

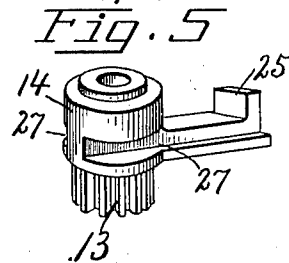
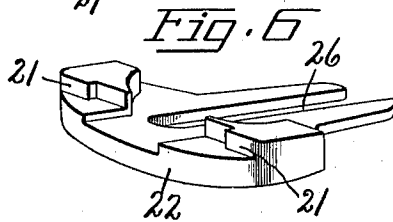
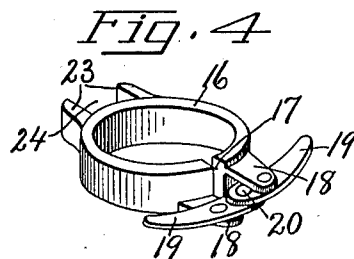
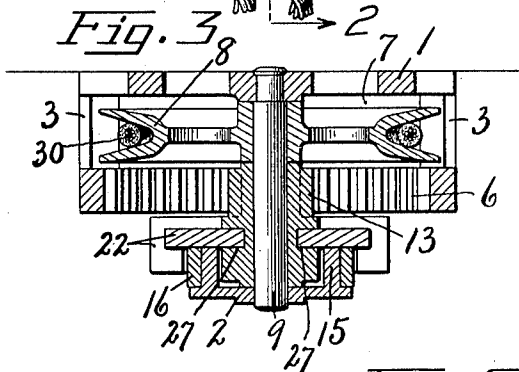
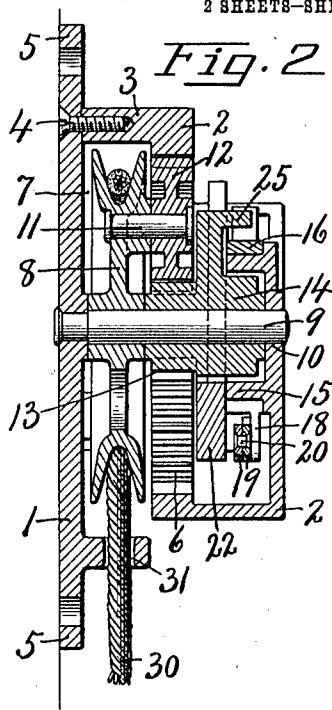
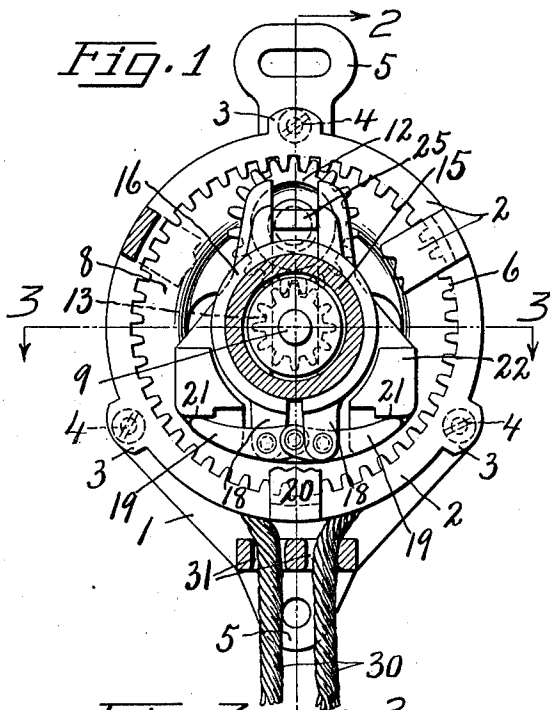
C. F. DAVY.  
FIRE ESCAPE.

APPLICATION FILED MAR. 28, 1910.

1,066,716.

Patented July 8, 1913.

2 SHEETS—SHEET 1.



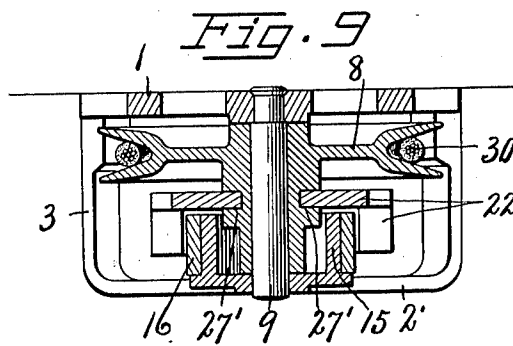
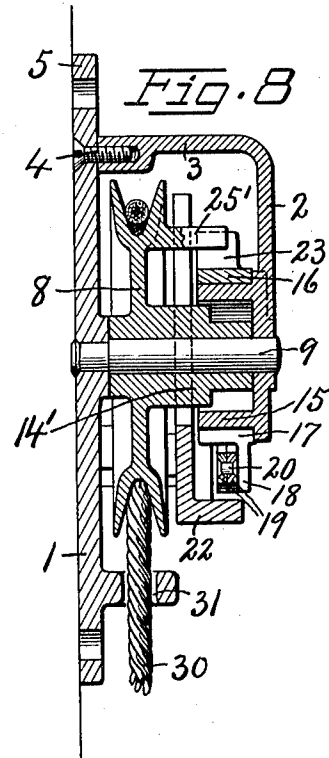
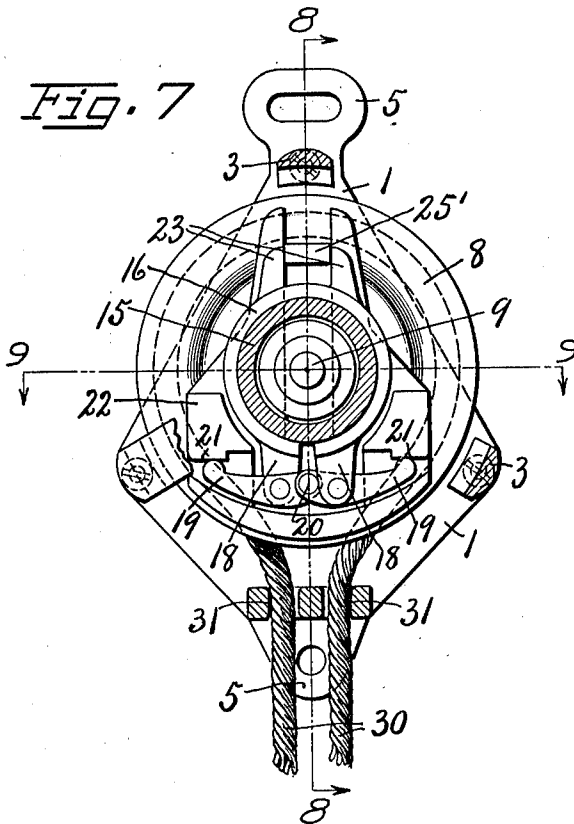
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# UNITED STATES PATENT OFFICE.

CHARLES F. DAVY, OF MOHAWK, NEW YORK.

FIRE-ESCAPE.

1,066,716.

Specification of Letters Patent.

Patented July 8, 1913.

Application filed March 28, 1910. Serial No. 551,830.

*To all whom it may concern:*

Be it known that I, CHARLES F. DAVY, of Mohawk, in the county of Herkimer, in the State of New York, have invented new and useful Improvements in Fire-Escapes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in fire escapes involving the use of a brake band and centrifugally operated controlling means therefor which together with a supporting frame is adapted to be hung or otherwise supported within the upper rooms of hotels and other buildings for the reception of a suitable cable by which the occupant or occupants of the room may lower themselves to a place of safety in case of fire.

The primary object of my present invention is to produce a maximum braking efficiency with a minimum movement of the centrifugally operated members, and to thereby render the action of the brake band more sensitive and responsive to the slightest movement of such members, so that an effective retarding action will be produced by the slightest movement of the actuating cable and will be increased by any accelerated travel of such cable, thereby assuring an automatic steady and safe lowering of the individual without the usual sensation of falling at the beginning of the descent. This object more specifically stated is to guide the centrifugally operated member radially of its rotation and to connect it to a self-opening brake band in such manner that when in use the brake band will be automatically compressed upon the periphery of the brake drum uniformly, and gradually at all points from the center toward the ends.

Other objects and uses will be brought out in the following description.

In the drawings: Figure 1 is a face view of a fire escape embodying the various features of my invention, a portion of the main supporting frame being broken away to show more clearly the lap of the brake band upon the drum. Figs. 2 and 3 are sectional views taken respectively on line 2-2 and 3-3, Fig. 1. Fig. 4 is a perspective view of the brake band and operating levers. Fig. 5 is a perspective view of the supporting guide for the centrifugally operated member. Fig. 6 is a perspective view of said

centrifugally operated member. Fig. 7 is an elevation, similar to Fig. 1, of a modified form of my invention omitting the gears. Figs. 8 and 9 are sectional views taken respectively on lines 8-8 and 9-9, Fig. 7.

The device shown in Figs. 1 to 6, inclusive, comprises a main supporting frame consisting of a base section —1— and a skeleton cap section —2— having feet or legs —3— which are secured by suitable fastening means, as screws —4—, to the base section —1—.

The entire apparatus is adapted to be secured to or suspended from any suitable support within the room of the building where it is housed from the elements and always ready for use and for this purpose the base is provided with one or more apertured flanges —5— for the reception of the fastening means, not shown, but capable of holding the entire apparatus in an upright position.

The frame section —2— is provided with a circular toothed rack or internal gear —6— disposed in a plane substantially parallel with but spaced apart from the base section —1— forming an intervening chamber —7— for the reception of a grooved pulley or sheave. The pulley —8— is coaxial with the gear —6— and is journaled upon a central shaft or spindle —9—, the latter having one end secured to the base section —1— and its opposite end supported in a suitable bearing —10— in the frame section —2—, said pulley being provided between its axis and periphery with an axially projecting stud —11— upon which is journaled a pinion —12—. This pinion meshes with the gear —6— and also with a pinion —13— on the shaft —9—, said pinion —13— being secured to and preferably forming an integral part of a revoluble sleeve or collar —14— which is also mounted upon the shaft —9— and is therefore rotated by the planetary gear or pinion —12—.

The outer portion of the frame section —2— is provided with an inwardly projecting annular flange —15— forming a brake drum which is concentric with the shaft —9— and preferably formed integral with the frame section —2—, its periphery being trued up to form a circular bearing or friction face for a split friction ring or brake band —16—, which is spring tensioned to automatically release itself from gripping engagement with the brake drum —15—

when the device is not in use. The brake ring —16— is split or divided at —17— and portions thereof at opposite sides of the division are provided with radially projecting ears —18— to which are pivoted circumferentially extending levers —19—. The inner or shorter arms of these levers are pivoted at —20— to each other, while their opposite longer arms extend in opposite directions and are adapted to rest against bearing faces —21— on a centrifugal operated member —22—.

The brake band is coaxial with the pulley or sheave —8— and collar —14— and is adapted to be rotated around the brake drum or flange —15— and for this purpose is provided with radially projecting lugs or ears —23— spaced apart to form an intervening groove or slot —24— for receiving an axially projecting lug —25— on the rotary collar —14—, so that as the collar is rotated in either direction similar motion is imparted to the brake band —16—.

It will be observed that the lug —25— engages the brake band some distance from its axis and at one side only which tends to move the brake band eccentrically against the drum and thereby producing more or less friction and consequent retardation of the free rotary action of the collar —14— on its actuating mechanism. The main retarding action, however, is brought about by the centrifugal operating member —22— operating to compress the brake band —16— upon the drum —15— through the medium of the levers —19— and for this purpose the centrifugal member —22— is mounted for rotary and radial movement relatively to the axis of the shaft —9— with the excess of predominance of weight eccentric to or at one side of said axis.

As shown more particularly in Figs. 3, 5 and 6, the centrifugal member —22— is furcated at one end forming an open ended slot —26— the opposite sides of which are guided in lengthwise grooves or ways —27— in the sides of the collar —14—. The weighted member —22— is therefore locked for rotary movement with the collar —14— around the shaft or spindle —9— and is also movable radially by centrifugal force along the guide ways —27—, thereby pressing the bearing faces —21— against the outer ends of the longer arms of the levers —19— and causing the compression of the brake band —16— upon the brake drum —15—, the force of compression depending upon the radial centrifugal movement of the member —22— which movement is dependent upon the speed of rotation of the pulley or sheave —8— and intervening transmitting mechanism between said pulley and collar.

In the particular construction shown in Figs. 1 to 6, inclusive, the speed of the collar —14— and centrifugal member —22— actu-

ated thereby are multiplied over that of the pulley —8— by the intermediate train of gears —6—, —12— and —13, but in some instances these multiplying gears and also the collar —14— may be dispensed with and the brake band rotated directly from the pulley as shown in Figs. 7, 8 and 9. In this latter modification the pulley or sheave —8— is provided eccentrically with an axially projecting lug or shoulder —25'— projecting between the lugs or ears —23— on the brake band —16—, said pulley being provided with a hub —14'— having guide grooves or ways —27'— for the reception and guiding of the furcated end of the centrifugal operating member —22—, the latter being substantially the same as that shown in Fig. 6.

Aside from the omission of the multiplying gears —6—, —12— and —13— and separate collar —14— and that the brake band —16— is rotated directly from the pulley or sheave —8— and that the centrifugal member —22— is guided directly upon and rotated by said pulley, the structure and operation shown in Figs. 7; 8 and 9 is substantially the same as that shown in Figs. 1 to 6, inclusive. In both of these constructions a cable —30— is wrapped or passed around the greater portion of the grooved sheave —8— and guided in suitable ways —31— on the lower portion of the main supporting frame or base —1—, said ways —31— being located in substantially the same plane as the pulley or sheave and close together so as to produce a maximum lap of the cable upon the pulley. This cable is made of fire proof material consisting of a central series of wire strands and an outer casing or jacket of more flexible fire proof material. It will be observed that this apparatus is designed for operation in either direction and that either side of the cable may be used to lower the individual to a place of safety from the upper story of the building. It will also be observed that while one side of the cable may be in use by one or more persons, the other side is being drawn up ready for use by another person, thereby doubling the capacity of the apparatus and making it possible to lower a large number of persons by the same device in a comparatively short time in the case of emergency.

In practice one end of the cable is drawn up into position for use at the story where the device is located, while the other end of the cable is usually coiled up around a suitable reel and is supported from the frame —1— or any other suitable support, and in case of fire or other emergency requiring the use of the device it is simply necessary to drop the reel out of the window or other exit to the ground below whereupon the person or persons desiring escape may fasten themselves by a belt or otherwise to the short

end of the cable and simply step out of the exit to the outside of the building whereupon the device will automatically establish a safe speed of descent and at the same time the longer end of the cable will be drawn up to the same story ready for use by another person.

When the fire escape is in use, the member —22— is moved radially by centrifugal force due to its rotation thereby pressing the bearing faces —21— against the outer ends of the levers —19— which operate to compress the split brake ring —16— upon the brake drum —15— from a point midway between the ends of the ring gradually toward said ends so as to cause frictional contact between all points of the brake ring and brake drum. As soon as the weight upon the end of the cable is relieved, thereby stopping the rotation of the pulley or sheave —8— and brake band —16—, the latter immediately automatically opens and releases itself by its tension with the brake drum —15— thus returning the levers —19— and centrifugal —22— to their normal starting positions ready for a repetition of the operation previously described.

What I claim is:

1. In a fire escape, a brake drum, a revoluble brake band surrounding the drum and divided through one side only, a radially movable centrifugally operated member rotating with the brake band and provided with shoulders at opposite sides of the divisions in the brake band, levers pivoted to each other and to the meeting ends of the brake band and provided with oppositely projecting arms engaged with said shoulders, and cable operated means for rotating the brake band and centrifugally operated member.

2. In a fire escape of the class described, a casing having a non-rotatable brake drum,

a coacting brake band surrounding said drum and divided through one side only, levers pivoted to the brake band at opposite sides of the division and operatively engaged with each other, a weighted member rotatable about the axis of the drum and brake band and having an independent centrifugal radial movement, said member having operative connection with the levers on the brake band to compress said band upon the drum with a gradually increasing pressure as the speed of rotation of said member increases, a cable and cable operated means for rotating said member and brake-band.

3. In a fire escape of the class described, a casing having a non-rotatable brake drum, a rotary brake band surrounding the drum and divided through one side only, the opposite side having a pair of outwardly projecting lugs spaced apart, ears on the brake band at opposite sides of the division, levers pivoted to said ears and to each other, a rotary collar coaxial with the drum and brake band and provided with a radially projecting arm having a lateral offset between said lugs to cause the brake band to rotate with the collar, a weighted member in radially sliding interlocking engagement with the collar to rotate therewith and to move radially by centrifugal force, said weighted member being operatively connected to the levers to compress the band on the drum as the weighted member is moved by centrifugal force away from the axis, and cable operated means for rotating the collar.

In witness whereof I have hereunto set my hand on this 19th day of March 1910.

CHARLES F. DAVY.

Witnesses:

H. E. CHASE,  
A. L. HUMPHREY.