

(No Model.)

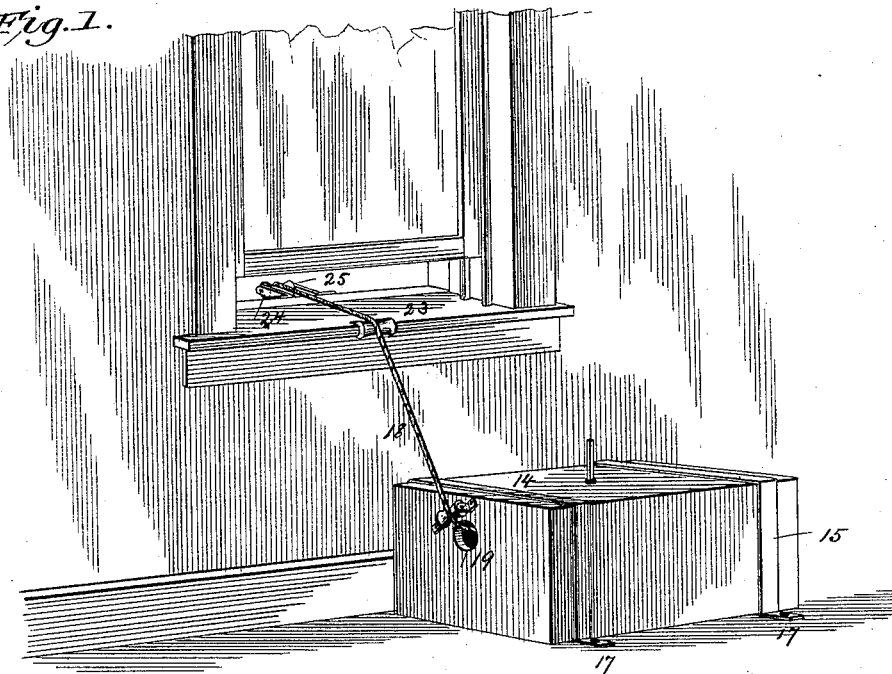
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H. C. ROSE.  
FIRE ESCAPE.

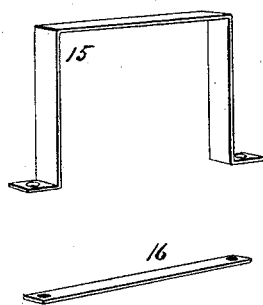
No. 422,159.

Patented Feb. 25, 1890.

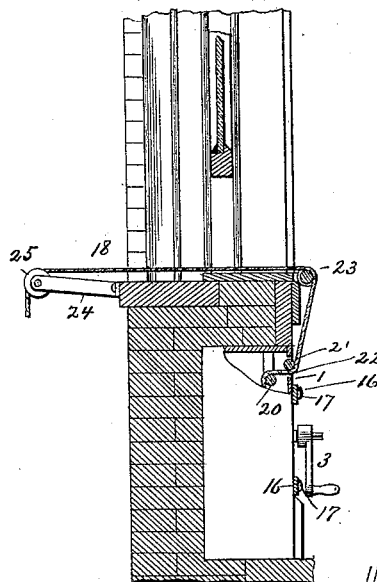
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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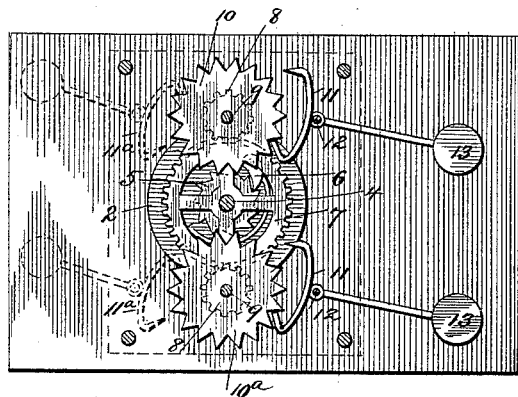
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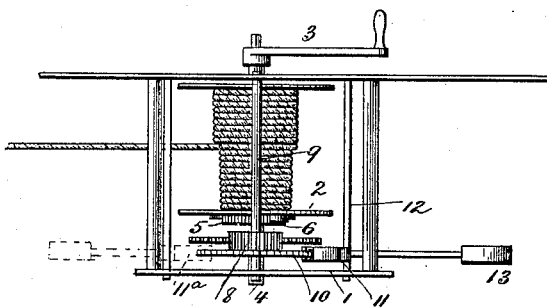
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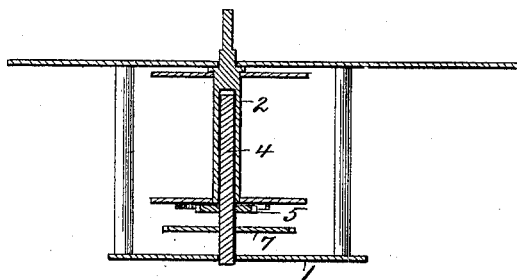
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*Fig. 4.*

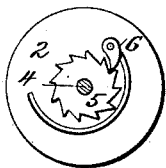


*Fig. 5.*



*Fig. 6.*

*Fig. 7.*



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# UNITED STATES PATENT OFFICE.

HENRY C. ROSE, OF LEADVILLE, COLORADO.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 422,159, dated February 25, 1890.

Application filed June 17, 1889. Serial No. 314,667. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. ROSE, of Leadville, in the county of Lake and State of Colorado, have invented a new and useful Improvement in Fire-Escapes, of which the following is a specification.

My invention consists in a new and improved automatic fire-escape, which will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 is a perspective view showing the escape secured within a room below a window. Fig. 2 is a detail view of one of the fastenings for securing the escape in that position. Fig. 3 shows the escape secured in a recess in a wall. Fig. 4 is a side view with the side plate removed. Fig. 5 is a top plan view. Fig. 6 is a central sectional view through the shafts 2 and 4, and Fig. 7 is a detail view hereinafter referred to.

The same numerals of reference indicate corresponding parts in all the figures.

Referring to these several parts by their designating-numerals, 1 indicates the back plate of the frame, in which the escape mechanism is secured. In this frame is journaled a drum 2, the rear end of the axle of which is squared to receive a crank-handle 3, by which the rope is wound up.

4 indicates a short shaft, the inner end of which turns in the hollow axle of the drum, as shown in Fig. 6. This shaft has a ratchet-wheel 5 on it in close proximity to the side of the inner drum-head, and a spring-actuated pawl 6 on the drum-head engages with the ratchet-wheel and causes the shaft 4 to turn with the drum when the rope is being unwound, but slips over the inclined ratchet-teeth when the drum is revolved to wind up the rope. The outer end of this shaft 4 has a toothed wheel 7, which meshes with pinions 8 on two auxiliary shafts 9, arranged on each side of it, as shown, and having each a larger toothed wheel 10<sup>a</sup> upon it, which may be called the "brake-wheels." These brake-wheels 10 and 10<sup>a</sup> are mounted on the shafts 9 on each side of the drive-wheel 7, as clearly shown in Fig. 4 of the drawings. With these brake-wheels oscillating brakes 11 engage, these brakes being curved at the ends, as shown, so that they engage alter-

nately with the teeth of the brake-wheels 10 and 10<sup>a</sup>. The brake-shafts 12, which are journaled in bearings at both ends, have each a pendulum-weight 13 depending from them, as shown.

The mechanism above described is inclosed in an outer casing 14, which protects it from injury, from being tampered with in a room, and from dust and dirt, and when secured outside a building protects it from rain, sleet, snow, &c.

The back plate 1 forms practically one side of the casing, and the escape can be secured below or above a window by means of the fastenings 15, consisting of metal straps of the shape shown, or may be set in the wall in a recess, as shown in Fig. 3, in which it is secured flush with the wall by straight metal straps 16. These straps 15 and 16 are secured in place by screw-bolts 17, passing through their ends.

The escape-rope 18 is secured at one end to the drum-axle and winds around the same, and passes through the casing through an end opening 19, except when the casing is set flush in a wall, as in Fig. 3, when the rope passes over a pulley 20 in the casing above the drum, and then over a pulley 21 in an opening 22 in the outer side of the casing.

The escape can be secured in position either outside a building or inside of a room, preferably inside, where it is protected from the weather. Rollers 23 are secured on the window-sill to guide the rope and reduce friction. When the escape is placed above a window, with the end opening down, the pulleys in the casing will not, of course, be needed.

The operation will be readily understood. In case of fire the person in the room opens the window and attaches himself to the end of the escape-rope. This may be done in a variety of ways—by means of a belt or belts secured to the end of the rope, and which the person buckles around him; by a stirrup in which he stands, or by a basket or cage in which he may be seated; and the free end of the rope may be provided with a snap-hook to engage with either of the above. The weight of the person on the end of the rope will then cause the drum to revolve, uncoiling the rope, when the pawl 6, engaging the ratchet-wheel

5, turns the shaft 4 and wheel 7, revolving the pinions 8, shafts 9, and brake-wheels 10 and 10<sup>a</sup>. As the brake-wheels thus revolve they oscillate the double-ended brakes 11, which are steadied and caused to oscillate evenly and at a proper rate of speed by the pendulum-weights 13, and the rope will thus be caused to unwind steadily and evenly, no matter what weight is on it, until the person reaches the ground. If another person is to descend from the room, the crank-handle 3 is placed on the projecting squared end of the drum-axle and turned to wind up the rope on the drum, when it is again used as before.

15 Instead of the two brake-wheels and oscillating brakes, as here shown, only one brake-wheel and oscillating brake may be used for light work when desired, and instead of one brake to a brake-wheel two brakes can be used on one brake-wheel, as shown by the dotted brakes 11<sup>a</sup> in Fig. 4. The two brake-wheels and brakes are the best for heavy work, and also give double security, as if one brake should get out of order the second will hold.

25 It will be seen that by using a short and deep drum, as shown, the diameter of the drum is very much increased when the rope is all wound upon it by the folds of the rope. The leverage is thus increased, and on starting from a room the descent is fastest as the rope unwinds from the large diameter, and as the rope unwinds the diameter diminishes, and the speed will thus decrease as the person approaches the ground.

35 The oscillating brake is a positive catch-brake, and as it engages with the brake-wheel as its pendulum-weight oscillates, catching al-

ternately on opposite sides, it will be seen that it is impossible for the drum and rope to slip, which may occur where a friction-brake is used, and a perfectly safe descent is thus assured.

It will be seen that the rope will be evenly and steadily unwound, no matter whether the weight of the person using the escape is light or heavy. The drum and rope can be removed by taking off the back plate without disturbing the balance of the machinery. The escape is completely automatic and no springs or weights are employed, making it strong, simple, durable, and efficient.

An arm 24 is preferably fastened to the window-frame, projecting outward and having a pulley 25 at its end, through which the rope runs, thus causing the rope to swing clear of the building.

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

In a fire-escape, the combination, with the escape mechanism consisting of the drum having the spring-actuated pawl, the shaft 4, having the ratchet-wheel and the cog-wheel, the shafts 9, arranged on opposite sides of the shaft 4 and having the pinions 8 and brake-wheels 10, and the oscillating brakes having the pendulum-weights and the outer casing, of the metal retaining-straps, substantially as set forth.

HENRY C. ROSE.

Witnesses:

JOHN NOWLAND,

JOHN W. CALLAWAY.