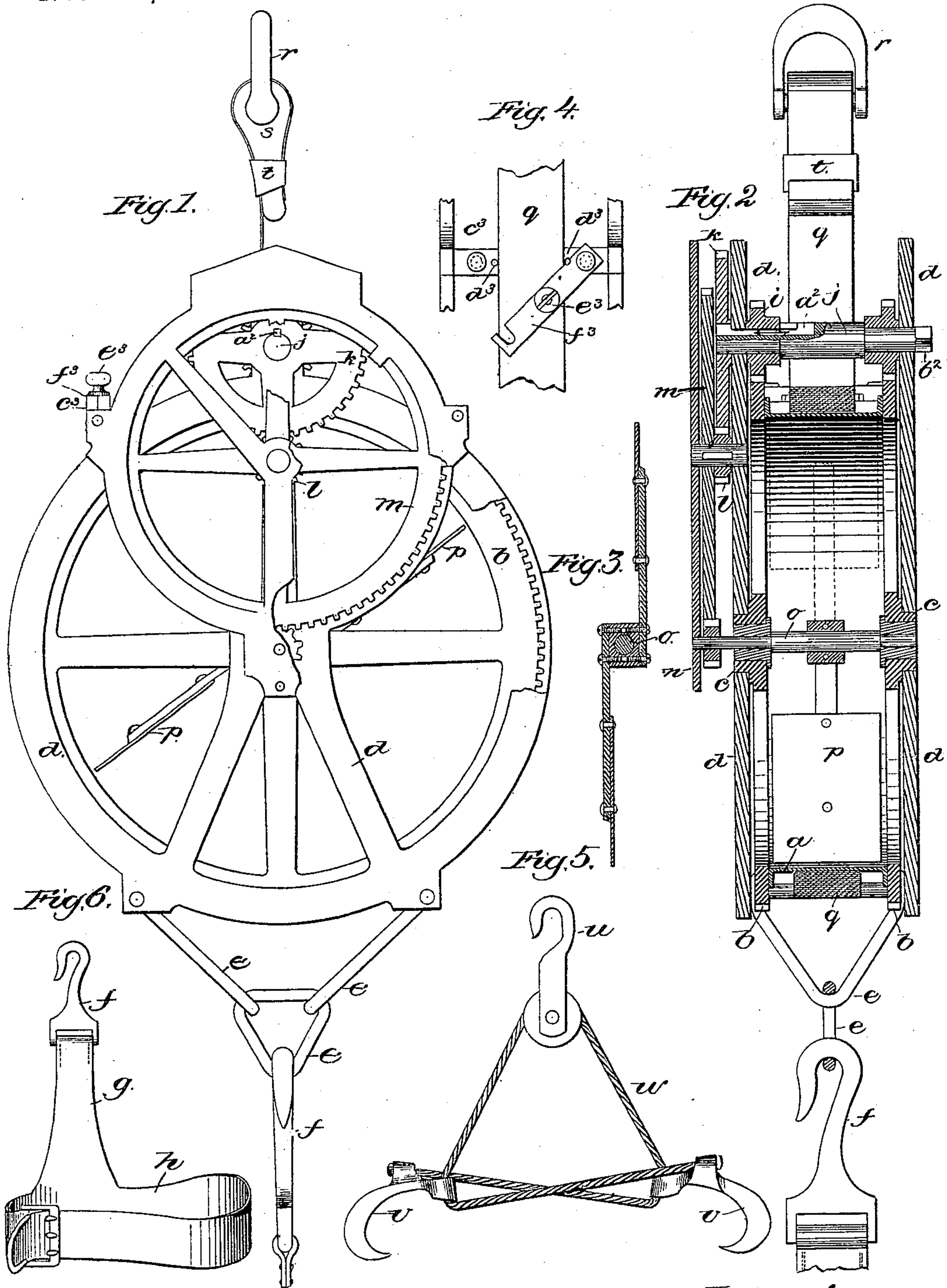


(No Model.)

H. KEENAN.  
FIRE ESCAPE.

No. 262,297.

Patented Aug. 8, 1882.



Witnesses.  
John F. C. Prentiss  
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# UNITED STATES PATENT OFFICE.

HUGH KEENAN, OF WORCESTER, MASS., ASSIGNOR OF THREE-FOURTHS TO  
MICHAEL H. MURPHY AND PETER MAGONE, OF SAME PLACE.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 262,297, dated August 8, 1882.

Application filed March 31, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HUGH KEENAN, of the city and county of Worcester, Massachusetts, have invented an Improvement in Fire-Escapes, of which the following description, in connection with the accompanying drawings, is a specification.

My invention relates to an apparatus for controlling the movement of a heavy body in falling under the action of gravity, it being especially intended for lowering persons from buildings in case of fire.

My invention has for its object to produce a simple and compact apparatus for regulating the movement of a cord or belt in unwinding from a reel or drum, the entire apparatus occupying a very small space, so as to be easily portable, and being adapted for use in any building.

The apparatus consists essentially of a drum or reel, upon which a suitable flexible suspending cord, belt, or tape is wound, the said reel being connected by a multiplying train of wheel-work with a fan or fly, (shown as located within the said reel, for the sake of compactness,) by which the movement of the said reel is so controlled as to permit the weight of a person attached thereto to run down with a slow uniform speed. The suspending-line is shown as consisting of a steel tape, which is desirable on account of its great strength in a small space. The said reel is provided with a suspending link or eye on the opposite side to that from which the tape reels off, and the said tape is provided at its end with a suitable suspending link or eye, and I provide, in connection with the said apparatus, a belt suitable to be clasped around the body of a person and having a hook that can be engaged with one of the said eyes; and I also provide a grappling-hook suitable to engage any desired portion of the frame-work of the building or object thereon, the said grappling-hook having connected with it a hook adapted to engage either of the before-mentioned eyes.

It will be seen that the end of the tape may be connected with the grappling-hook and the belt with the apparatus, which will thus be lowered down with the person; or, if desired, the apparatus may be connected with the grappling-hook and the body of the person suspended from the end of the tape, so that

the apparatus remains at the top of the building, and the tape may be again drawn up, and the apparatus thus employed to lower several persons in succession. For this purpose the reel may be disengaged by a suitable device from the regulating train, or fan or fly, and the reel wound up by a suitable crank or key, after which it is again connected with the regulating-train and permitted to run out, lowering another person. A suitable guide and friction device is provided for the tape, whereby it is held tightly and uniformly on the reel, the said device being removable to let the tape run off freely.

Figure 1 is a side elevation of an apparatus for lowering a heavy body constructed in accordance with this invention; Fig. 2, a longitudinal section thereof; Fig. 3, a sectional detail of the fan; Fig. 4, a detail illustrating the device by which the tape is laid tightly and evenly upon a reel in winding; Fig. 5, a view of the grappling-hook by which the apparatus may be attached to the frame-work of the building, and Fig. 6 a view of the belt and its supporting-hook for being clasped around the person to be lowered.

The reel or pulley *a*, provided at either side with gears *b* of slightly greater diameter, and thus forming flanges therefor, is mounted upon suitable journals, *c*, in a frame-work, *d*, provided with suspending-links *e*, suitable to receive a hook, by which the said reel itself may be suspended upon a fixture—such as a portion of the building—or by which an article can be suspended from the said apparatus, the said hook *f* being in this instance shown as attached to a strap, *g*, connected with or forming a portion of a belt, *h*, (see Fig. 6,) adapted to be clasped or buckled around the body of a person. The said gears *b* mesh with pinions *i*, fixed upon a shaft, *j*, having bearings in the same frame-work *d* with the said gears and reel, the said shaft also carrying a gear, *k*, meshing with the pinion *l*, keyed upon the same arbor with the gear *m*, meshing with a pinion, *n*, upon an arbor, *o*, having bearings in the hubs of the gears *b*, as shown in Fig. 2. The said arbor *o* has fixed thereon a fly or rotating fan, *p*, located within the said reel *a*, the said fan being by the train of wheel-work just described caused to rotate with great speed relative to that of the reel *a*, and by the



resistance of the atmosphere prevents the speed of rotation of the said reel from increasing beyond a certain amount, so that the cord or tape  $q$  wound thereon will reel off slowly to permit a body suspended from the said apparatus to descend with a gradual movement without injury. The said tape  $q$  is connected with an eye or clevis,  $r$ , pivoted in a block,  $s$ , over which the said tape is wrapped, and upon which it is fastened by a clasp,  $t$ , thus preventing a sharp bend in the said tape, which would be liable to weaken it. The said eye  $r$  is adapted to receive the hook  $f$  of the belt  $h$ , or, with the apparatus placed as shown in Figs. 1 and 2, to receive the hook  $u$ , connected with the grappling-hooks  $v$ , (see Fig. 5,) as shown, by the cord  $w$ , which is attached at one end of the said grappling-hooks, and thence run through an eye in the other hook, thence over a pulley connected with the hook  $u$ , thence through an eye in the first-mentioned grappling-hook, and across to the other grappling-hook, to which its other end is fastened, so that the strain upon the hook  $u$  tends to draw the grappling-hooks  $v$  more closely together, thus causing them to hold tighter the greater weight they have to sustain.

When suspended as shown in Figs. 1 and 2, the eye  $r$  being connected with the building and the person to be lowered being connected with the block  $e$ , it will be seen that the apparatus will be lowered down with the person; but it will be evident that by connecting the blocks  $e$  with the hook  $u$  and grappling-hooks  $v$  and suspending the hook from the eye  $r$  the apparatus will be left at the top of the building, and can consequently be used for lowering others. To do this the tape  $q$  will have to be rewound upon the reel  $a$ , and to enable this to be readily done the gear  $k$  is mounted loosely on the shaft  $j$ , so that the said gear and train leading therefrom to the fly may be disengaged from the drum and shaft  $j$ . The said gear  $k$  is caused to rotate with the shaft  $j$  in unwinding the tape by means of a key,  $a^2$ , fitted to slide in a longitudinal groove or spline in the shaft  $j$ . The portion of the said key that passes through the frame-plate  $d$ , when in the position shown in Fig. 2, lies within the circumference of the bearing portion of the shaft  $j$ , and the portion which is then in line with the gear  $k$  extends into the slot in the said gear, as shown in Fig. 1, thus causing the shaft and gear to rotate together.

When desired to disengage the train of wheel-work and fly from the reel for winding up the tape, the key  $a^2$  is moved in the direction of the arrow thereon, Fig. 2, until the smaller portion, which is shown in the said figure as being in the plate  $d$ , passes through the hub, and consequently permits the said shaft to rotate without causing the gear  $k$  and connected train to move with it.

As shown in Figs. 1 and 2, one of the spokes or arms of the gear  $m$  is opposite the end of the key  $a^2$ , and in order to permit the said key to be moved longitudinally, as just described,

the said gearing will have to be turned a little, so that the said key will pass into the space between the spokes or arms of the said gear  $m$ .

The shaft  $j$  is provided with a squared end,  $b^2$ , to receive a winding wrench or key, or may be permanently provided with a suitable handle, which may be made folding, like that of an ordinary measuring-tape, and by the reverse rotation of the said shaft  $j$  the tape  $q$  will be drawn upon the reel  $a$ . In order to lay it tightly and evenly upon the said reel the tape  $q$  is passed through a guide,  $c^3$ , (see Fig. 4,) having pins  $d^3$ , which gage the edges of the said tape, and a press-button,  $e^3$ , mounted in a bridge-piece,  $f^3$ , by which a sufficient friction can be brought to bear upon the said tape to cause one convolution to be closely laid upon another in winding, and when wholly wound up the said bridge  $f^3$  can be removed, as shown in Fig. 4, leaving the tape  $q$  free to run off without friction. The said tape, in running off, is carried over the shaft  $j$ , which serves as a guide therefor.

It is obvious that any disengaging device other than the sliding key  $a^2$ —such, for instance, as a ratchet and pawl—may be employed to enable the reel  $a$  to be turned in the reverse direction without moving the train.

I claim—

1. In a portable fire-escape, the combination of the following elements: a reel, a regulating-train of wheel-work to control its rotation, a suspending cord or tape wound on the said reel, and means to connect the said tape and reel, either one with a building and the other with the body of a person, whereby the apparatus may be either lowered with the person or remain at the top of the building, as desired, substantially as described.

2. The winding reel or drum and regulating-train of wheel-work connected therewith, combined with the governing fan or fly, the said governing fan or fly being located within the said reel and having its bearings in the journals thereof, substantially as described.

3. The combination, with the reel and its regulating-train mounted upon a frame-work, provided with a supporting-link, of a cord or tape wound upon the said reel and provided with an eye or link and grappling-hooks, and a supporting-belt, each adapted to be connected with the said link or eye, substantially as described.

4. The tape or cord winding reel and governing-train, adapted to be disconnected therefrom in its backward movement, combined with a detachable guide and friction device for the said tape, whereby it may be wound tightly and evenly upon the said reel in the backward rotation thereof, substantially as described.

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

HUGH KEENAN.

Witnesses:

M. J. McCAFFERTY,  
T. W. SCANNELL.