I. DEATHERAGE.

FIRE ESCAPE.

APPLICATION FILED JAN. 27, 1909.

947,482.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

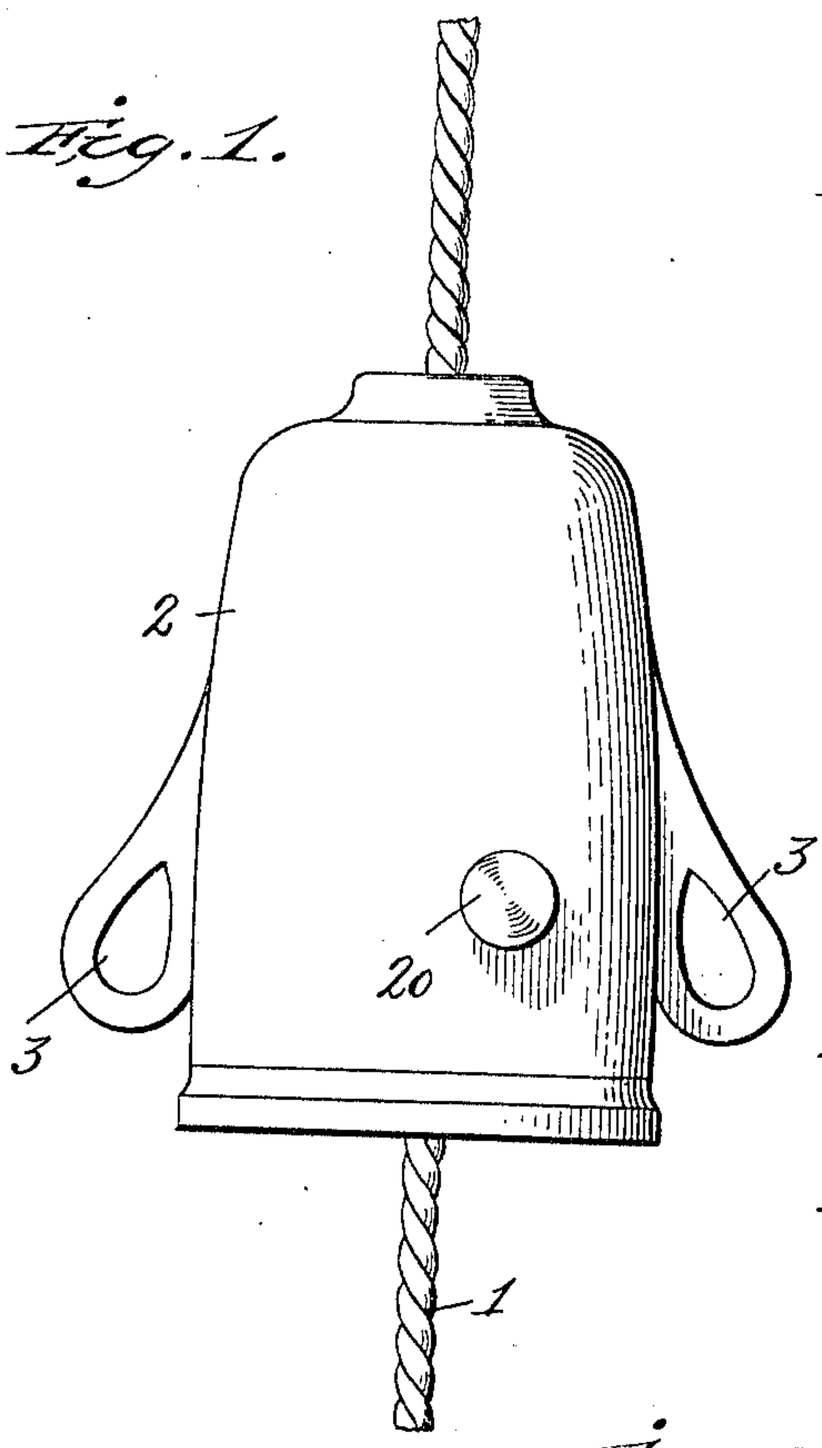



Fig. 2.

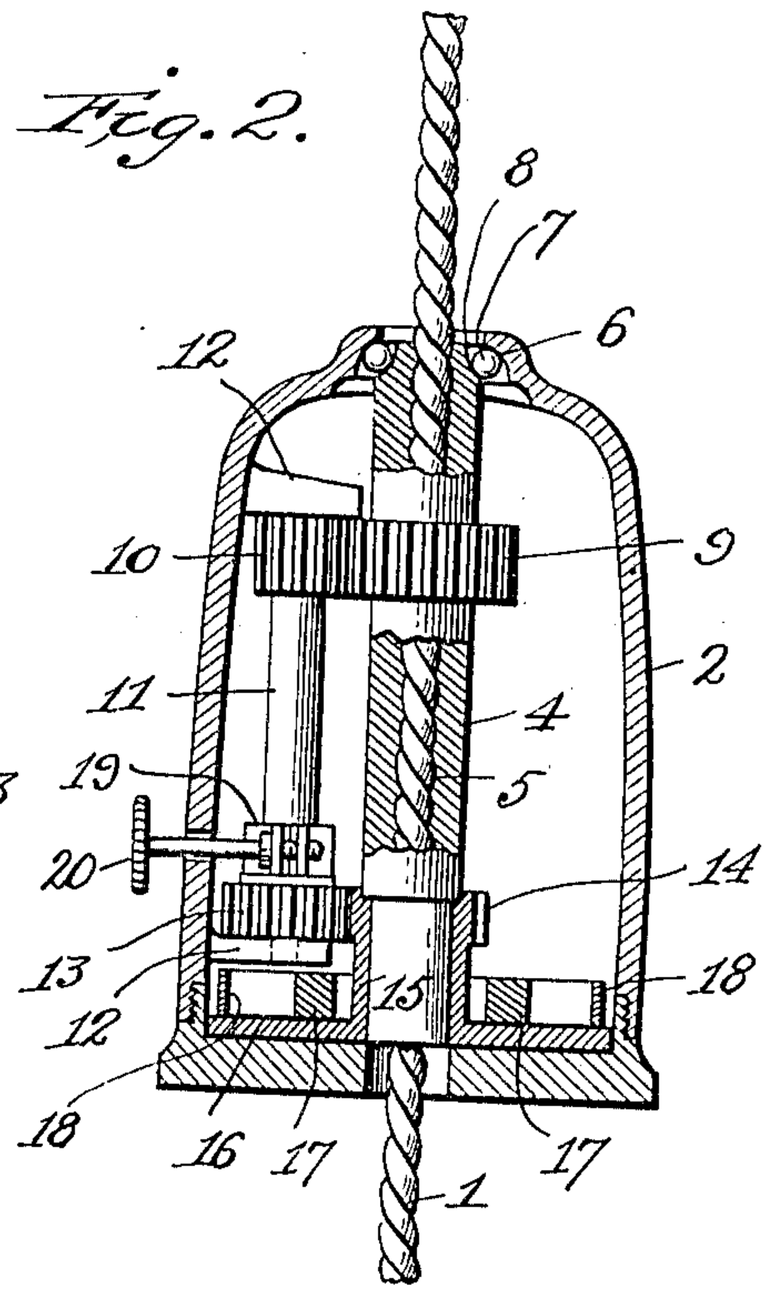
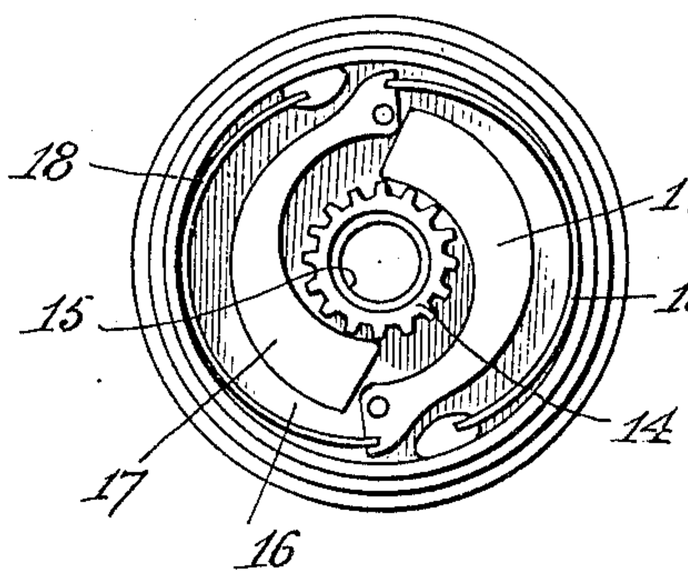



Fig. 5.

Fig. 3.



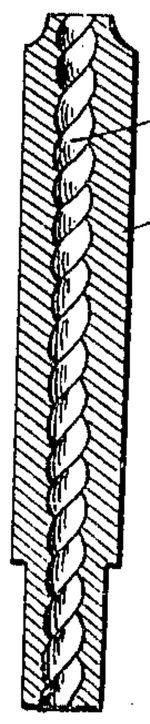
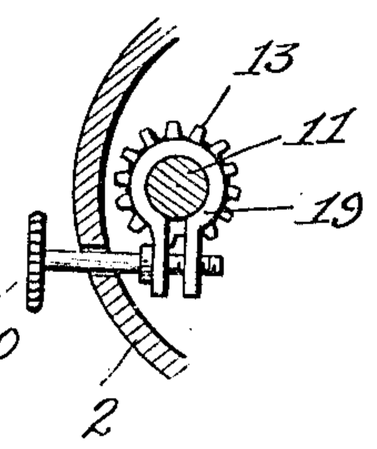




Fig. 4.




Witnesses

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2 SHEETS—SHEET 2.

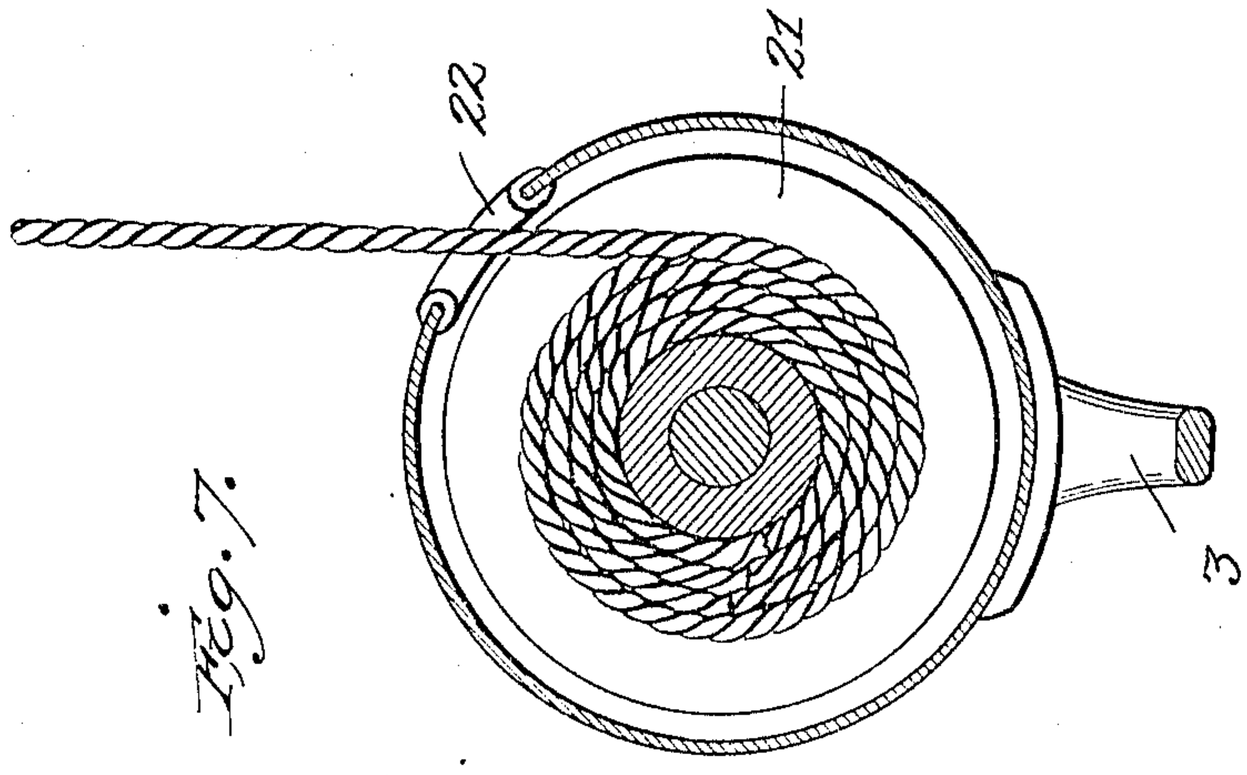


Fig. 7.

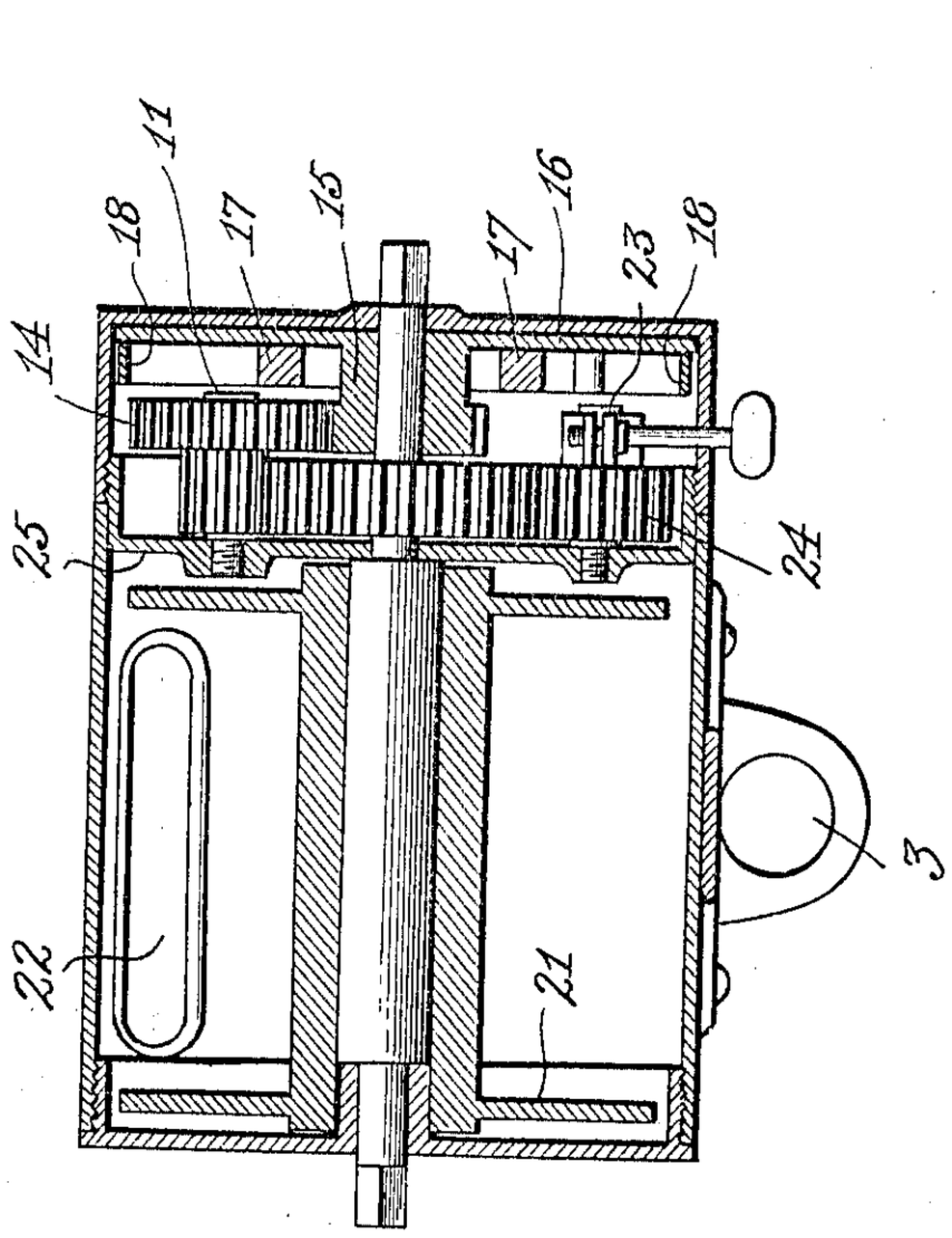


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE.

947,482. Specification of Letters Patent. **Patented Jan. 25, 1910.**

Application filed January 27, 1909. Serial No. 474,468.

*To all whom it may concern:*

Be it known that I, ISAAC DEATHERAGE, a citizen of the United States of America, residing at West Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Fire-Escapes, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to fire-escapes of that type in which the person using the apparatus descends a cable which is suspended from the building and it consists in certain novel features of the device illustrated in the accompanying drawings which will be hereinafter first fully described and then particularly pointed out in the appended claims.

In the drawings, which fully illustrate the invention, Figure 1 is a side elevation and Fig. 2 is a vertical section of the improvements. Fig. 3 is a detail plan view of the governor. Fig. 4 is a detail view of the brake. Fig. 5 is a detail longitudinal section of the cable-engaging shaft. Figs. 6 and 7 are a longitudinal and a transverse section, respectively, of the improvements applied to a fire-escape in which the cable is wound upon a reel which descends with the user.

In the form shown in Figs. 1 and 2, 1 denotes a wire cable which is securely fastened at its upper end to a building and in use is thrown from a window of the same so that it will reach to the ground. A casing, 2, provided with lugs or ears, 3, from which stirrups may be suspended is mounted to move along this cable and carries a central hollow shaft, 4, the bore of which is rifled so as to engage the coils or strands of the cable, as clearly shown in Figs. 2 and 5, and be rotated thereby as it slides downward thereon. It will be understood that the rifling grooves, 5, may be given any desired pitch and be of any desired depth in order that the device may be fitted to any cable according to the requirements of each particular case.

In order to assure ease of operation, I provide an annular raceway, 6, in which balls, 7, are held by a cone, 8, formed on the upper end of the shaft 4, it being understood that the weight of the person using the device is applied directly to the casing and by it transmitted to the upper end of the shaft which, under the influence of that weight, drops along the cable and is rotated by the cable through its rifled engagement therewith. Upon the shaft is formed or rigidly secured a gear wheel, 9, which meshes with a pinion, 10, on a counter-shaft, 11, journaled in bearings, 12, formed on the inner surface of the casing. A pinion, 13, on the lower portion of the counter shaft meshes with a gear, 14, formed on the upper end of a hub, 15, which rises from a disk, 16, seated in the lower end of the casing, and also forms the lower journal for the main hollow shaft 4. At diametrically opposite points upon the disk 16 are pivoted governor arms, 17, which are curved to extend around the hub and have their longer free arms weighted as shown most clearly in Fig. 3. A leaf spring, 18, is arranged beyond each of these governor arms and has one end firmly secured to the disk 16 and its opposite end secured to the shorter branch of one governor arm. As the main shaft rotates motion will be imparted to the governor disk or plate through the gearing shown and described and the weighted ends of the governor arms will fly outward under centrifugal action against the tension of the springs. The result of this movement of the governor arms is to bow the springs outward against the inner surface of the casing and thereby create a frictional contact which will retard the motion and bring the descent within a safe speed besides eliminating all jerkiness of the descent.

In order that the user of the apparatus may control the descent and even stop it, if necessary, I provide around the countershaft, a clamping ring, 19, the arms or branches of which extend toward the side of the casing and receive the end of a screw, 20, the extremity of the screw having a threaded connection with the inner of the said arms while the outer arm fits loosely on the screw and against a shoulder thereon. It will be readily seen that by turning the screw in one or the other direction the clamp will be tightened around the shaft or freed therefrom so that it will have more or less of a braking action thereon and that if the screw be turned entirely home the shaft will be clamped firmly so that it can not rotate with the result that the entire device will be locked against rotation on the cable.

In the form illustrated in Figs. 6 and 7, the cable is wound on a reel, 21. and passes

out through a slot, 22, as it is unwound in the descent of the casing. The main shaft in this form of the device is solid and will be disposed approximately horizontal when the apparatus is in use instead of approximately vertical as in the other form. The governor is disposed at a right angle to the shaft, of course, but the counter shaft is not as long as in the form shown in Fig. 2 and the braking clamp does not engage the counter shaft but is arranged around the hub, 23, of an idler pinion, 24, which is provided at the opposite side of the casing from the counter shaft. The counter shaft and the shaft of the idler pinion are journaled in a transverse partition, 25, arranged within the casing to divide the same into two chambers receiving the cable and the gearing, respectively, in order that the cable may not be caught and cut by the gearing.

The device is very simple in its construction and the arrangement of its parts and enables the user to control his descent without any fear of falling.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is:—

1. In a fire-escape, the combination of a suspending cable, a carrier mounted to travel thereon, and a hollow shaft within the carrier having its bore rifled to engage the cable.

2. In a fire-escape, the combination of a cable, a carrier having a rifled shaft engaging around said cable, and a governor driven by said shaft.

3. In a fire escape, the combination of a suspending-cable, a main shaft adapted to be driven thereby, a cylindrical carrier-casing supported by said shaft, a gear on said shaft, a sleeve rotatably mounted on said shaft and carrying a gear on its inner end and a plate on its outer end adjacent to the end of the casing, a brake mounted on the face of this plate and adapted to impinge against the adjacent cylindrical wall of the casing, and a counter shaft supported in the casing parallel with the main shaft and carrying gears for transmitting motion from the gear on the main shaft to the gear on the sleeve.

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

ISAAC DEATHERAGE.

Witnesses:

R. W. Bishop,

Charles Lowell Howard.