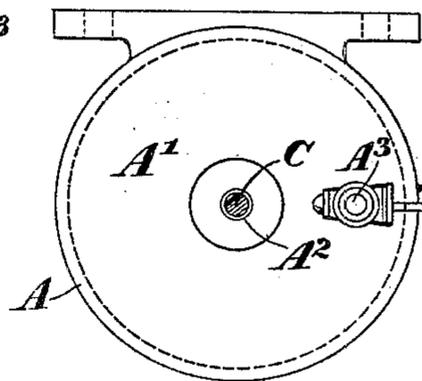


Fig. 3.

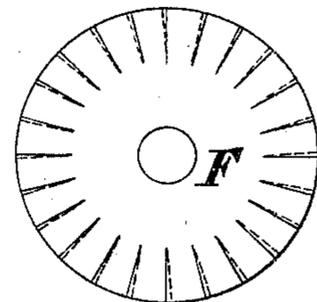


Fig. 4.



Fig. 4^a.

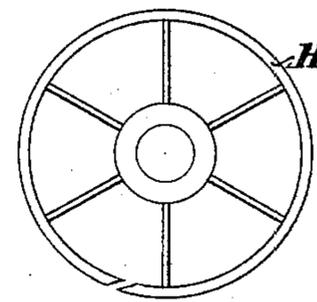


Fig. 5.

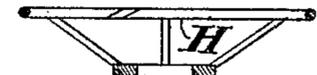


Fig. 5^a.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 696,508, dated April 1, 1902.

Application filed January 31, 1902. Serial No. 91,999. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM STEWART, builder, a subject of the King of Great Britain and Ireland, residing at Hume street, Albury, in the British State of New South Wales, Commonwealth of Australia, have invented a new and useful Pneumatic Cushion Appliance Usable as a Fire-Escape and for other Purposes, of which the following is a specification.

This invention relates to a pneumatic cushion appliance usable as a fire-escape and for other purposes, such as the lowering of goods or materials from a height or into the hold of a ship, cellar, or pit.

The invention consists of a weighted plug or piston working in a vertically-arranged tube or pipe having a closed top end furnished with an adjustable escape-valve and having its lower end open to the atmosphere, the said piston being secured to a rope, which passes out through a central hole in the closed end of tube, the rope then passing over a sheave, and with its free end carrying a light cage or other device suitable to support a person or goods.

In order that the invention may be well understood, I will now describe it, aided by a reference to the attached sheet of drawings, in which—

Figure 1 shows by an elevation the appliance as attached to the wall of a building; Fig. 2, an enlarged sectional view of the construction of the tube and piston, and Fig. 3 a top end view of the tube; Fig. 4, a plan, and Fig. 4<sup>a</sup> a central section, of an expanding washer which is employed on the piston; and Fig. 5 a plan and Fig. 5<sup>a</sup> a sectional view of an expanding ring which is attached to piston and to the piston packing-leather.

A is the vertically-arranged tube or pipe, made of the requisite sectional area and length, fixed, say, to the wall of a building, as B, the top of the tube having a cap A' secured on it, which is provided with a central hole A<sup>2</sup>, through which a wire or other rope C is passed. The end of said rope within the tube or pipe is secured to an eye or ring at top end of a rod D, which passes through and supports by a nut D' a piston or weighted plug E, which fits loosely within the tube. The upper end of said piston or plug is made

concave to receive a saucer-shape expanding washer F, whose edge is slitted radially to allow it to expand. Above washer F is a dished leather or rubber piston-packing G, the upper rim or edge of which is attached to an expanding steel ring H, which insures said edge of leather packing being retained in position and an air-tight joint being maintained between inner wall of tube and the said piston-leather and so preventing the downward escape of air. The expanding washer F is seated in the concaved upper end of piston E about the central rod D, while the expanding ring-piece H is supported upon said central rod D of the weighted piston E.

I is a washer-plate within the leather piston-piece G.

In the aforesaid cap A' at top end of tube is a regulating-valve A<sup>3</sup>, by means of which the escape of air from tube is regulated. The said rope C outside the tube or pipe passes upward and over a suitably-supported sheave or pulley J, arranged, say, near the top of a building. The free length of rope is suspended therefrom and has affixed to it a cage, as K, or a cross-bar, ring, or other device to support the person using the appliance or the materials or goods it is to be used to lower.

J' is a guard-pulley to prevent the rope leaping from the groove in pulley J. The lower end of said vertical tube is open to the atmosphere, as at A<sup>4</sup>, and it is seated on a plate, as A<sup>5</sup>, while also a spring-buffer, as L, may be employed to receive the weighted piston when it reaches the lower end of its stroke.

The appliance is brought into operation upon a person of sufficient weight stepping into the cage, or a sufficient load to overcome the weight of the piston or plug E being carried on the rope suspended over the sheave then the weighted plug-piston will be drawn upward by the rope and so compress the air within tube, and thus prevent the too rapid descent of the person or load, such descent being regulated by the air which escapes through the valve A<sup>3</sup>. Again, immediately the suspended rope is relieved of its load the weighted piston falls within the tube and so returns the overhanging rope, with its attached cage, to its elevated position, in readiness for the next descent.

Although I have described and shown one

arrangement of my appliance for the purpose stated, I would have it understood that I do not desire to confine myself thereto, as, for instance, the vertical tube may be arranged  
 5 in a rectangular lining or box and the sheave at upper end be supported by arms therefrom, and hence the appliance be portable, and, as will be obvious, other arrangements of the appliance may be necessary to suit the use to  
 10 which it is to be put.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fire-escape, a tube A open at its bottom and closed at its upper end, an air-regulating valve at said upper end, a weighted piston in said tube, an expansion-washer carried by said weight, and a rope or cable connected to said weight, substantially as described.  
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2. In a fire-escape, a tube A having an open lower end and a closed upper end, an air-regu-

lating valve at said upper end, a weight in said tube concaved at said upper end, a cup-shaped expansion-washer seated in said concaved end of the weight, and a rope or cable  
 25 connected to said weight, substantially as described.

3. In a fire-escape, a tube A closed at its upper end and open at its lower end, a tapering weight within said tube having a concaved  
 30 upper end, a cup-shaped expansion-washer seated in said concavity, a clamping-disk within said washer, a bolt passing through said disk, washer and weight, for clamping  
 35 them together, and a rope connected to said rod, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM STEWART.

Witnesses:

BEDLINGTON BODYCOMB,  
 W. J. S. THOMPSON.