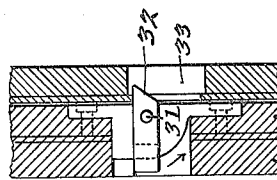
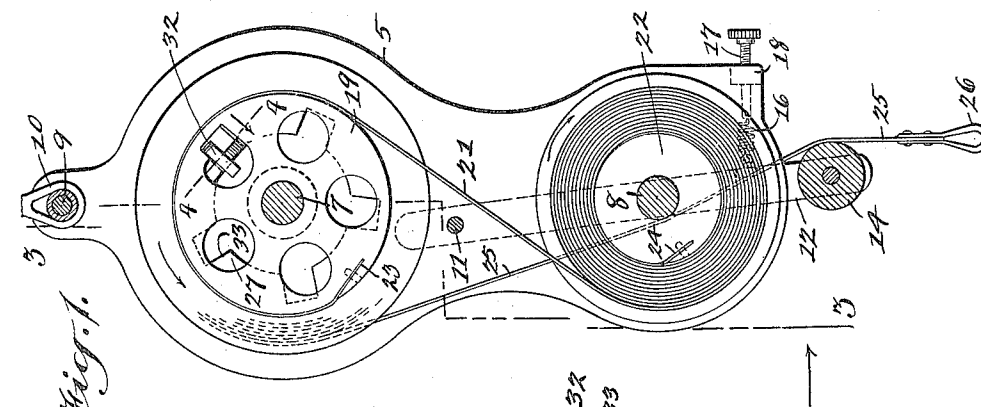
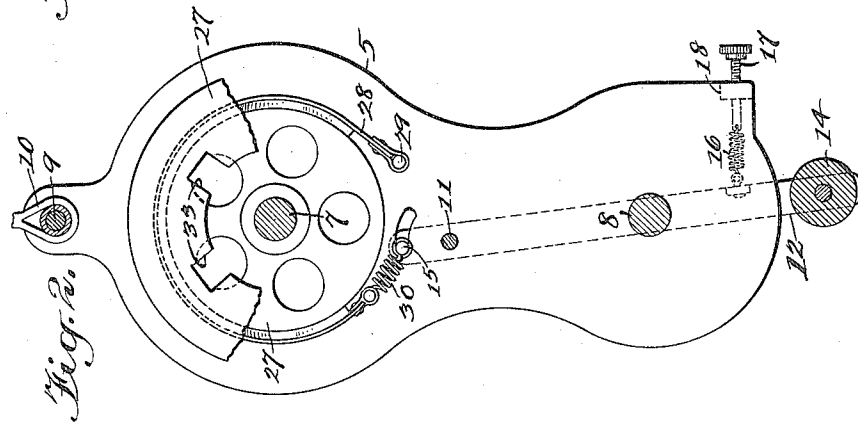
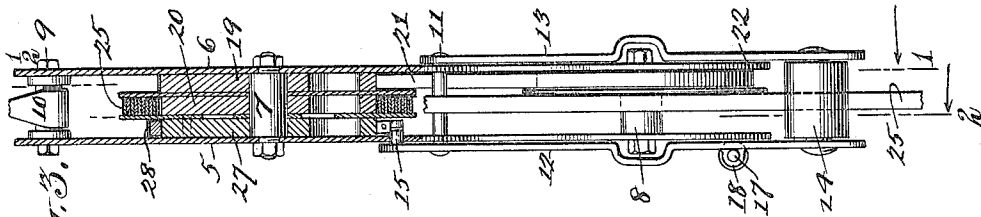


A. F. FORNELIUS.
FIRE ESCAPE.
APPLICATION FILED SEPT. 15, 1914.

1,164,489.

Patented Dec. 14, 1915.



WITNESSES

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Fig. 4.

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FIRE-ESCAPE.

1,164,489.

Specification of Letters Patent.

Patented Dec. 14, 1915.

Application filed September 15, 1914. Serial No. 861,786.

To all whom it may concern:

Be it known that I, AXEL FERDINAND FORNELIUS, a subject of the King of Sweden, and a resident of Athenia, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to means for escaping from a burning building, particularly to the type adapted for connection, in time of need, with a window frame, or the building closely adjacent said window frame, and which includes the use of a cable wound normally upon a drum and provided with some form of device adapted to contain or to be attached to a person.

The main object of my invention is to provide means for controlling the speed of descent of a person by means of the device, and to provide means for accommodating the device to the weight of the person.

A further object is to provide means for re-winding the cable after use in order to allow of the use of the device by more than one person.

A further object is to provide means for avoiding friction caused by the brake means, in the re-winding of the cable for subsequent use; and further objects are to provide such devices which are simple in construction and use, highly efficient, under absolute control, positive against any possible entangling of the cable, light, compact, and comparatively inexpensive.

My invention is fully described in the following specification, of which the accompanying drawings form a part, in which the separate parts are designated by the same reference characters in each of the views, and in which:—

Figure 1 is a section taken through my device, on the line 1—1 of Fig. 3; Fig. 2 is a similar section taken on the line 2—2 of Fig. 3; Fig. 3 is a section taken on the line 3—3 of Fig. 1; and Fig. 4 is a section taken on the line 4—4 of Fig. 1.

In the drawings forming a part of this application I have shown a present preferred form of embodiment of my invention, comprising side plates 5 and 6, joined by shafts 7 and 8 and a rod 9, the latter having a sleeve thereon and secured to a strap 10 adapted to be hung from a hook or other part of a building in the position of a window, and I also provide a rod 11, interme-

diating the shafts 7 and 8, serving as a pivot for two exteriorly arranged side bars 12 and 13 carrying a roller 14 at the lower ends thereof, the bar 12 being extended above the pivot 11 and provided with an inwardly directed stub shaft 15, and having, adjacent its lower end, a spring 16 secured at one end thereto and the other end of which is secured to a screw 17 adjustable in a lug 18 on the outer face of the side plate 5.

The shaft 7 carries two drums 19 and 20, secured together or integral with each other, the former being against the side plate 6 and being the receiving drum for a spring ribbon 21 normally wound on a drum 22 rotatable on the shaft 8, said spring being secured to the drum 19 as shown at 23, Fig. 1, the tendency of the spring being to wind itself on the primary drum 22, in a manner similar to the spring actuated tape measures in common use, and is secured thereto as shown at 24, Fig. 1.

The drum 20 is arranged centrally of the side plates, and normally carries a cable or steel ribbon 25 provided with a loop 26 at the lower end thereof for connection with a basket or with a strap adapted to be connected with a person using the device, and, by reference to Fig. 1, it will be seen that the cable 25 is led over the roller 14, beneath the side plates, whereby said roller is moved from its normal position when the cable is under tension, against the spring 16, thus moving the side bars 12 and 13 on their pivot rod 11 for a reason later explained.

Revoluble on the shaft 7 is a brake drum 27, independent of the allied drums 19 and 20, and around which is passed a brake band 28 secured to a rod 29 held in the side plates 5 at one end, and the other end being connected with the stub shaft 15 on the side bar 12, a spring 30 being interposed between said stub shaft and the end of said brake band, and it will be seen that, when the roller 14 is moved out of normal position by the tension of the cable, the brake band is tightened on the brake drum 27 and the revolution thereof is retarded, but resiliently because of the spring 30.

Pivoted at 31, Fig. 4, on the cable drum 20, is a pawl 32, which projects into one of a plurality of openings 33 inside of the brake drum 27, as shown in Fig. 1, the inner end of the pawl being free to move in the direction of the arrow in Fig. 4 but not in the other direction from the normal direc-

tion shown, and this pawl arrangement permits the cable drum 20 to revolve backwardly to re-wind the cable without effect on the brake drum 27 but, in the opposite
 5 revolution of the cable drum, the pawl engages with the brake drum and moves the same with the cable drum in the unwinding of the cable therefrom. The object of this
 10 pawl arrangement is to avoid the relatively great friction between the drum 27 and the brake band 28 in the cable re-wind, thereby enabling the use of a very light spring 21,
 although the spring 16 serves to remove the frictional grip of the brake band on its
 15 drum as soon as the cable tension is removed, but the weight of said brake band is a material factor in retarding the re-wind of the cable in the event of its being required to revolve the brake drum reversely also in such
 20 cable drum movement. As stated, the ribbon 21 is normally wound on the drum 22, being tempered to be closely coiled thereon, and is not alone put under stress by being unwound therefrom but is put under further
 25 stress by being wound oppositely on the drum 19; this stress is distributed throughout the spring whereby each transverse line re-acts against each adjacent transverse
 30 line; inasmuch as the drums have no motion other than rotary and the tendency of the ribbon 21 is to unwind from the drum 19, the other end of said ribbon being relatively fixed, the drum 19 must revolve
 35 reversely to rewind the ribbon 25 on its drum; also, the tendency of the spring ribbon 21 being to rewind itself upon the drum 22 and the opposite end of said ribbon being relatively fixed, the drum 22 must revolve to
 40 allow said ribbon to rewind itself thereon. It will thus be seen that a person is lowered to the ground at a predetermined and constant speed, due to the constant pressure of the brake band on its drum, and this
 45 is under control by means of the adjustment of the spring 16, to accommodate the device to light or heavy persons and, when a person has reached the ground, the device returns to normal position automatically,
 50 ready for the descent of another person. The brake band spring 30 serves to pre-

vent binding of the brake band on its drum, 55 and also serves to take, resiliently, any jerks on the cable no matter how occasioned, and the device as a whole is compact, light, and inexpensive, whereby a person may carry one with him in his suit-case in traveling 60 without inconvenience.

While I have shown certain details of construction, it will be apparent that I am not limited thereto, as I may make changes
 65 thereover, within the scope of the following claims, without departing from the spirit of my invention, or sacrificing its advantages.

Having fully described my invention, what I claim as new, and desire to secure 70 by Letters Patent, is:—

1. A device of the class described, comprising a support, a cable drum thereon, a cable wound thereon, a spring receiving
 75 drum revoluble with said cable drum, a primary spring drum, a tempered spring coiled thereon and attached to said spring receiving drum, said spring being unwound from
 80 said primary drum and wound reversely to its coiling tendency on said receiving drum when said cable is unwound from its drum by strain applied thereto.

2. As an article of manufacture, a revoluble element, a spring receiving drum connected therewith, a primary spring drum, a 85 tempered spring normally coiled thereon and the free end of which is secured to said receiving drum and the opposite end to said primary drum, and means for revolving said
 90 element to unwind said spring from said primary drum and wind the same reversely to its coiling tendency on said receiving drum, said spring automatically rewinding
 95 itself on said primary drum to reverse the direction of revolution of said element when said revolving means are inoperative.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AXEL FERDINAND FORNELIUS.

Witnesses:

JOHN FORNELIUS,
 ERIK FORNELIUS.