(No Model.) 3 Sheets—Sheet 1.

W. A. BUCKLEY.

FIRE ESCAPE.

No. 419,108. Patented Jan. 7, 1890.

Fig. 1.

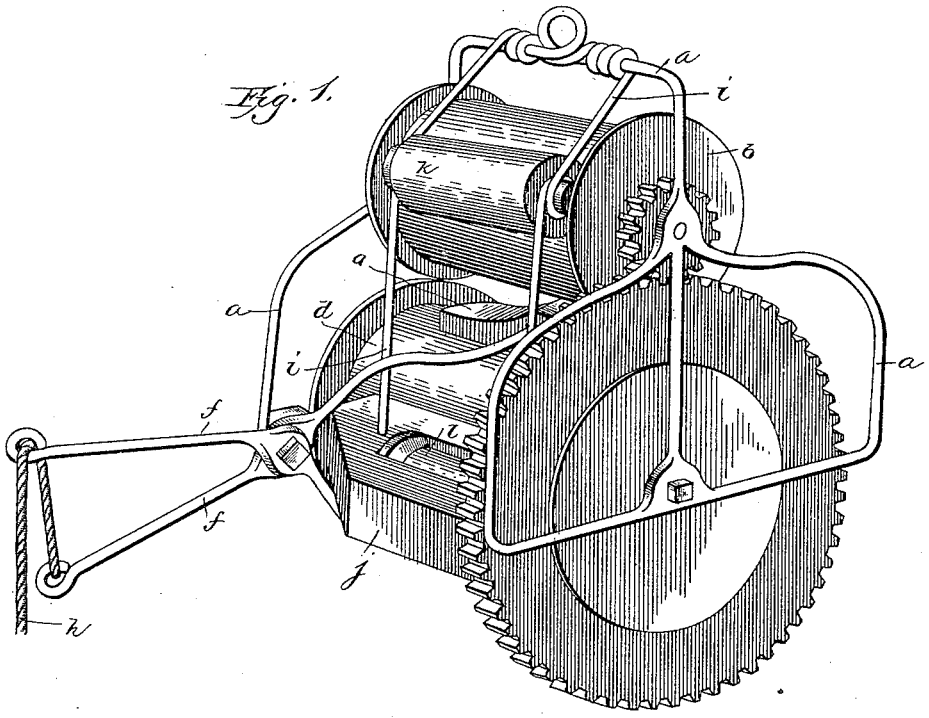


Fig. 3.

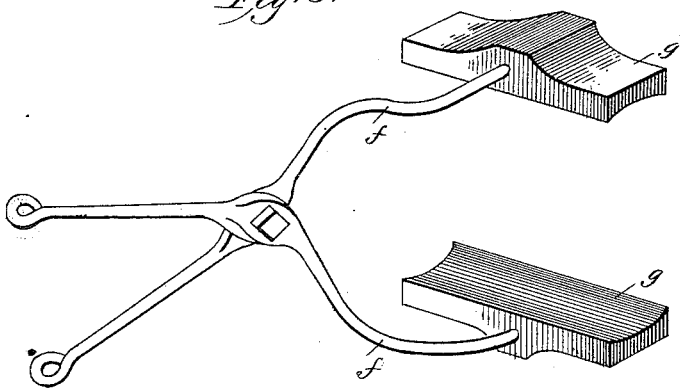
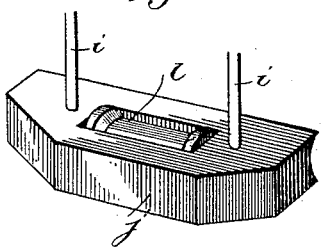


Fig. 4.



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per O. E. Duffy
Attorney.

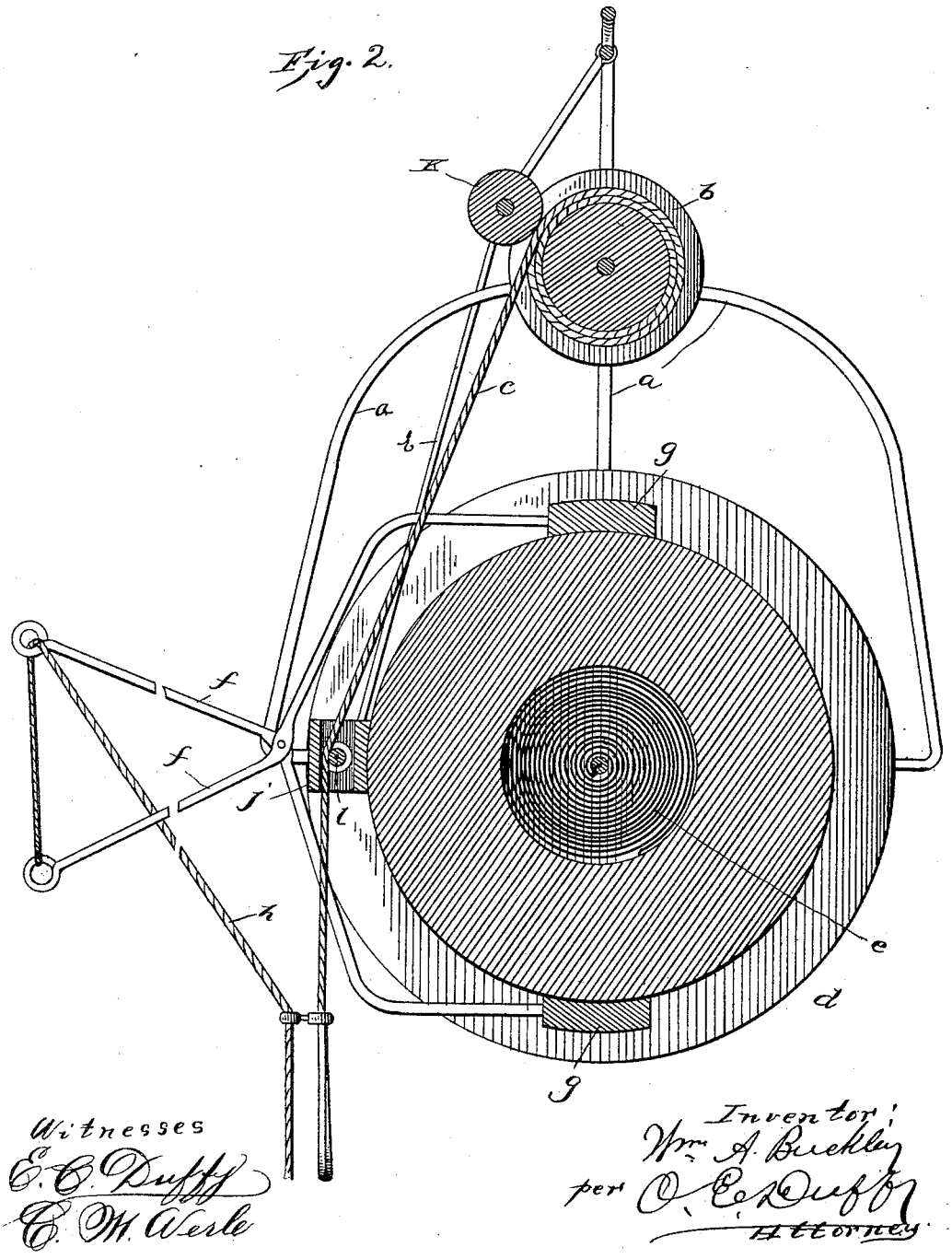
(No Model.) 3 Sheets—Sheet 2.

W. A. BUCKLEY.

FIRE ESCAPE.

No. 419,108. Patented Jan. 7, 1890.

Fig. 2.



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E. M. Werle

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Attorney

(No Model.) 3 Sheets—Sheet 3.

W. A. BUCKLEY.

FIRE ESCAPE.

No. 419,108. Patented Jan. 7, 1890.

Fig. 5.

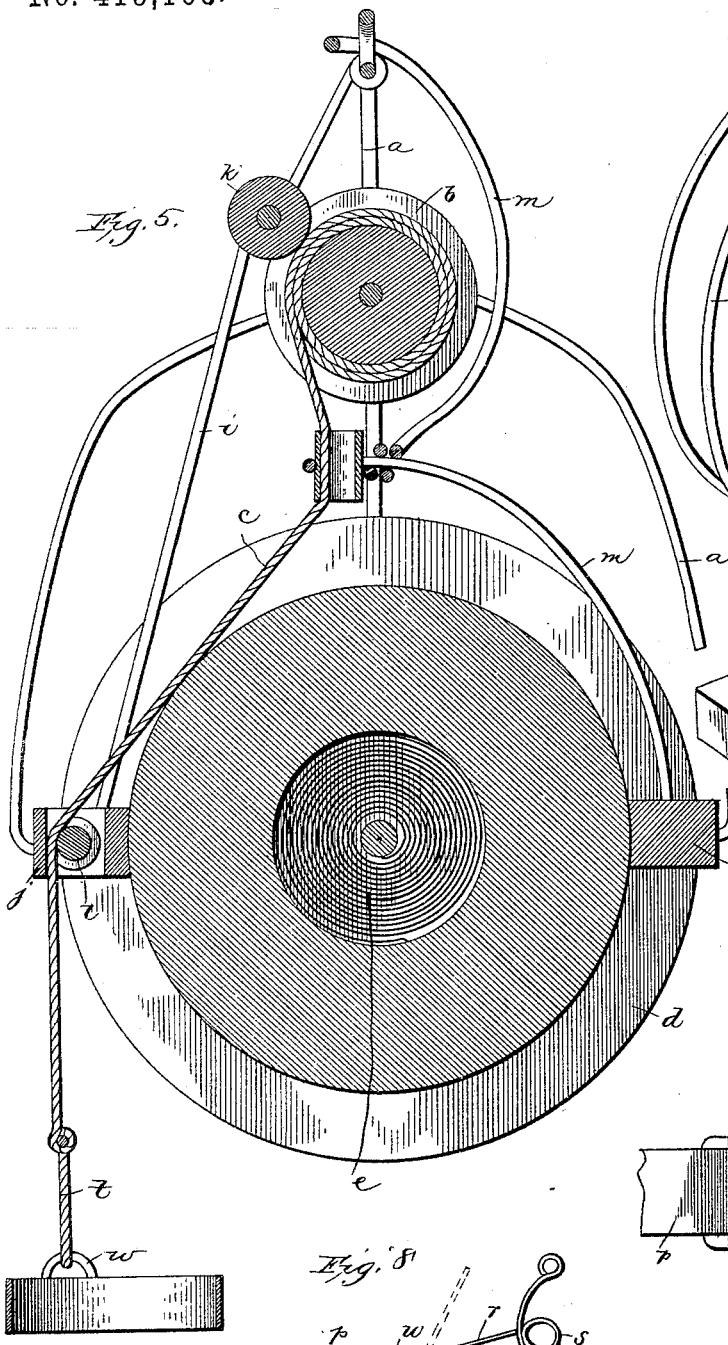


Fig. 6.

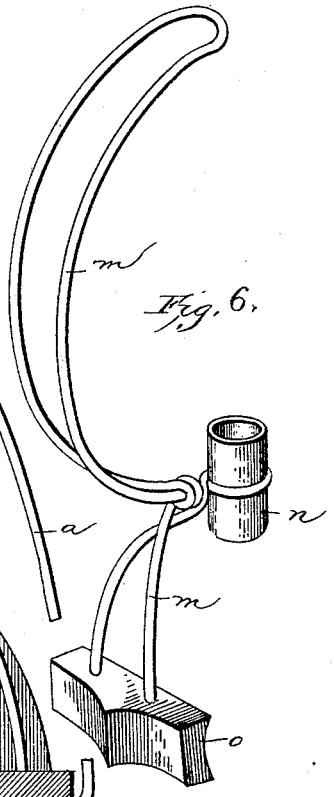


Fig. 7.

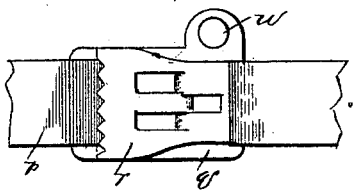
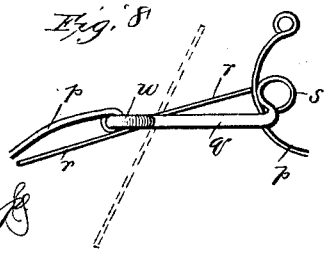


Fig. 8.



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Inventor:
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UNITED STATES PATENT OFFICE.

WILLIAM A. BUCKLEY, OF GAINESVILLE, VIRGINIA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 419,108, dated January 7, 1890.

Application filed March 11, 1889. Serial No. 302,921. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. BUCKLEY, of Gainesville, in the county of Prince William and State of Virginia, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to an improvement in fire-escapes; and it consists in certain novel features of construction and combinations of parts, more fully described hereinafter, and particularly pointed out in the claims.

The object of the invention is to provide an improved, cheap, simple, effective, and safe friction fire-escape provided with an improved automatic braking or speed-regulating device, whereby the rate of descent will not be too rapid whether the person descending be of great or light weight; also to provide an improved braking device to be applied at will by the person descending, and to provide a spring whereby the rope will be automatically returned to its normal position after a person has descended.

Referring to the accompanying drawings, Figure 1 represents a perspective view of the fire-escape. Fig. 2 is a longitudinal section of the same. Fig. 3 is a detail perspective view of the braking device operated by the person descending. Fig. 4 is a detail perspective view of the shoe of the automatic brake. Fig. 5 is a view similar to Fig. 2, showing an additional automatic brake. Fig. 6 is a detail perspective view of the additional brake, and Figs. 7 and 8 are detail views of portions of the device for supporting a person descending by the rope.

In the drawings, the reference-letter *a* indicates the supporting-frame of the escape, which is adapted to be secured to the upper portion of a building. In the upper portion of this frame a reel or drum *b* is journaled. Upon the drum the escape rope or cord *c*, by which descent is made, is normally wound. In the lower part of the supporting-frame a drum *d* is journaled, and this drum is connected with the reel *b* by means of a gear-wheel secured to the drum and meshing with a gear-wheel secured to the reel. Thus when the rope is drawn from the reel the same is rotated, and rotates the drum through the medium of the gearing against the tension of a clock-spring *e* within said drum. Thus when a person has descended to the ground and released the rope the action of the spring will immediately draw up the rope and wind the same upon the drum. The lower portion of the frame is provided with a forwardly-extending arm, upon which the arms *f f* are pivoted within their lengths. At their inner ends each one of these arms is provided with a brake-shoe *g*, adapted to bear upon the periphery of the drum *d*. One of these arms extends from its pivotal point to the upper side of the drum, and its opposite end extends outwardly, and the other arm extends beneath the drum, while its opposite end extends outwardly above the first-mentioned arm, and is provided with an eye. A cord *h* at one end is secured to the free end of the lower arm, and is then passed upward through the eye in the upper arm. From thence the cord extends to or near the ground, so that a person descending by the cord *c* can regulate the speed of descent by pulling down on the cord *h*, which will draw the free outer ends of the arms *f f* toward each other, and thus, of course, the inner ends of the same toward each other, and the brake-shoes *g g* upon the upper and lower sides of the drum.

A frame *i* at its upper end is loosely secured to the upper portion of the supporting-frame. This frame *i* extends down in front of the reel and drum, and at its lower end is provided with a brake-shoe *j*, to bear upon the periphery of the drum, and near its upper portion is provided with a roller *k*, to bear upon the rope *c*, wound on the reel, and thus cause the rope to wind evenly and tightly upon the same when in operation.

The brake-shoe *j* is provided with a transverse opening and a roller *l*, journaled in the inner side of the same. The rope *c* passes from the reel down through said opening, bearing upon the roller, and thereby tending to force the brake-shoe against the periphery of the drum, as the roller is not in the direct line of the length and downward pull on the

rope *c*. Thus it will be readily seen that when a person of light weight is descending by the rope the lateral pressure of the same upon the roller *l*, and the consequent pressure of the brake-shoe *j* upon the drum, will be sufficient to retard the speed of descent the required amount; but the pressure in this case will be less than where a person of heavy weight is descending, so that the speed of descent will be about the same, no matter whether the person descending be of light or heavy weight. If the brake *j* does not sufficiently retard the speed, the person descending has merely to pull down on the cord *h* and operate the other braking device.

The frame *i* can be loosely secured to the main supporting-frame, or it can be rigidly secured to the same with a normal tendency to spring outwardly.

If desired, an additional automatic brake can be employed, consisting of a frame *m*, loosely secured to the main frame of the escape, and extending downwardly on the opposite side from the frame *i* and curving outwardly to pass around and beneath the reel *b*, and beneath said reel this frame is provided with a tube *n*, through which the escape-rope *c* passes, the tube being in such a position that the rope is diverted from its natural course to pass through the same. From the tube *n* the frame extends downwardly, and at its lower end is provided with a brake-shoe *o*, bearing on the opposite side of the periphery of the drum *d* from the shoe *j*. Thus it will be seen that the weight of a person upon the rope *c* will exert a corresponding lateral pressure on the tube *m* and draw the shoe *a* against the drum. If the brakes *j* and *o* are used together in one machine, the rope will follow the course shown in Fig. 5.

A person is easily secured to the rope *c* by means of a belt *p*, adapted to pass around the body and provided with a buckle, by means of which the belt can be drawn tight, consisting of the frame *q*, provided with the tongue *r*. This frame is also provided with a tube *s*, through which the rope *h* passes, so that the same will always be within reach, and the belt is connected to the rope *c* by means of two or more ropes *t*, secured to rope *c*, and extending downwardly and secured to the opposite sides of the belt by means of eyes *w*, one of which is preferably formed on the buckle-frame.

It is evident that various changes might be made in the form and arrangement of the various parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself to the precise construction herein set forth.

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

1. A fire-escape comprising a supporting-frame, a reel mounted in the same, the escape-rope wound upon the reel, a drum mounted in the frame, gearing connecting the reel and drum to rotate together, a spring in the drum to rotate the reel to wind the rope upon the same, and one or more brake-shoes bearing on the periphery of the drum, substantially as described.

2. In a fire-escape, the combination of the supporting-frame, a reel mounted in the same, upon which the descending rope is wound, a pair of crossed levers pivoted to the frame to swing in a vertical plane, brake-shoes on the inner corresponding ends of said levers adapted to bear on opposite sides of the periphery of a rotary part of the escape actuated by the movement of the descending rope, and a cord extending down beside the escape-rope to draw the free ends of the levers toward each other, substantially as described.

3. In a fire-escape, the combination of a supporting-frame, a reel mounted in the frame, a descending-rope wound on said reel, a drum mounted in the frame connected by gearing to rotate with said reel, a pair of crossed levers pivoted to the frame and at their corresponding ends provided with brake-shoes bearing on the upper and lower sides of the periphery of said drum, and a rope to draw the outer free ends of the levers together and press the shoes against the drum, substantially as described.

4. The combination, in a fire-escape, of a supporting-frame, a descending-rope supported thereby, a drum mounted in said frame and rotated by the movement of said rope, and a braking device for said reel, comprising a frame pivoted to the supporting-frame and having a shoe bearing against said drum, said pivoted frame diverting said rope laterally from its course, whereby the lateral pressure of the rope when under strain forces the shoe against the drum, substantially as described.

5. In a fire-escape, the combination of the supporting-frame, a drum mounted therein, a movable frame carried by the supporting-frame, a brake-shoe carried by said frame to bear against said drum and provided with an aperture therethrough, and the conveying-rope of the escape adapted to rotate said drum by its movement and pass through said opening of the brake-shoe and press the same against the drum, substantially as described.

6. A fire-escape comprising a supporting-frame, a reel mounted in the same, the conveying or escape rope wound upon the reel, a drum mounted in the frame and rotated by said reel, a movable frame provided with a roller bearing on the rope on the reel, and a brake-shoe carried by said movable frame to bear against the drum, said escape-rope passing through and bearing on a roller in said shoe to press the shoe against the drum by the lateral pressure of the rope tending to straighten, substantially as described.

7. A fire-escape comprising a supporting-frame, a reel mounted in the same, the escape-rope wound on the same, a spring-drum

mounted in the frame and connected with and adapted to rotate with the reel, said drum being adapted to rotate the reel to wind up the rope, and an automatic braking device bearing upon the periphery of the drum, substantially as described.

8. In a fire-escape, the combination of the escape-rope, a belt secured to the same, and a buckle and tongue whereby the belt can be adjusted, said buckle being provided with a tube or opening, for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM A. BUCKLEY.

Witnesses:
HUBERT E. PECK,
EUGENE O. DUFFY.