

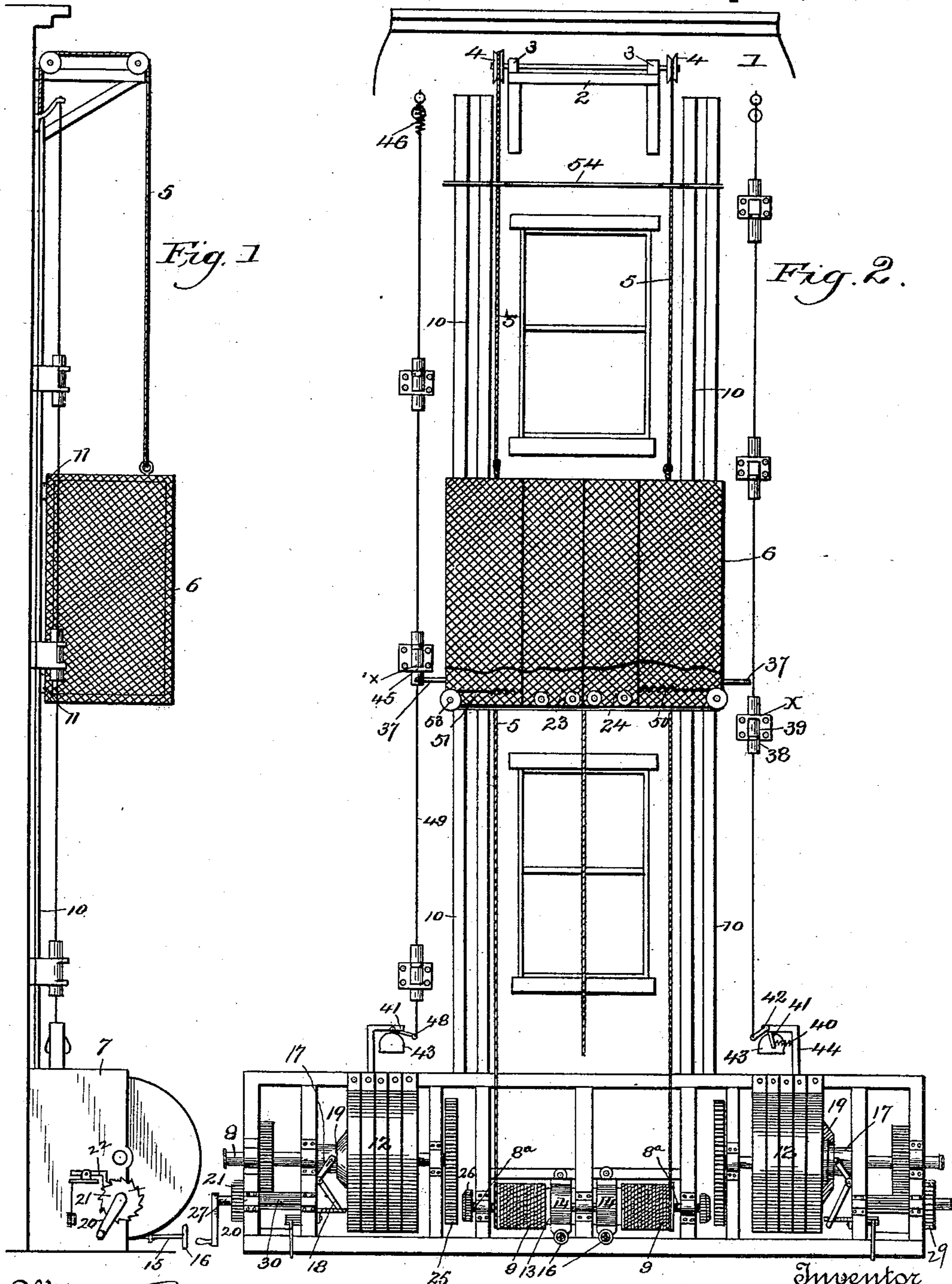
(No Model.)

2 Sheets—Sheet 1.

J. L. GREGORY.  
FIRE ESCAPE.

No. 536,927.

Patented Apr. 2, 1895.



Witnesses  
*J. M. Reynolds*  
*L. G. Randall*

Inventor  
*James L. Gregory*  
By *John H. Haddad*  
his Attorney

(No Model.)

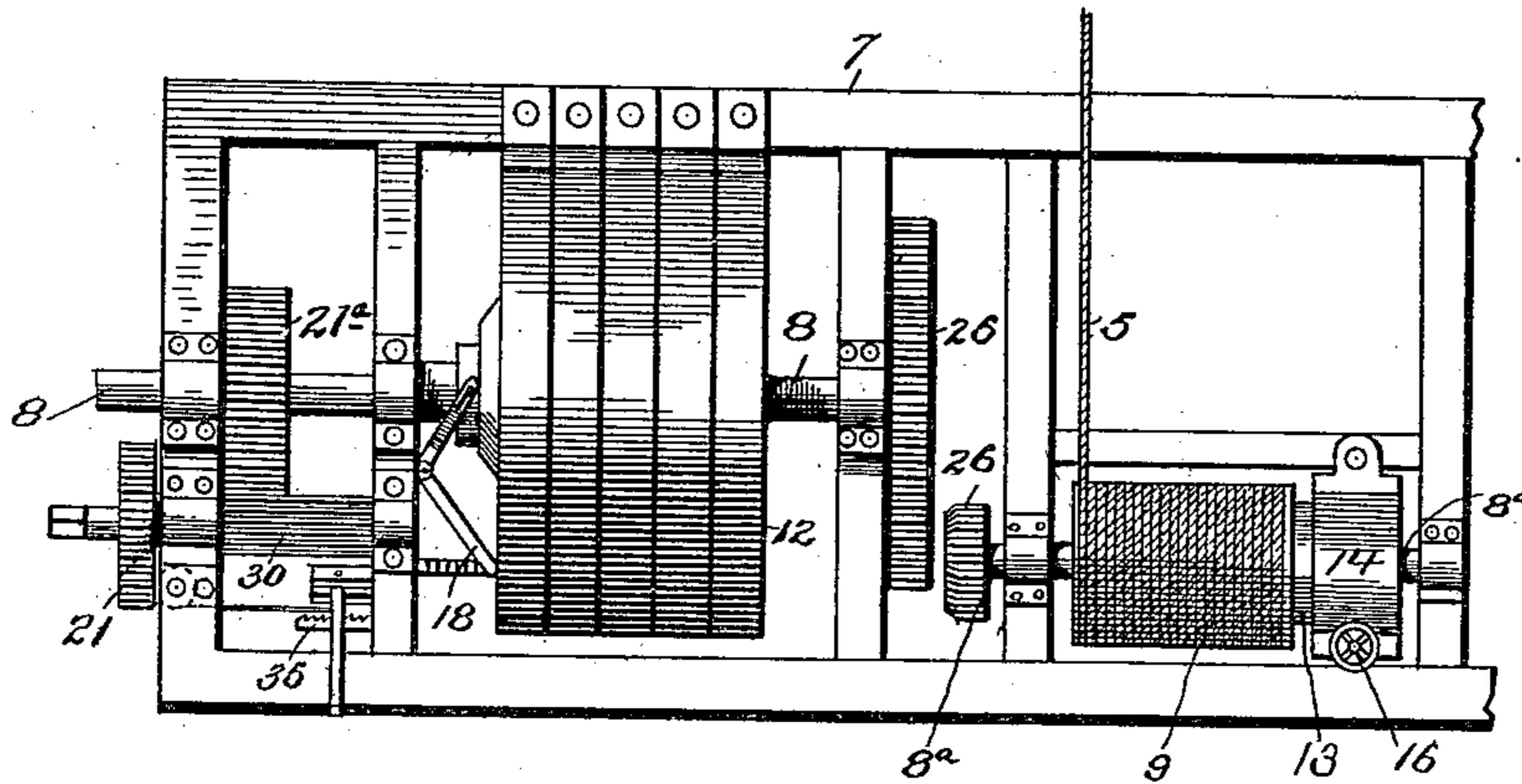
2 Sheets—Sheet 2.

J. L. GREGORY.  
FIRE ESCAPE.

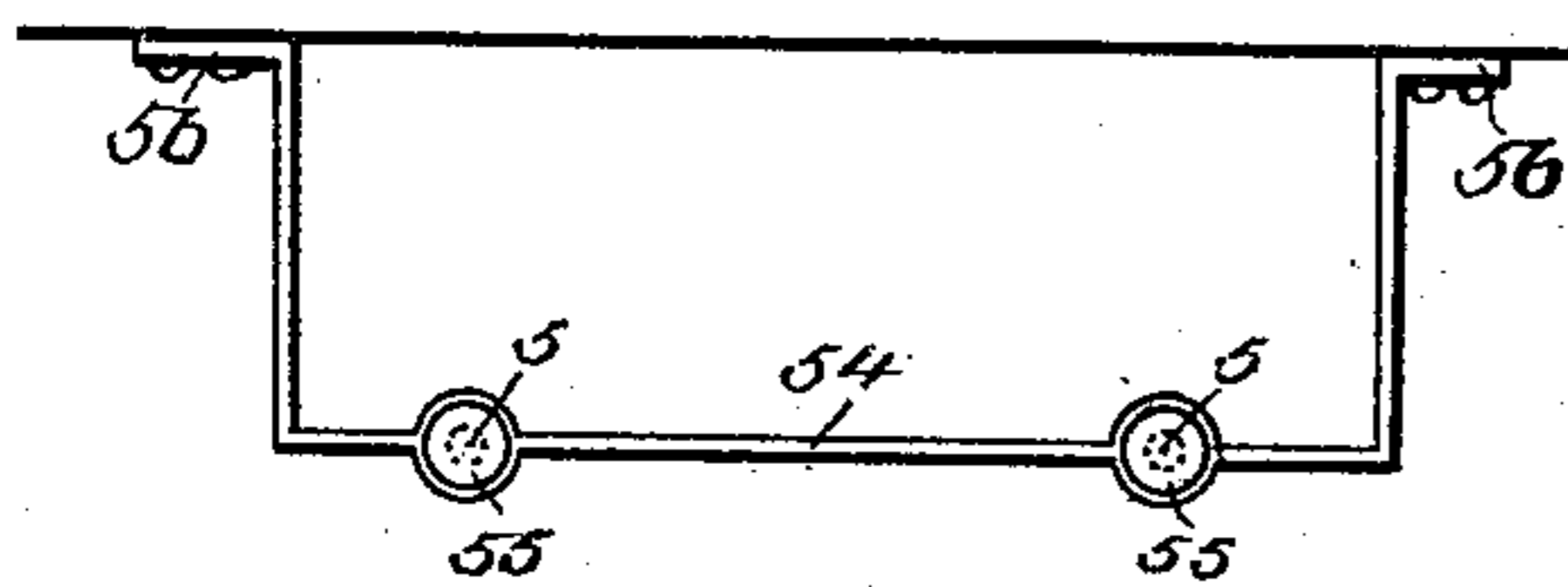
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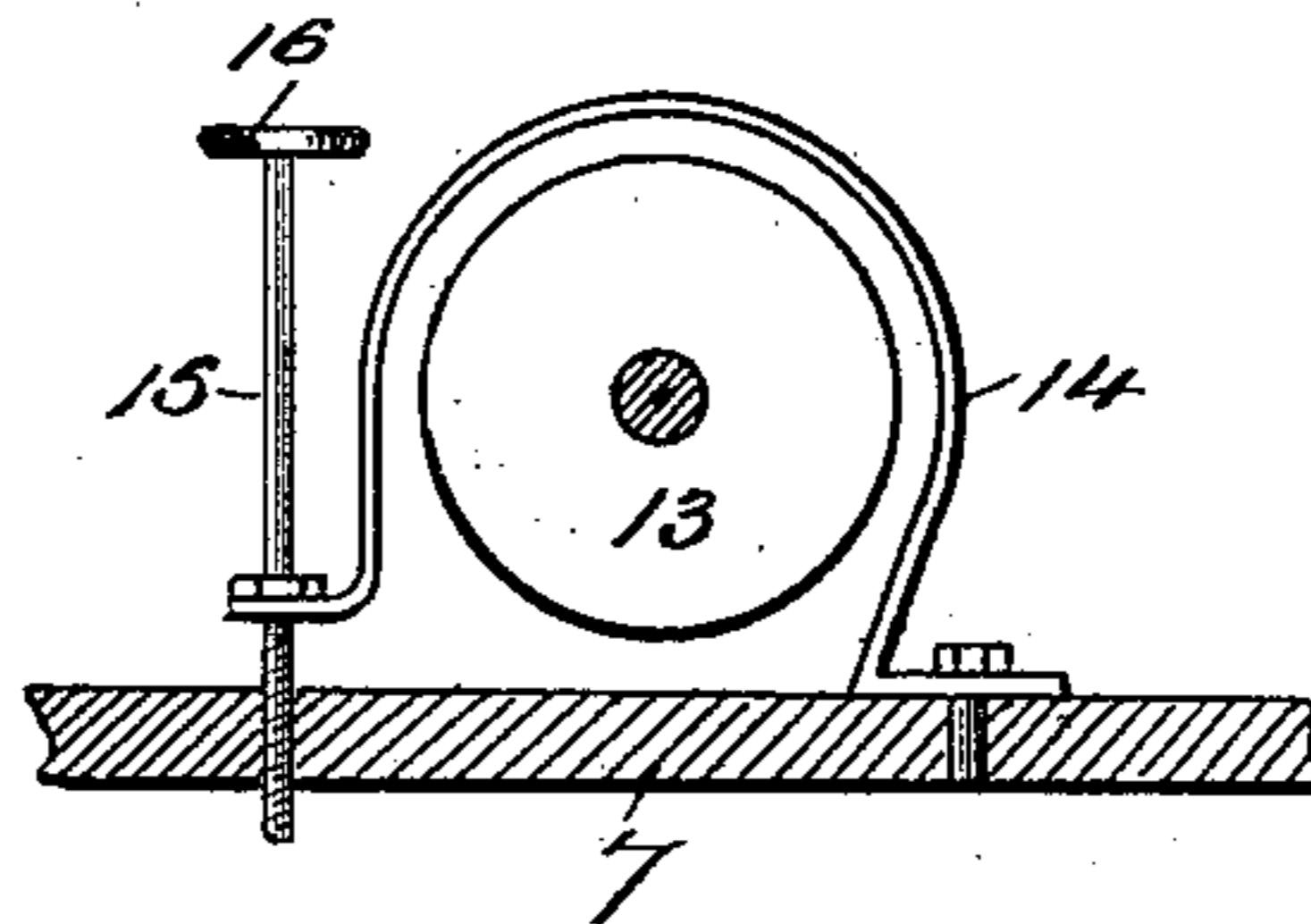
*Fig. 3.*



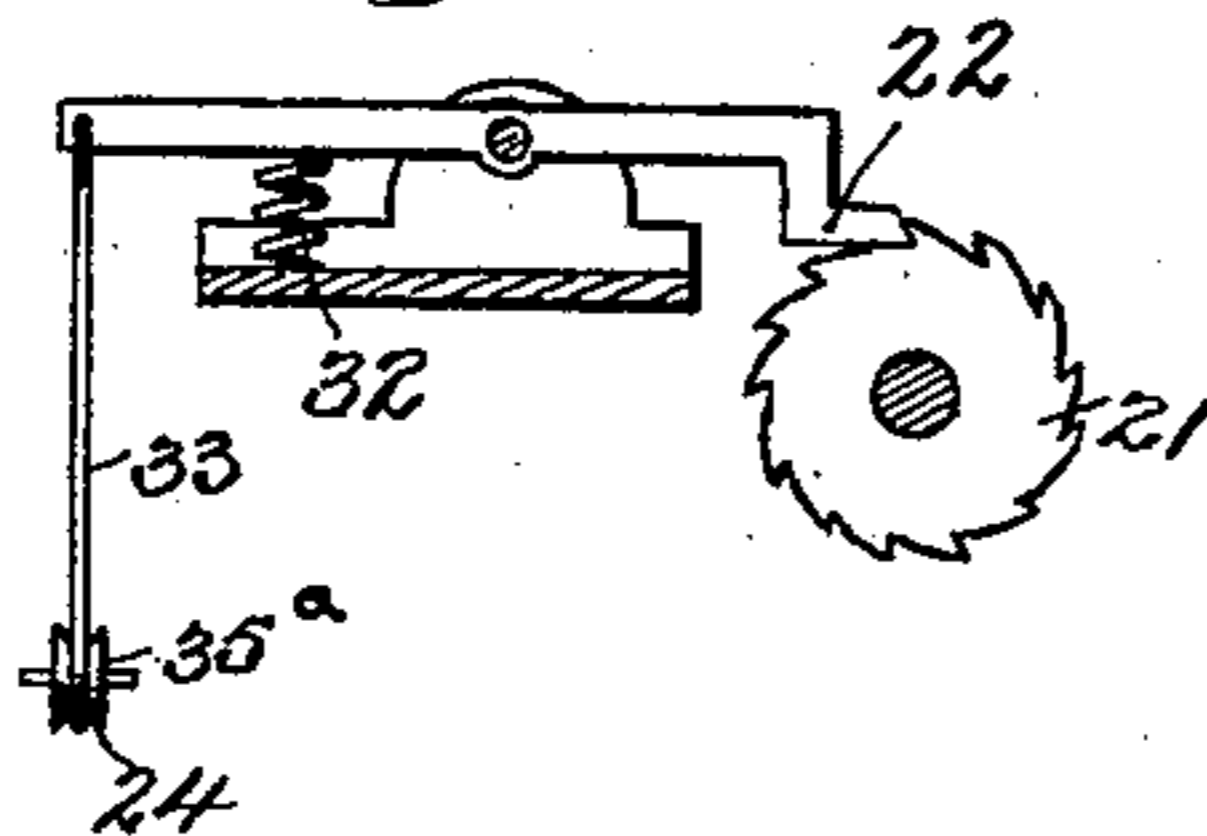
*Fig. 4.*



*Fig. 6.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

JAMES L. GREGORY, OF WASHOE CITY, NEVADA.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 536,927, dated April 2, 1895.

Application filed August 1, 1894. Serial No. 519,200. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES L. GREGORY, a citizen of the United States, residing at Washoe City, in the county of Washoe and State of Nevada, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to fire escapes, and has for its object to provide simple and effective gearing for automatically operating to sound a gong or other signals as well as to provide automatic means for opening the door of a cage and also to indicate by the sound or signals where to stop the cage by giving due notice to the operating engineer.

With these and other objects in view the improvement consists of the construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

In the accompanying drawings: Figure 1 is a side elevation showing the application of the invention. Fig. 2 is a front elevation of the parts shown in Fig. 1. Fig. 3 is a detail view of the hoisting mechanism on a larger scale. Fig. 4 is a detail view of the guide bar for the hoisting ropes. Fig. 5 is a detail view of the detent mechanism on a larger scale. Fig. 6 is a detail view of the brake.

Secured to the upper part of the building 1 by suitable secure means is the projecting frame work 2, which is intended to support the bearings 3, for the rollers 4, over the latter of which pass the ascending and descending cables 5, which support the cage 6.

Just above the side-walk and secured to the building in a position directly beneath the frame-work 2 is the casing 7 through the center of which passes the shaft 8<sup>a</sup>, to the middle of which is secured the drums 9 about which the ends of the cables 5 are wound.

To prevent the cage 6 from swinging outward from the building, I have supplied the guides or tracks 10 which extend the whole height of the building, and which are adapted to engage with the guides 11 secured to the cage 6.

At both sides of the central drums 9 are situated shafts 8, each having a series of spiral

springs 12. One end of each spring is secured to the shaft 8 while the other end is secured to a stationary part of the outer casing 7. The cables 5 are wound about the central drums 9, in such a manner that when the cage 6 descends, the spiral springs are wound up and consequently when the cage ascends the springs are unwound.

It will be readily seen that after the cage has descended with several occupants, the power accumulated in the springs will be amply sufficient to raise the empty cage to the required height.

I do not desire to confine myself to any particular number of springs encircling the shaft 8 as the number is regulated by the weight of the cage and when it is desired that a person should ascend to a particular story, the number of springs desired to raise this added weight will be necessarily increased.

To regulate the rapidity of descent of the cage and to stop the cage at any desired story of the building, I have constructed two secondary drums 13 one on either side of the central drums 9, and over which pass the steel bands 14, shown in Fig. 6, one end of each of which is secured to the casing 7, while through the other end passes the binding screw 15 the threaded end of which passes through the casing 7 while its other end terminates in the wheel 16.

It will be readily seen that when the end of the band 14 is forced toward the casing 7, it increases the friction between the band and drum and consequently decreases the rapidity of descent of the cage.

As will be seen from the accompanying drawings, I have constructed the shaft in three sections, 8, 8, and 8<sup>a</sup>, which are adapted to be operatively connected by means of gearing 25 and 26 which are secured respectively to the opposing ends of the sections. Near the ends of the casing 7 are pivoted levers 18, one end of which terminates in a form one prong of which passes over while the other passes under a flanged sleeve 19 secured to the shaft 8.

When it is desired to disengage from the central drums the power of the springs on either or both sides, the levers at the end of the casing are moved toward each other,

thereby disengaging from each other the gear wheels 25 and 26 and allowing the drums 9 to revolve independent of the springs 12.

In order to impart to the springs the necessary tension or coil I have supplied the cranks 20 which are adapted to engage with the projecting ends of the shafts 27 and which are locked in the required position and thereby prevented from revolving by means of the ratchet wheel 21 and pawls 22 which are situated in suitable supports at the end of the casing 7.

The cage 6 which is constructed of a net work of wire or other suitable material is lined with a non-combustible material such as mica, and to prevent the flames issuing from the windows of the building, from entering the cage I have supplied the sliding doors 23 and 24 shown in Fig. 6.

The improvement consists of suitable gearing for an automatic operation and consists of the cog wheels 25 and 26 which communicate the power with the drum wheel shaft 8<sup>a</sup> which operates the cage. The gearing 25 is intended to be three times the diameter of the gear 26, or the necessary difference in diameter to have the said gear 26 revolve three or four times to one revolution of the gear 25. By the use of this gearing, it will be observed that fifteen revolutions of the power shaft will revolve the drum wheel shaft forty five times. Thus it will be seen that by the use of this gearing any desirable elevation may be attained. The cog wheels 25 and 26 are beveled so that the teeth can be moved to their proper position. At the end of shaft 8, is provided a secondary parallel shaft 27 with a crank 20, a ratchet wheel 21, and a prolonged cog wheel 30. The crank 20 has leverage enough through ordinary manual power to wind the springs to a sufficient tension to obtain power enough to hoist a cage of several hundred pounds weight. The ratchet wheel 21 and the catch or pawl 22 are to prevent the machine from running backwardly, and have a spring 32 attached thereto which is so arranged that when the lever for operating the device is applied and the pawl 22, is raised from the ratchet wheel, it will force the pawl back into its position as soon as the lever is placed out of gear or free from being on brake. Attached to the end of the pawl is a steel wire 33 that passes down through the frame 7, and then turns at a right angle as at 24, where a pulley 35<sup>a</sup> is applied and from thence extends to the said lever where it is secured. The said lever is held in its adjusted position by a series of notches or notched plates or analogous device 35, which is adjacently situated. Thus it will be seen by the use of this lever that the power cannot run down accidentally and when not desired, but when it is necessary, the mechanism can be so operated as to cause the power to run down instantly.

The prolonged or elongated cog wheel 30 is used as an aid in increasing the power or to

provide more leverage and also for a cog wheel 21<sup>a</sup> to move back, and therefore it can attain its essential or proper position. As the engineer of the fire escape is directly under the cage, it would be impossible for him to know where to stop the cage. To obviate this deficiency and difficulty, I have provided sound signals and bells that will sound at every story. As the cage ascends a flexible spring 37 which is on said cage will move upwardly with the cage and strike a slider 38 and carry it to the point marked X where the spring on the cage will bound and pass the slider. When this slider together with the frame 39 is drawn back by a spring 40, a clapper 41 hung on a pivot in the frame 42 will strike the bell 43, the latter being secured to an upright 44 as shown. This operation ensues in ascending, but in descending the flexible spring 37 will strike the slider and carry it down to the point X where the said slider strikes a shoulder 45 of the frame. When the said slider strikes the said shoulder, the flexible spring bends and descends from the slider and exerts a tension on the spring 46. By this action a stiff clapper 41 will be caused to strike the bell 43. A shank 48 at the bottom of the descending wire 49 which is attached to the bell is heavier than the clapper 41, and therefore when the tension is applied to the spring 46, the said shank 48 will drop. Consequently raising the clapper and the tension being taken from the spring 46 instantly will permit the clapper to sound the bell.

At the bottom of the sliding doors of the cage on each side, it will be observed that a spring 50 is attached to each door, one end of each of which is secured to one of said doors and the other end to a wire 51. As the wire assumes a parallel position, it runs over a pulley 53 for evident purposes. The said wire extends to the ground from any story, and if it is necessary to open any of the doors from the ground the said wire is pulled. In this instance also a stay 54 is provided for the cables as shown, and the outside cables over the cage are adapted to pass through eyes 55. By the use of this stay it will be readily seen that the cable cannot sway backwardly and forwardly. The said stays are shown secured as at 56 to the building.

The construction and arrangements of the several parts of my fire escape being thus made known, the operation and advantages of the same will it is thought be readily understood.

I am aware that changes in the form and proportion of parts of the devices herein shown and described as an embodiment of my invention can be made without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and alterations as fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

A fire escape consisting of a cage, one or

more cables secured to said cage and passing  
over suitable pulleys or rollers, a stay for the  
outer cable, a signal mechanism operated by  
the movement of the several parts, means  
5 for stopping the cage from the ground, drums  
mounted on a section or shaft, and having  
bearings in a framework secured to the build-  
ing at the base thereof, and upon which said  
cable is adapted to be wound, spiral springs  
10 encircling said shaft and means for control-

ling the winding and release of said springs,  
substantially as described.

In testimony whereof I have signed this  
specification in the presence of two subscrib-  
ing witnesses.

JAMES L. GREGORY.

Witnesses:

E. W. HARRIS,  
R. C. MOORE.