

J. R. CREIGHTON.
ELEVATOR ANNUNCIATOR.

No. 175,338.

Patented March 28, 1876.

Fig. 1.

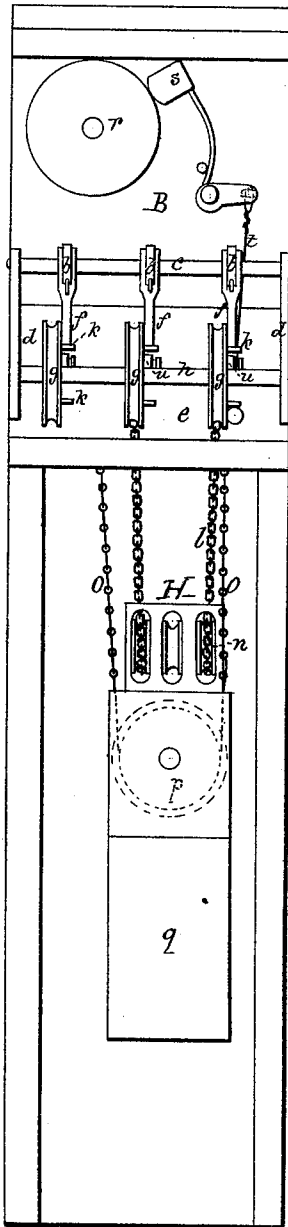


Fig. 4.
Enlarged.

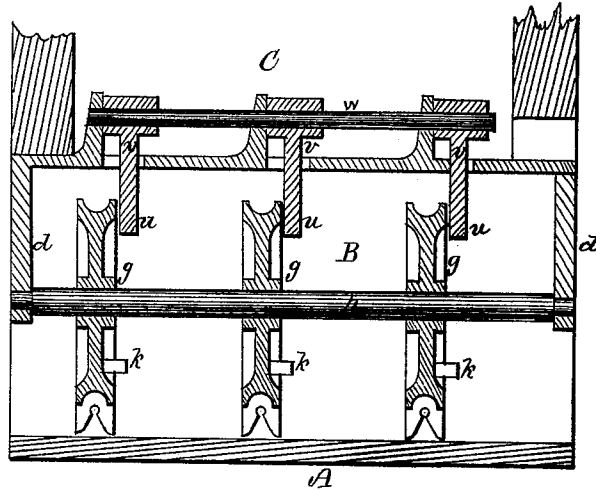
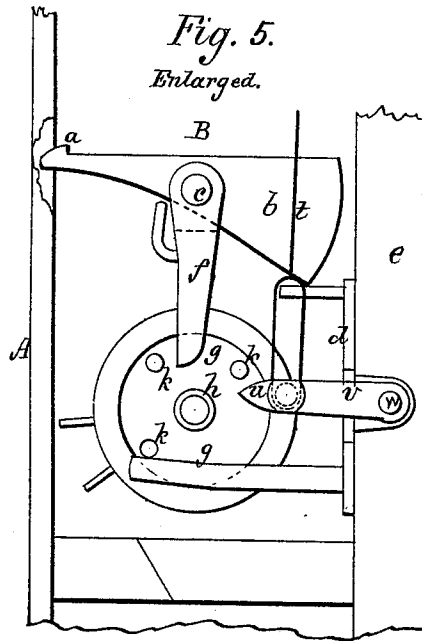


Fig. 5.
Enlarged.



Witnesses. *J. H. Cunningham.*
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M. C. Boardman. *H. Curtis. Atty.*

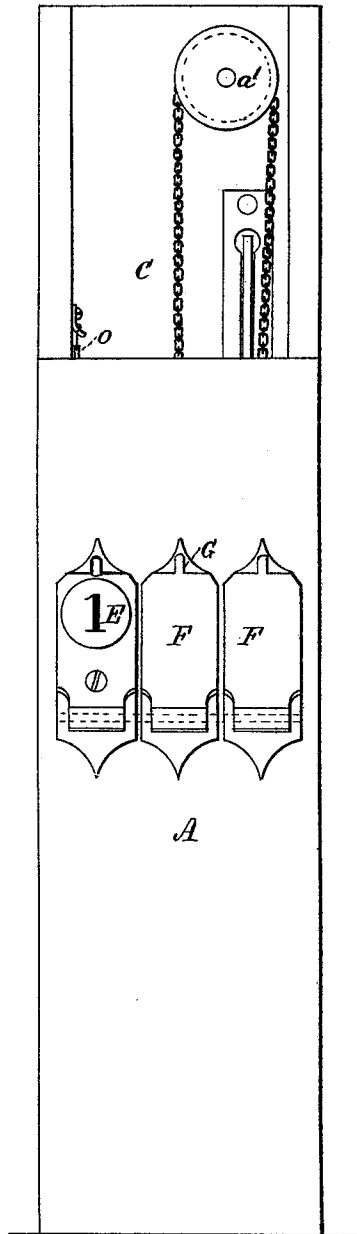
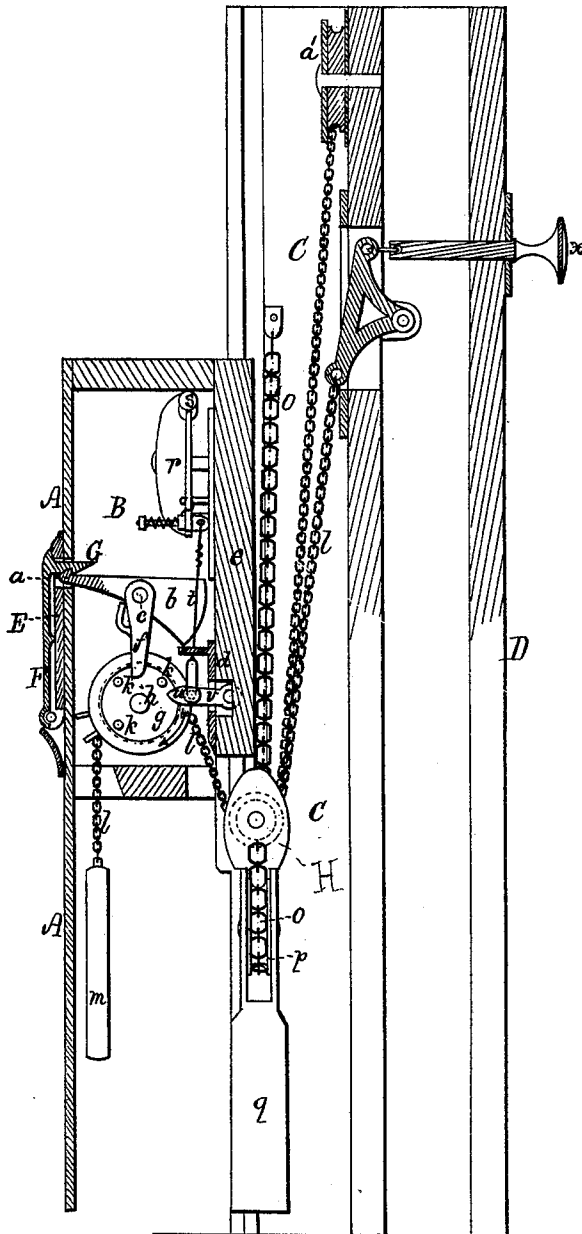
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Fig. 3.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES R. CREIGHTON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELEVATOR-ANNUNCIATORS.

Specification forming part of Letters Patent No. **175,338**, dated March 23, 1876; application filed February 21, 1876.

To all whom it may concern:

Be it known that I, JAMES R. CREIGHTON, of Boston, Suffolk county, Massachusetts, have invented an Elevator Annunciator, of which the following is a specification:

The purpose of my present invention is to provide an annunciator for elevators which shall be operated by positive mechanical devices in lieu of by electricity, as now generally practiced; and to this end I employ, in connection with and carried by the elevator-car, a mechanism for enabling a person upon any floor or landing to actuate or expose within the car the number or character corresponding to such floor, and also, if desirable, to sound a gong or other signal to attract the attention of the attendant. As a portion of the mechanism, or that operated by the caller, is of necessity stationary, while that attached to the car travels with the latter, it becomes necessary to provide a means of compensating for such varying conditions, and for the approaching or receding of such car from a given point.

To accomplish the object of my invention in one manner in which I have practically demonstrated the working of such invention, I dispose within a suitable cabinet or inclosure, making part of the rear of the interior of the car, a series of tilting latches or pallets, one to each story, these latches serving, when in their normal position, to engage and lock, in a closed position, the covers or drops which conceal the numbers of the various floors, each latch being operated by a scape or sprocket wheel, whose movements are controlled by a cord or chain passing partially about it, and about one of the sheaves of a pulley-block suspended in part from the car and in part from the car-roadway, one end of said cord or chain being connected with some one of the pull-knobs, which are placed at the various landings, while the other end is provided with a weight to restore the scape-wheel to its idle position, and avoid slack of the chain, the series of scape-wheels being mounted loosely and independently upon a horizontal rod, and adjacent to a rock-shaft carrying a series of fingers, and connected with a gong or other signal, the whole being so arranged that a pull upon any knob by a

person desiring passage effects a corresponding pull upon the chain, and such pull upon the chain effects a partial rotation of the adjacent or accompanying scape-wheel, and, through one of the teeth of the latter, a consequent disengagement of the latch and falling of the drop, which conceals the number of the floor from which the call is made, while simultaneously with this fall of the drop another tooth of the scape-wheel actuates the rock-shaft and sounds the signal, it being observed that the scape-wheel is rotated in one direction by the pull upon the knob, and returned by the weight attached to the other end of the chain.

A very important, and indeed vital, element in my present invention is the employment of a pulley-block or its equivalent, which constitutes a take-up or compensator for the relative changes in position between the car and the pull or signal cords or chains, and serves not only to take up the slack of such chains, so that in any position in which the car may be a pull upon any one chain shall actuate the scape-wheel and signal, but provide a resistance sufficient to overcome the contra-weight upon the free end of each pull-cord. To effect this object the pulley-block must travel with the rise and fall of the car at much less speed than that of the latter, and I consequently support or suspend it upon or from a chain or rope, one end of which is attached to the wall of the elevator well or roadway, and the other to some proper point upon the rear of the car, the whole being substantially as hereinafter explained.

The drawings accompanying this specification, and illustrating my invention, represent, in Figures 1 and 2, elevations of a portion of the rear inner wall of an elevator-car and the rear of the roadway of the same, showing the application of my invention. Fig. 3 is a vertical section of the same through one of the drops and its actuating mechanism. Fig. 4 is a horizontal section, and Fig. 5 a side view, of the drop-operating mechanism.

I employ, necessarily, a series of pull-knobs, one to each landing or floor of the building in which the elevator is situated, and I employ also a like number of drops and number-plates, and of scape-wheels and pallets; but as these

are simply counterparts of each other in purpose and operation, and vary in number with the number of floors of the structure, I shall describe the construction and operation of but one.

In the drawings above referred to, A represents the inner wall or side of the car of a passenger-elevator, and at B a chamber or inclosure in rear of such wall, and constituting part of the car. C represents the rear part of the well or roadway in which the said car travels, while D is supposed to represent the wall or partition of the hall of the hotel or other structure, which conceals the elevator-well.

In carrying my invention into practice, I affix to the inner face of the wall A of the car a plate or shield, E, upon which I engrave or engross the number, letter, or other representative of one of the floors of the structure in which the elevator is employed; and to the lower part of such plate E I hinge, also at its lower part, a drop or cover, F, for concealing from sight the character upon said plate, such cover being provided at top with an inwardly-projecting hook or catch, G, which passes through an opening in the plate and the wall A, and engages a similar hook or catch, *a*, formed upon the outer end of a horizontally-cocking tripper, *b*, which is situated immediately in rear of the wall A, and is pivoted upon a horizontal rod, *c*, which is supported within or by brackets *d d* affixed to the rear side *e* of the inclosure B, before named. I further suspend from the rod *c*, and alongside the tripper *b*, a pendulous finger or pallet, *f*, while immediately below the said tripper, and to one side of said finger, I dispose a sprocket-wheel, *g*, which is mounted loosely and independently upon a second horizontal rod or support, *h*, placed below and parallel with the rod *c*, and, like the latter, duly supported by brackets. Upon the side of the wheel *g* next the pallet *f*, I affix a series of laterally-projecting pins, *k*, &c., which are equidistant from each other, the disposition of these pins with respect to the free end of the pallet *f* being such that, as the wheel is turned upon its axis in the direction of its arrow, one of such pins intercepts and actuates the pallet, as herein-after stated. A chain, *l*, or its equivalent, whether a cord or wire, or otherwise, is carried over, and partially about, the periphery of the sprocket-wheel *g*, and with one end dropping in front of such wheel, and having attached to it a weight, *m*, for returning the wheel to its normal position after a call has been made. From the rear side of the wheel *g* the chain *l* is led to and carried below, and partially about, as sheave, *n*, making part of a pulley-block, H, which is disposed within the roadway C, and in rear of the wall *e* of the inclosure B, this block H being suspended from a chain, *o*, or its equivalent, and upon a sheave, *p*, introduced into it below its legitimate hoisting-sheaves *n*, before named, one end of said chain *o* being secured to one side of the

roadway C about midway the height of the latter, and the other end secured to the under side of the car or of the wall *e*, while a heavy weight, *q*, is attached to the lower part of the block H, to maintain the perpendicularity of the latter, and to constitute a means of tension or resistance to withstand a pull upon the pull-chain *l*, and transmit the force of such pull to the wheel *g* at whatever position or altitude the car may be in.

From the sheave *n* the chain *l* is led upward to a point in the roadway C opposite or about on a level with the particular floor or landing of the building which the wheel *g* is identified with, and the end of the chain is provided with a knob, *x*, which is in a convenient position to be pulled by a person desiring passage. To provide a signal which shall attract the attention of the car-attendant when a call is made, I affix to the wall *e*, and over the tripper *b*, a gong or bell, *r*, and hammer *s*, of ordinary construction, and to the actuating end of such hammer I connect the upper end of a wire, *t*, which descends to and is swiveled at its lower end to the inner extremity or nose *u* of a horizontally-rocking arm or finger, *v*, which latter is attached rigidly at its rear end to a horizontal rock-shaft, *w*, pivoted within bearings in the wall *e* and in rear of the rod *h*, which supports the sprocket-wheel *g*, the nose of such finger *v* being situated immediately below one of the pins *k* of the said wheel, and so as to be intercepted and actuated by such pin upon a movement of the wheel.

The operation of the above-described mechanism is as follows: A person desiring to ride in the elevator pulls upon the knob *x*, and this pull is, through the chain *l*, transmitted (via the pulley-block H as a bearing) to the sprocket-wheel *g*, with the effect of partially rotating such wheel upon its axis. In this movement of the wheel one of its pins *k*, or that next in advance of the pendent finger or pallet *f*, wipes against and forces such pallet rearward, and depresses the front end or hook of the tripper *b*, and consequently disengages such hook from the hook of the drop F, and permits the latter to drop by its own gravity and expose the number behind it, thus indicating to the car-attendant the number of the floor from which the call is made. Simultaneously with the movement of the finger *f* by the pin *k* of the sprocket-wheel *g*, the next succeeding pin of such wheel wipes against and depresses the nose of the finger or arm *v*, and the depression of this finger, through the wire *t*, actuates the hammer *s* and sounds the gong, thus attracting the attention of the attendant in the event of his not having noticed the exposure of the number, as before alluded to. The fallen drop should be returned to place at once by the attendant, and this is the only act requisite to restore the parts to their normal positions, as the weight returns the wheel *g* to place and tightens the chain *l*.

Under the arrangement and relative proportions of the mechanical elements herein ex-

plained, the pulley-block H travels about half the distance of the car, but this proportional rate of speed is not arbitrary, but may be varied to meet varying conditions.

As the position of the two ends of the chain *l* must not be changed or disturbed, or the chain between its two extremes allowed to become slack on the one hand or unduly taut on the other, by the rise or fall of the elevator-car, in order to properly operate the drop and signal, an intermediate guide or bearing, which shall automatically adapt itself to the changing positions of the car and chain, becomes necessary.

As before stated, the block H, or its equivalent, is an important element in my annunciator, as it constitutes a traveling or variable pivot or bearing for the chain *l*, whereby the latter is enabled to adapt itself to the various changes in altitude of the car, and is maintained in a taut condition, in order that a pull upon it shall be instantly transmitted to the devices which actuate the gong and free the drop.

In order that the chain which connects with the pull-knob of the lowest floor may be enabled to exert the requisite downward pull upon the sprocket-wheel, or other actuator of the drop and gong, and possess sufficient length to permit of the requisite movements of the car, I carry such chain over a pulley, *a'*, situated at or near the top of the roadway.

Though I have, as before stated, explained the nature and operation of but one series of drops and pulls, and their actuating mechanisms, in connection with the car, it will be understood that a series of such devices are to be employed, varying in number with the number of floors or landings of the structure in which the elevator is placed, and in the accompanying drawings I have represented several drops and pull-chains, with their actuating mechanism.

I do not confine myself to the precise details of mechanism as herein laid down, and as shown in the accompanying drawings, whereby to adapt the pull upon a knob to operate the drop and gong in connection with the car, as I believe my invention to embrace the combination, with an elevator-car, of direct-acting mechanical devices for effecting such a result, without regard to minute or restricted details by which it is carried into effect.

As far as my knowledge extends, electricity has heretofore been the only agent employed by which a person desiring passage has given notice to the attendant of the car; and my purpose in employing direct-acting mechanical appliances is to avoid the expense, trouble, and objections of many kinds attendant upon this mode of signaling.

I claim—

1. The combination, with an elevator-car, of direct-acting mechanical devices, substantially as herein explained, whereby a pull upon a chain, or its equivalent, gives notice to the attendant that the car is wanted at a given floor, essentially as and for purposes stated.

2. The combination of the chain *l*, pulley-block H, and elevator-car with a suitable auxiliary mechanical device for giving notice to the attendant of the want of the caller, substantially as and for purposes stated.

3. The combination of the pull-chain *l*, wheel *g*, and weight *m*, or other means of exerting tension upon the chain, with the elevator-car and the compensating pulley-block H, or its equivalent, and in connection with a suitable device for imparting notice to the attendant, substantially as and for purposes stated.

4. The combination of the chain *l*, wheel *g* with its pins *k*, tripper *b* with its accompanying finger or pallet *f*, and the drop or cover *F*, in connection with the number or character plate *E*, substantially as and for purposes stated.

5. In combination with the pull chain *l* and the wheel *g*, the gong *r*, operated by the rocking finger or arm *v*, or its equivalent, whereby the gong is sounded simultaneously with the lowering of the drop and exposure of the number behind it, substantially as and for purposes stated.

6. The pulley-block H, pull-chain *l*, and suspensory chain *o*, with the elevator-car, substantially as and for purposes stated.

7. In general combination, the chains *l* and *o*, pulley-block H, wheel *g*, tripper *b*, pallet *f*, and drop *F*, with the elevator-car, substantially as and for purposes stated.

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Witnesses:

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W. E. BOARDMAN.