No. 872,050. PATENTED NOV. 26, 1907.

P. C. BURHANS.

FIRE ESCAPE.

APPLICATION FILED JULY 14, 1906.

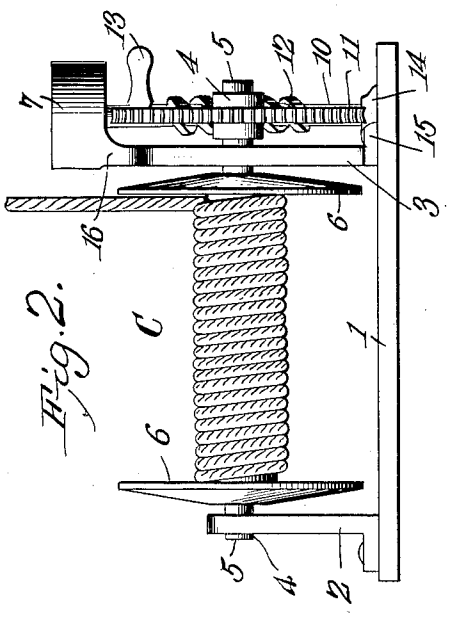


Fig. 2.

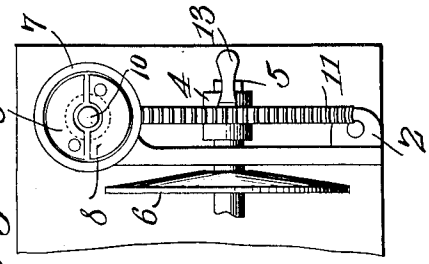


Fig. 4.

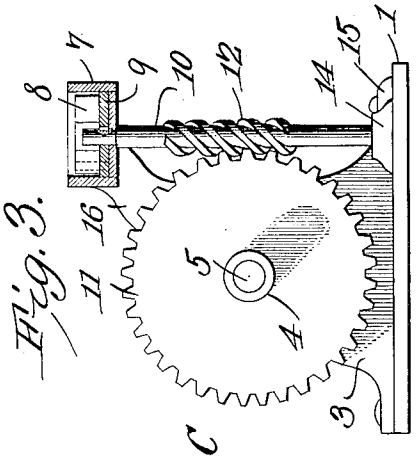


Fig. 3.

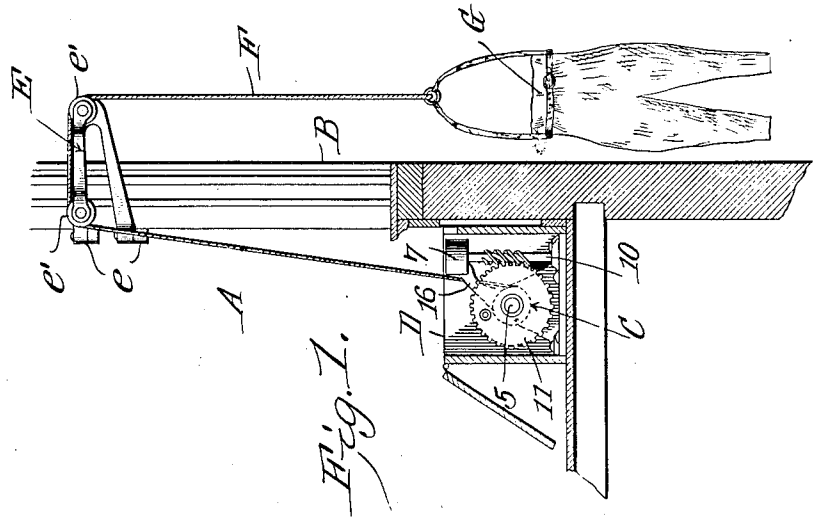


Fig. 1.

WITNESSES:

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FIRE-ESCAPE.

No. 872,050. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed July 14, 1906. Serial No. 326,245.

To all whom it may concern:

Be it known that I, PAUL C. BURHANS, a citizen of the United States, residing at Phœnix, in the county of Burleigh and State of North Dakota, have invented a new and useful Fire-Escape, of which the following is a specification.

This invention relates to fire escapes of that type including a life line by which persons can be lowered automatically from windows or other suitable points of a burning building to the sidewalk.

The invention has for one of its objects to provide a life saving apparatus of this character which is so constructed that a building can be readily equipped with the same without any alterations thereof being required, the apparatus being adapted to be placed in rooms adjacent a window and inclosed as to certain of its parts in a suitable casing which may serve as a window seat or other piece of furnishing for the room.

A further object of the invention is to provide a winding mechanism for the life line so organized and equipped with a retarding device that the descent of a person can be smoothly and gently made without imperiling life.

Another object is the employment of a swinging bracket adapted to be positioned adjacent the window on the inside of the room, so as to be swung out of the window a suitable distance that the life line will be supported away from the wall of the building and thereby permit the descent to be made without endangering the person by striking projecting structures on the building. A further advantage of the bracket is that the rope will be supported off the window sill and thereby be prevented from scraping and cutting in two.

Another object of the invention is to provide a simple and inexpensive device of the character referred to which can be installed at little expense, is easy to operate and reliable, and requires a minimum of space.

With these objects in view, and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts, more fully described hereinafter, and set forth with particularity in the appended claims.

In the accompanying drawing, which illustrates one of the embodiments of the invention, Figure 1 is a view showing the invention in use. Fig. 2 is a front elevation of the means for winding and unwinding the life-line. Fig. 3 is an end view of the same showing parts of the retarding device in section. Fig. 4 is a plan view of the said device.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to Fig. 1 of the drawing, a portion of a building is shown in section, a room being designated by A having a window B. The mechanism for paying out and winding up the life-line is indicated by C, the same being inclosed in a box D, the lid of which is swung open, while the apparatus is in use, as shown. The box or casing D may be, and preferably is, provided with suitable ornamentation, so as to add to the appearance of the apparatus, and it may be placed directly in front of a window, as shown, so as to serve, when the apparatus is not in use, as a window seat. If desired, however, it can be set at one side of the window. Located at any desired height on the window frame, or adjacent thereto, is a hinged bracket E, the hinges of which are indicated at *e*. The bracket is so arranged as to conveniently swing from a position in the room, when not in use, to a position extending out of the window, as shown. On the ends of the bracket are arranged pulleys *e'* over which the life-line F is guided. By means of this bracket, the life-line is supported above the window sill so that there is no danger of the line cutting by frictionally riding on any parts liable to produce injury. Furthermore, the bracket supports the life line at a suitable distance from the wall of the building, so as to reduce to a minimum the likelihood of accident resulting from the person striking the wall, or projections thereon, and again, the location of the bracket above the window sill permits of a person easily swinging out of the window, after having adjusted the sack or envelop G around his body. The sack G, which is attached to the free end of the life line, may be of any suitable construction, the same, by preference, being provided with legs so as not to restrict the movements of the user when in the sack, and adapted to be fastened around the body just under the arms, as by buckling. When the device is not in use, the sack G and life-line are placed in the cas-

ing or box D so as to be out of the way, and the bracket E is swung into the room to a position alongside of the wall.

The winding and unwinding mechanism, as shown in Figs. 2 and 3, comprises a base plate 1, which is screwed, bolted, or otherwise fastened to the floor or other suitable part, and arranged at the ends of the base plate are brackets 2 and 3 bolted to the base plate. The brackets are provided with bearings 4 for receiving the opposite ends of the horizontal shaft 5. The shaft 5 is provided with spaced flanges 6 between which the life-line winds and unwinds.

In order to prevent the rope from unwinding at too great a speed, retarding means are required. For this purpose, an automatic friction brake is employed which comprises a stationary drum 7 and centrifugally acting weights 8 that are preferably semi-discus in shape and each pivoted at one end on a supporting plate 9. In order to produce a sufficient braking action while the line is unwinding and to partially release the braking effect to permit the line to be readily rewound manually preparatory to the next descent, it is preferable to locate the pivots at points toward those ends of the weights that are in advance during the winding movement and in rear during the unwinding movement, so that during the latter movement of the line, the weights will be pushed around the inside of the drum, the friction due to the engagement of these parts operating to draw the weights out and increase the braking action, whereas during the winding movement, the weights will be drawn around the friction drum with a minimum of friction. The plate 9 is rotated by means of an upright shaft 10 that is suitably connected with the shaft 5 so as to receive rotation therefrom, and hence act to retard the movement of the shaft when the same exceeds a certain speed. The power transmitting connection between the shafts 5 and 10 is desired to be of such a character as to possess a certain amount of retarding action, so that the entire work of retarding the movement of the shaft 5 will not be brought to bear on the brake. While the power transmitting connection is intended to act with the brake in this manner, it will, at the same time, impart sufficient speed to the brake device to throw the centrifugally acting weights into operation. For this purpose, a spiral gear is employed comprising a wheel 11 meshing with the spiral teeth or thread 12 on the shaft 10. The shaft 5 is extended beyond the standard 3 so as to receive the wheel 11 and permit the latter to serve as a crank wheel for winding up the life-line after a person has descended. The crank for turning the wheel is indicated at 13.

The spiral gear shaft 10 is mounted at its lower end in a step bearing 14 provided in a base extension 15 of the bracket 3. Extending laterally from the upper end of the standard 3 is an extension 16 forming a bracket to which the brake drum 7 may be integrally, or otherwise, attached. This extension also forms a bearing for the upper end of the shaft 10. By the construction described, the rotation of the shaft 5 imparts a rotary movement to the brake shaft 10 through the spiral gearing. If a person of light weight is descending, the weight may not be sufficient to create sufficient speed of the shaft 5 to bring the brake into operation, the spiral gearing serving, in this case, to retard the unwinding of the life-line. While a spiral gear may be designed to operate satisfactorily in this manner, it is quite obvious that a worm on the shaft 10 would be inoperative. When a heavy person descends by the life-line, the latter tends to unwind at a greater speed, which speed, being communicated to the shaft 10, automatically brings the brake device into operation so that the descent can be made gently and without discomfort to the person.

I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, but I desire to have it understood that the apparatus shown is merely illustrative, and that various changes may be made, when desired, as are within the scope of the invention.

What is claimed is:—

In a fire escape, the combination with a suitable winding device having a life line fastened thereto at one end, and means for guiding the line during its winding and unwinding, and means for manually operating the said device to rewind the line, of a brake for controlling the operation of said device embodying a gear wheel revoluble with the winding device, a bearing supporting one end of the winding device and having a step bearing at its base and a hollow friction drum arranged in alinement therewith, a shaft having one end coöperating with the step bearing and having its upper end shouldered and coöperating with a relatively fixed portion of the friction drum to prevent upward movement of the shaft, a circular plate revoluble with the said shaft and fitting the friction drum, centrifugally acting weights pivoted on said plate and coöperating with the friction drum, and a spiral gear on said shaft coöperating with the said gear.

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

PAUL C. BURHANS.

Witnesses:
A. G. COVELL,
BERT T. LEGG.