

990,029.

A. H. BORDEN.
FIRE ESCAPE.
APPLICATION FILED OCT. 14, 1909.

Patented Apr. 18, 1911.
2 SHEETS—SHEET 1.

Fig. 2.

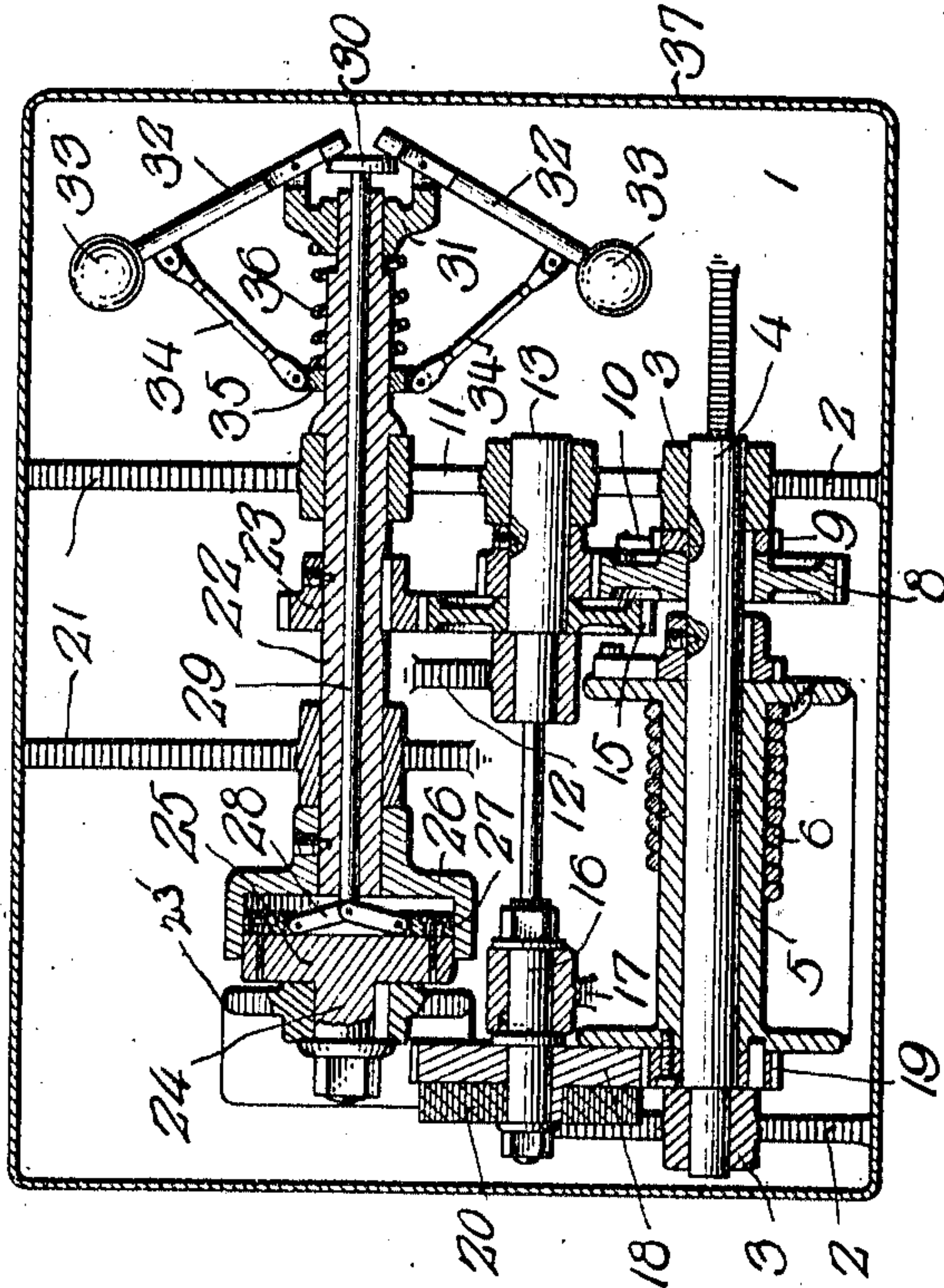
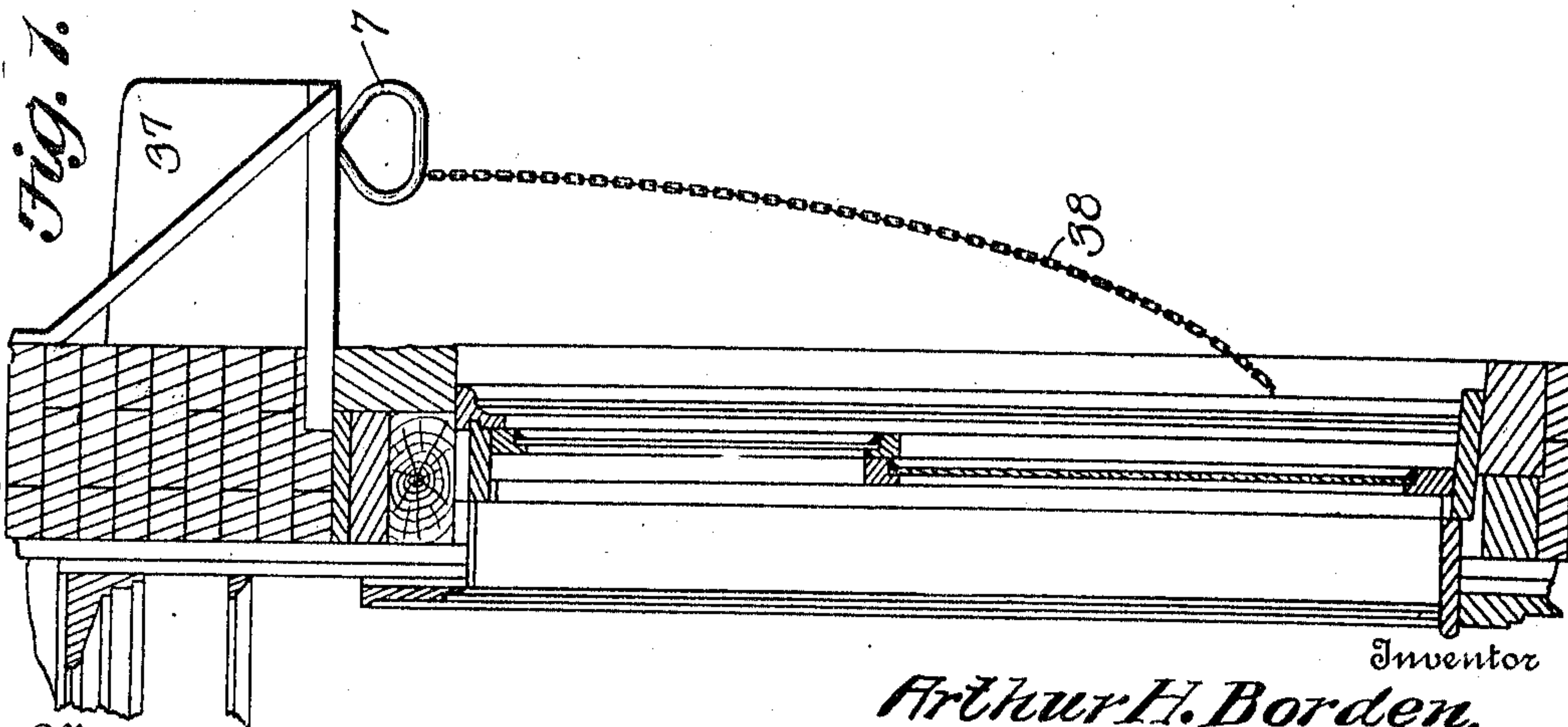


Fig. 1.



Witnesses
Chas. Richardson,
D. W. Gould.

Inventor
Arthur H. Borden,

By Victor J. Evans

Attorney.

A. H. BORDEN.
FIRE ESCAPE.
APPLICATION FILED OCT. 14, 1909.

990,029.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 2.

Fig. 3.

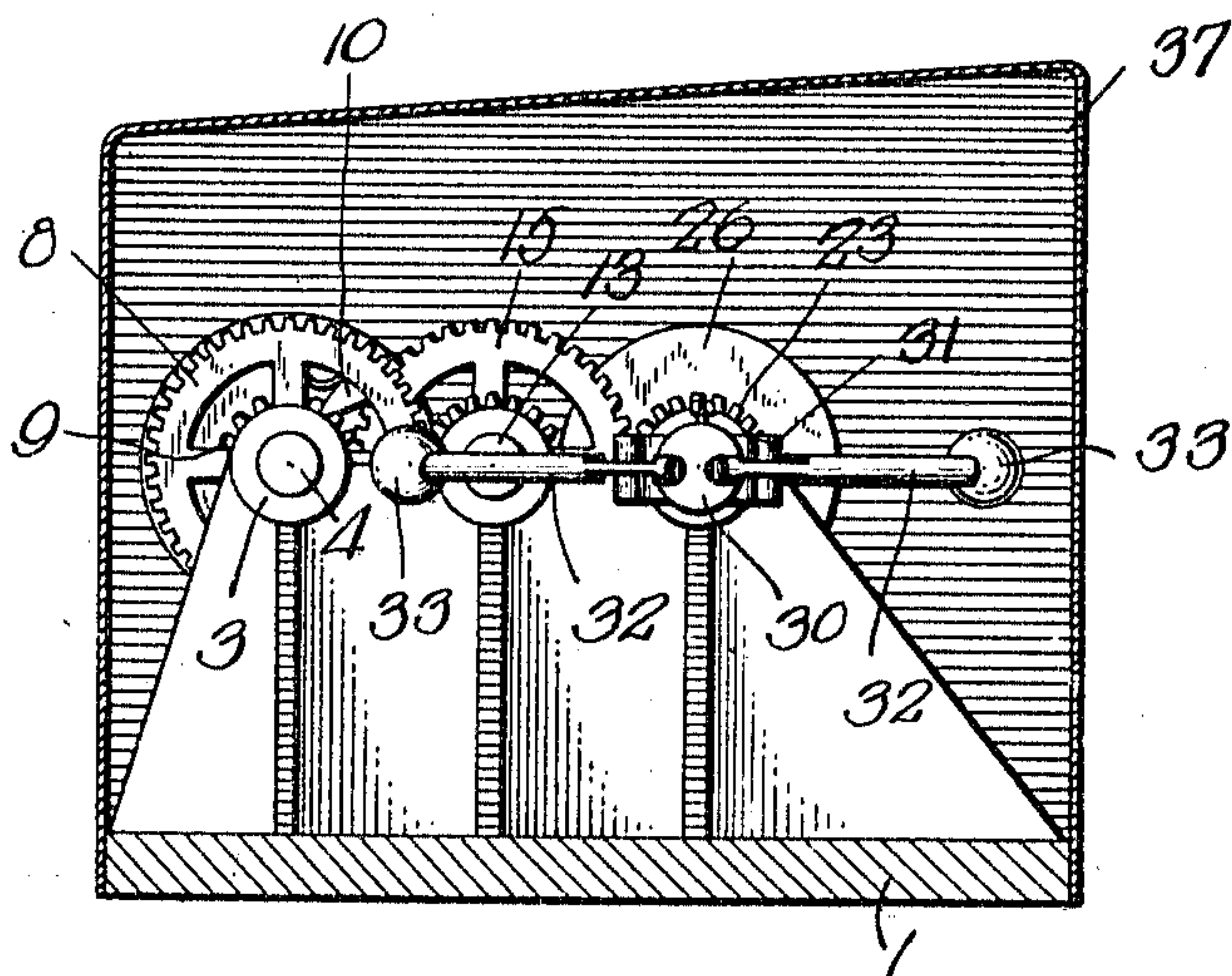
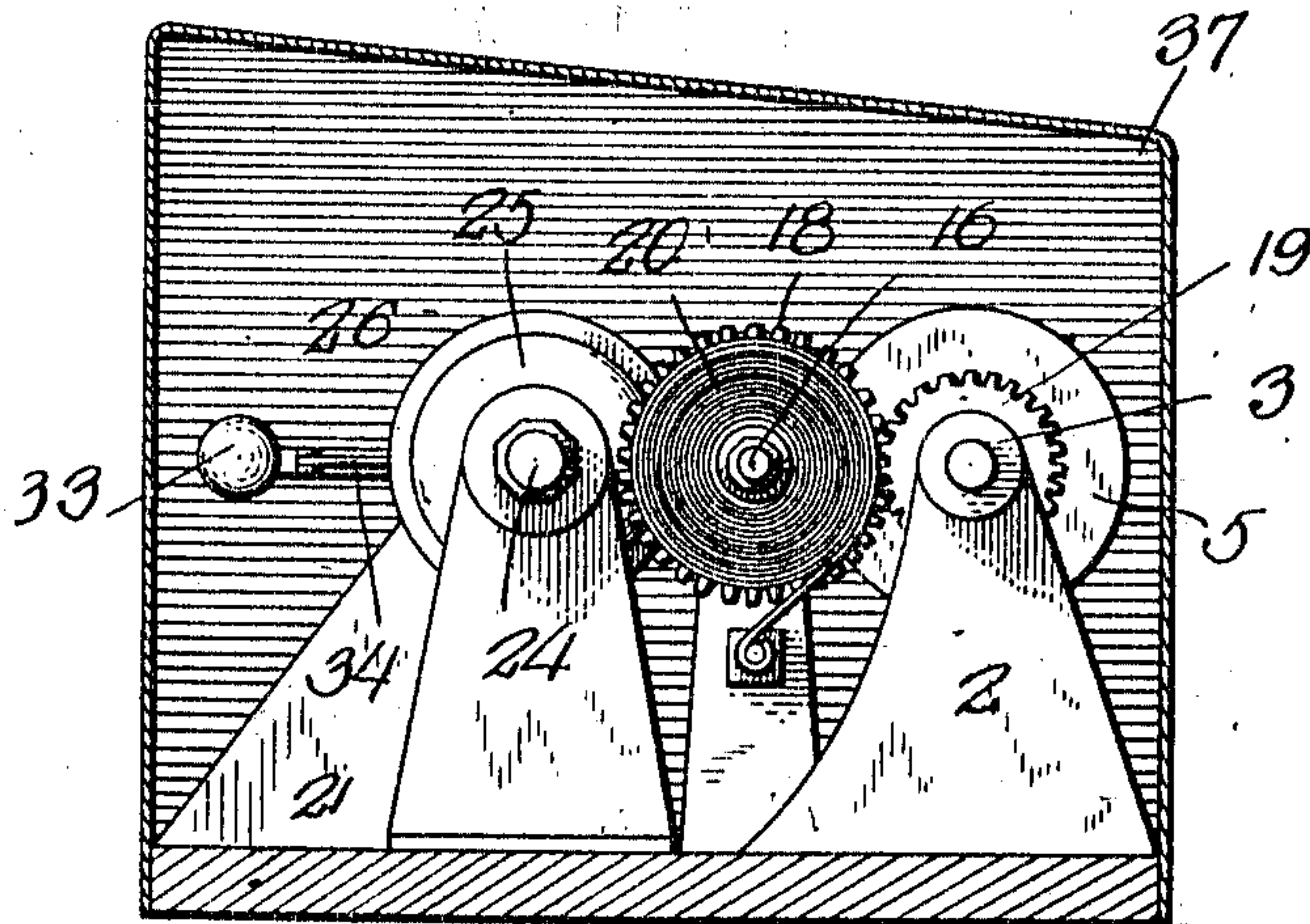


Fig. 4.



Witnesses

Charles Richardson
D. W. Gould.

Inventor

Arthur H. Borden,

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

ARTHUR H. BORDEN, OF NEW BEDFORD, MASSACHUSETTS.

FIRE-ESCAPE.

990,029.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed October 14, 1909. Serial No. 522,518.

To all whom it may concern:

Be it known that I, ARTHUR H. BORDEN, a citizen of the United States, residing at New Bedford, in the county of Bristol and State of Massachusetts, have invented new and useful Improvements in Fire-Escapes, of which the following is a specification.

The invention relates to an improvement in fire escapes, being particularly directed to a device by which a person can be lowered with safety from a window or other elevation to the ground, the lowering element being automatically rewound for subsequent use.

The main object of the present invention is the provision of a fire escape including a lowering element such as a cable which, under the weight of a person, is designed to be gradually lowered and to be automatically controlled during such movement by the braking mechanism, the lowering of the cable serving to operate a spring resetting mechanism adapted upon the release of the cable from the weight of the user to automatically rewind the cable to original position.

The invention in its preferred details of construction will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in elevation of the improved fire escape, a portion of the building being shown in section. Fig. 2 is a horizontal section through the fire escape. Fig. 3 is an end elevation of the fire escape mechanism, the casing being shown in section. Fig. 4 is a similar view from the opposite end of the mechanism.

Referring particularly to the accompanying drawings, the improved fire escape comprises a base 1 on which, at spaced intervals and adjacent one edge, are arranged uprights 2 formed at the upper end with bearings 3 for the reception of a main shaft 4. On the shaft between the bearings is arranged a drum 5 having a lowering element such as a cable 6 wound thereon, one end of the cable being secured to the drum and the opposing end projecting through an opening in the base and provided with an enlarged eye 7. Mounted loosely upon the shaft 4 beyond one end of the drum is a gear 8 and secured upon the shaft adjacent the gear is a ratchet 9 designed to be engaged by a pawl 10 carried by the gear 8, so that when the

shaft is rotated in one direction, that is under the influence of the unwinding cable, the gear will be positively operated by the shaft, while opposing revolution of the shaft permits the latter to move independent of the gear. Mounted in additional uprights 11 and 12 is a shaft 13 carrying a pinion 14 to mesh with the gear 8 and a gear 15 rotating with the pinion, said gear and pinion being fixed to the shaft. In longitudinal alinement with the shaft 13 is arranged a shaft 16 of the resetting mechanism also mounted in uprights 17. The shaft 16 is fixed against rotation and has loosely mounted thereon a gear 18 designed to mesh with the pinion 19 fixed to the proximate end of the drum, a spring 20 being coiled about the shaft and having one end fixed to the upright below the shaft and opposing end secured to the gear. The spring is arranged so that under the influence of the drum in movement incident to the unwinding of the cable the spring will be wound or tensioned.

Beyond the resetting mechanism the base 1 is provided with uprights 21 in which is mounted a shaft 22 carrying a pinion 23 designed to mesh with the gear 15 with the effect to rotate the shaft 22. An upright 23' is provided beyond the end of the shaft 22 in which is fixed a stub shaft 24 carrying a disk head 25 designed to seat within a cup member 26 secured upon the end of the shaft 22. Brake shoes 27 are slidably arranged at diametrically opposing points on the disk head 25, said shoes being designed to cooperate with the inner surface of the cup member 26. The shoes are connected by toggle levers 28 with a governor rod 29 slidably mounted in the shaft 22 and projecting beyond the end of the same, being terminally provided with a disk 30.

A governor mechanism is mounted on the shaft 22 including a ring 31 secured upon the shaft adjacent the end in which is pivotally supported levers 32 having the usual weighted outer ends, said levers being so mounted that their inner ends bear upon the disk 30 of the governor rod. The levers 32 are connected by links 34 with the collar 35 slidably mounted on the shaft and so positioned, under the influence of the spring 36 coiled about the shaft, that the levers 32 are normally held so as to exert no pressure upon the disk 30. Therefore, under normal conditions, the brake shoes 27 are practically

free of contact with the cup member 26, which is the position, of course, of the minimum braking effect.

The apparatus described is designed to be supported from a building or other structure in a substantial manner, and preferably inclosed in a weatherproof casing 37. The eye 7 of the cable may, if desired, have an auxiliary connector 38 leading into a window so that the ring may be drawn down into a position convenient to the user when desired. Any appropriate form of belt may be used which is preferably designed so as to be quickly and conveniently applied beneath the arms of the user and provided with any form of hoop which may be inserted in the eye 7.

In use, the person suspended from the cable will be lowered to the limit of the cable in an obvious manner, the rotation of the drum serving through the connections and mechanism described to operate the governor with the effect to brake the revolutions of the shaft 22 and thereby prevent excessive speed of the cable as will be obvious. Upon the disconnection of the ring from the belt or other support, the spring 20 which, as previously stated, has been wound during the lowering of the cable will operate to draw the cable to normal position, rendering it instantly available for the next user. During the rewinding of the cable the pawl 10 permits movement of the shaft independent of the governor mechanism, hence the rewinding is much more rapid than the lowering movement, rendering the device available for continued use with a comparatively small delay.

The device is to be constructed in a substantial manner capable of standing the maximum weight to which such a structure may be subjected and is, of course, to be arranged in such convenient position and numbers as will thoroughly safeguard the building or other structure in accordance with the number of occupants.

Having thus described the invention, what I claim as new is:—

In a fire escape the combination with a drum shaft, of a governor mechanism for controlling said shaft, a stub shaft intermediate said drum shaft and governor mechanism for transmitting motion from the drum shaft to the governor mechanism upon the movement of the drum shaft in one direction, a resetting mechanism for said drum shaft, the said governor mechanism comprising an operating shaft, a cup member mounted upon one end of said shaft, a stub shaft mounted in alinement with said governor operating shaft, a disk mounted upon said stub shaft and fitting within said cup member, brake shoes slidably mounted upon the face of said disk and a brake operating shaft mounted in and longitudinally slidable of said governor operating shaft whereby said brake shoes are caused to engage the inner surface of the cup member and thereby retard the too rapid movement of the drum shaft.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR H. BORDEN.

Witnesses:

FRANK L. ROGERS,
J. P. DORAN.