

No. 646,721.

Patented Apr. 3, 1900.

W. H. BAKER & F. E. KIP.  
ELECTRICAL INDICATOR FOR ELEVATORS.

(No Model.)

(Application filed Feb. 2, 1899.)

2 Sheets—Sheet 1.

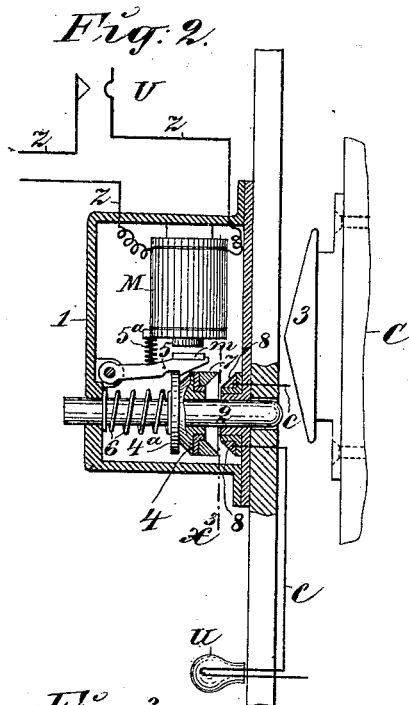
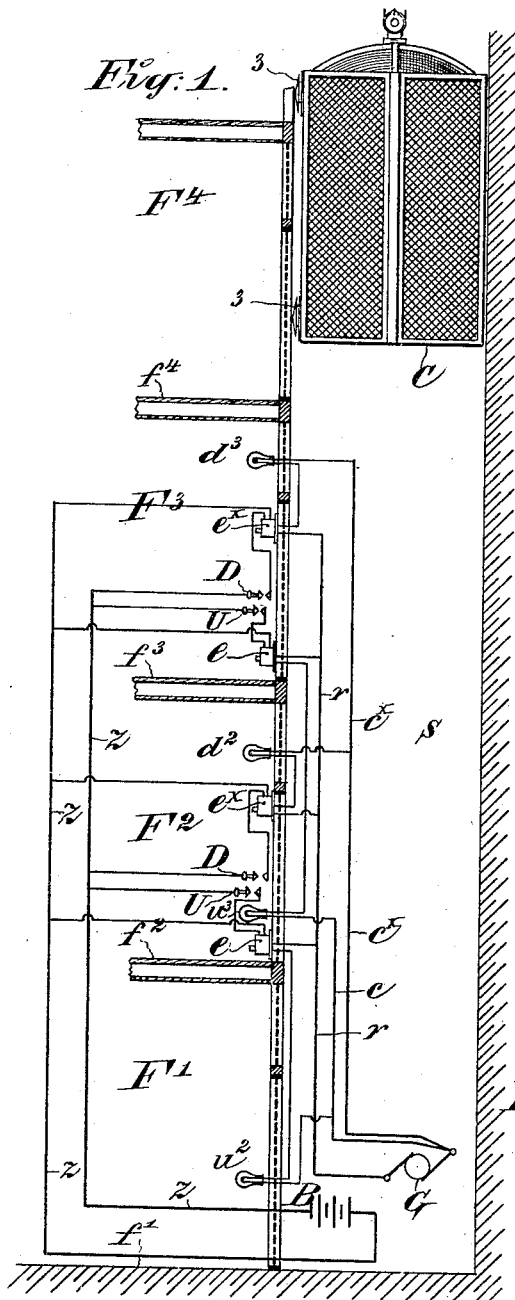
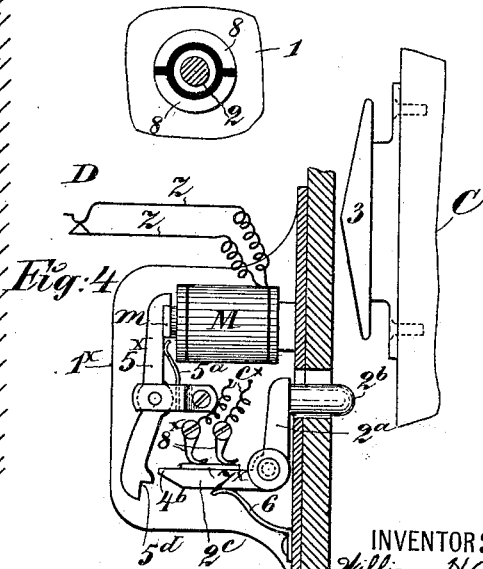


Fig. 3.



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Fig. 5.

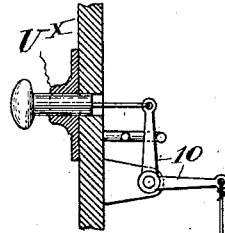
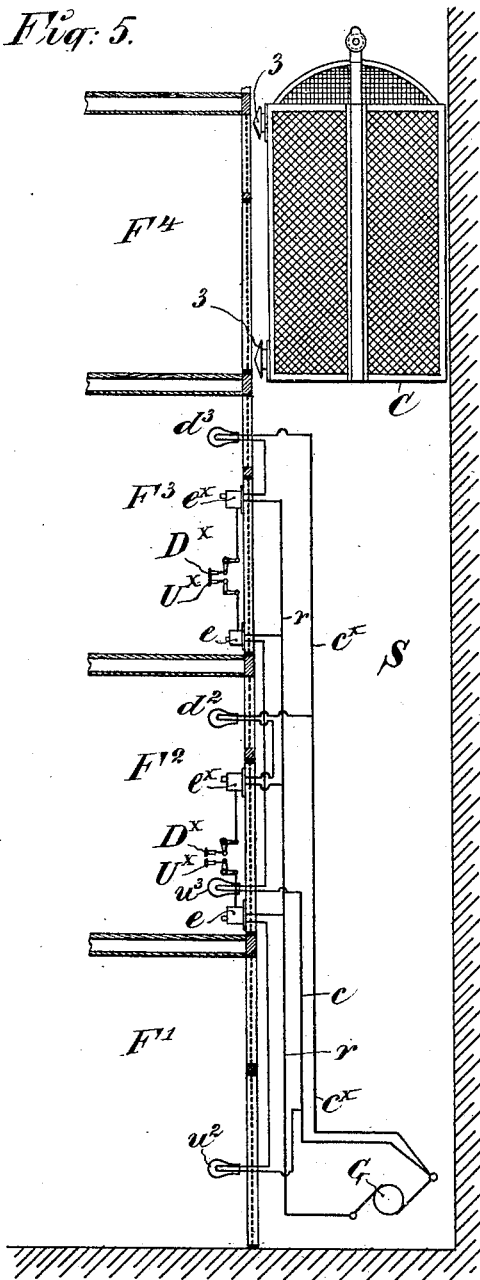


Fig. 6.

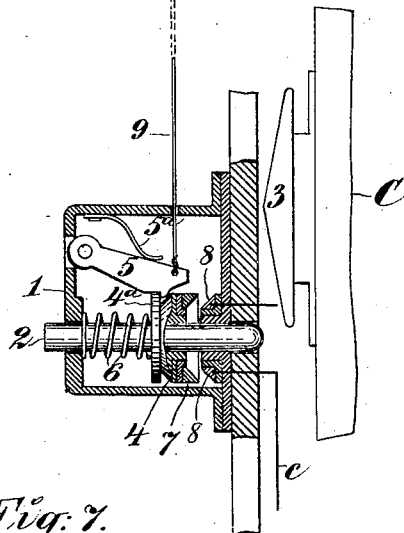
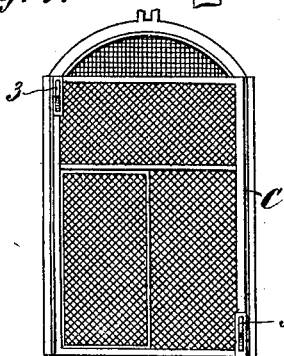


Fig. 7.



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# UNITED STATES PATENT OFFICE.

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## ELECTRICAL INDICATOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 646,721, dated April 3, 1900.

Application filed February 2, 1899. Serial No. 704,249. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. BAKER, residing at Central Falls, Providence county, Rhode Island, and FREDERIC E. KIP, residing at Montclair, Essex county, New Jersey, citizens of the United States, have invented certain new and useful Improvements in Electrical Indicators for Elevators, of which the following is a specification.

10 This invention relates to electrical devices whereby a person on any intermediate floor may indicate to the boy or operator in the elevator or car his desire to go up or down; and it has for its object to enable one who may be  
15 waiting for a car to close a current through an incandescent lamp at his floor or story, and within sight of the boy in the car, by manipulating suitable mechanical devices, one being marked "Up" and the other  
20 "Down." Operating one device lights, for example, a red lamp to designate "up" and the other lights, for example, a blue lamp to designate "down." As the car approaches and before it reaches the stopping-point,  
25 with its bottom level with the floor of that story, the boy in the car sees the light in time to stop the car. The exact position of the lights is not important to this invention, so long as they are so placed that the boy or person operating the elevator may see them in  
30 time to stop the car and may know which floor they indicate. Operating devices and lights will of course be provided for all the intermediate floors. None will be needed on  
35 the upper and lower floors, where the car necessarily makes stops.

Means are provided whereby the car in its movement up or down breaks the lamp-circuits, thus extinguishing the lamps, and sets  
40 the lamp-circuit closers.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a somewhat-diagrammatic view, on a small scale, showing the elevator-shaft, the car, and the circuits. Fig. 2 is a sectional  
45 view, on a large scale, showing one of the circuit-closers employed in making and breaking the lamp-circuits. Fig. 3 is a sectional view on line  $x^3$  in Fig. 2 and showing the  
50 semicircular conical contacts which form terminals of the lamp-circuit. Fig. 4 is a view

similar to Fig. 2, showing a slightly-different construction of the circuit-closer. Fig. 5 is a view similar to Fig. 1, and Fig. 6 is a view similar to Fig. 2, illustrating mechanical in  
55 lieu of electromagnetic means for operating the device for breaking and closing the lamp-circuit. Fig. 7 shows the preferred positions of the cam-pieces on the car C.

Referring to Fig. 1, S represents the elevator-shaft, C the car therein, and  $F'$ ,  $F^2$ ,  $F^3$ , and  $F^4$  the several stories of the building. There may be and usually are many more than four stories in buildings where elevators are used; but the number is not important to  
60 this invention. The floors are indicated at  $f'$ ,  $f^2$ ,  $f^3$ , and  $f^4$ .

G represents diagrammatically the generator which supplies the lamp-circuits, and B a battery or generator which supplies the  
65 push-button circuit for closing the lamp-circuits.

The two series of lamps used should have something to distinguish them, and this may be, conveniently, color, as red and blue, the  
75 former, for example, indicating "up" and the latter "down." As represented in Fig. 1, the red or "up" lamps are designated  $u^2$  and the blue or "down" lamps are designated  $d^2$  and  $d^3$ . The lamps  $u^2$  and  $u^3$  are in  
80 a circuit  $c\ r$  and the lamps  $d^2$  and  $d^3$  are in a circuit  $e^x\ r$ . The letter  $r$  designates the return-conductor for both circuits. In the branch circuit of each lamp is a normally-open break controlled by a circuit-closer,  
85 (seen in detail in Figs. 2 and 3,) and this circuit-closer is controlled for closing the lamp-circuit by a push-button or the like. In Fig. 1 the circuit-closers for the lamps  $u^2$  and  $u^3$  are designated by  $e$  and those for the lamps  
90  $d^2$  and  $d^3$  by  $e^x$ . The "up" push-buttons are designated by U and the "down" push-buttons by D. The operative circuit which controls the circuit-closers  $e$  and  $e^x$  is designated  
95 by  $z$  and may be arranged in any manner familiar to electricians.

Referring now to Figs. 2 and 3, the construction and operation of the circuit-closer will be explained. Within a box or frame 1 is mounted a slide 2, arranged horizontally.  
100 The box is so mounted with respect to the elevator-shaft that the rounded end of this

slide may under certain conditions project into the path of a cam-piece 3 on the car. Fixed on the slide 2 is a collar 4, having a shoulder at 4<sup>a</sup>, and pivotally mounted in the box 1, adjacent to the slide, is a detent or hook latch 5, adapted to engage the shoulder 4<sup>a</sup> and hold the slide 2 withdrawn and its spring 6, which tends to advance it, compressed. The detent 5 is backed by a spring 5<sup>a</sup> and carries at its free end an armature *m*, situated adjacent to the poles of an electromagnet M in the box 1. If the magnet M be excited, it will attract the armature *m*, and thus lift the detent 5 free from the shoulder 4<sup>a</sup>. The slide 2 being then free, it will be instantly moved endwise by its spring 6, thus bringing a hollow cone of metal 7, which it carries and which forms a contact-piece, into electrical contact with the two cone-shaped terminals 8 8 of the lamp-circuit, thereby closing the latter.

Fig. 2 shows the parts of the lamp-circuit closer in their normal positions, with the lamp-circuit open. The coils of the electromagnet M are in the circuit *z*.

In Fig. 2 the push-button is designated by U, the lamp by *u*, and the lamp-circuit by *c*. When the button U is pressed, closing the circuit through the magnet M, the latter is excited, attracts its armature *m*, lifts the detent 5, and sets free the slide 2. The spring 6 instantly drives the slide forward, and the circuit is closed through the lamp *u*.

The upwardly-moving car *c* in passing on up causes the cam-piece 3 thereon to wipe over the rounded end or nose of the slide 2 and press the latter back far enough not only to break the lamp-circuit and extinguish the lamp, but far enough for the detent 5 to wipe over and engage the shoulder 4<sup>a</sup>, thus holding the lamp-circuit open. When the slide 2 is protruded to its full extent and the lamp-circuit is closed, the free end of the latch-detent 5 will still rest on the collar 4. The contact 7 and terminals 8 will be suitably insulated, as indicated in Fig. 2.

There will be, by preference, two cam-pieces 3 on the car C, (see Fig. 7,) one situated near the top of the car to act on the circuit-closing devices *e*<sup>x</sup> when going down and the other situated near the bottom of the car to act on the circuit-closing devices *e* when going up, and they will be in different vertical planes, as will also be the two sets of circuit-closing devices. The reason for placing the cam-pieces on the car as described is that the light may be extinguished as the car passes away from the story to which the light belongs, either up or down.

Fig. 2 shows a simple construction of the lamp-circuit closer, and in this view the slide 2 and collar 4 are cylindrical; but this form is only adopted for convenience. Indeed it is not very material just how this device is constructed, so long as the essential features are retained. It must have a magnet and detent for holding and releasing, it must make

the contact automatically when the magnet is excited, and the cam-piece on the car must break the lamp-circuit and set the device again. Obviously this may be effected by other constructions than that shown—as, for example, the construction seen in Fig. 4. In this view the inclosing box or case 1 is omitted and the devices are mounted on a suitable frame or plate 1<sup>x</sup> of any kind. The magnet M has its armature *m* mounted on a lever 5<sup>x</sup>, with a hook or shoulder 5<sup>a</sup> to take over the end 4<sup>b</sup> of a bell-crank lever, the upright arm 2<sup>a</sup> of which carries a nose-piece 2<sup>b</sup>, which projects into the path of the cam-piece 3 on the car, and the horizontal arm 2<sup>c</sup> of which carries a contact-piece 7<sup>x</sup>, which closes the circuit at the terminals 8<sup>x</sup> of the lamp-circuit. Fig. 4 shows the parts as they appear at the instant a push-button, as D, is pressed.

Where mechanical manipulation is relied on to close the lamp-circuit—as by pulling on a knob, for example—to release the slide 2 or its equivalent, the construction seen in Figs. 5 and 6 may be employed. In this case the battery B, the circuit *z*, and the magnet M and its armature will be dispensed with and mechanical devices substituted in their stead, as the construction seen in Fig. 6, for example. In this view the detent 5 is the same as that seen in Fig. 2 and the circuit-closing devices are the same; but the magnet M and its armature *m* are omitted and in lieu thereof a cord or pull-wire 9 is attached to the detent 5 and extends to a detent-operating device, such as the pull U<sup>x</sup>. Change of direction in the pull-wire may be effected, as in bell-wires and the like, by bell-cranks 10, properly placed and arranged. In Fig. 5 the “up” pulls are designated by U<sup>x</sup> and the “down” pulls by D<sup>x</sup>. Where the force of the pull is exerted downward it will only be necessary to invert the device illustrated in Fig. 6.

In Figs. 1 and 5 only enough lamps and circuit-closers are shown to make the invention clear; but the system shown may be repeated for all the floors in the building. It will be noted also that, as shown in Figs. 1 and 6, the “up” lamps *u*<sup>2</sup> and *u*<sup>3</sup>, pertaining to the second and third stories, are really situated in the stories below those to which they respectively pertain. This placing of the lamps is a matter of judgment.

Having thus described our invention, we claim—

1. The combination with an electric signal-lamp situated adjacent to an elevator-shaft and visible from the elevator-car, an electric circuit including said lamp and having a break in it which must be closed to light the lamp, a lamp-circuit closer at said break and comprising means for automatically closing said break, a detent which holds the circuit open, normally, at said break, and an electromagnet controlling said detent, an operative circuit including the coils of the magnet of the lamp-circuit closer and having a break adapted to be closed manually, means for closing

said operative circuit manually, the elevator-car, and means carried by said car for breaking the lamp-circuit and setting said detent, substantially as set forth.

5 2. The combination with an electric signaling-lamp situated adjacent to an elevator-shaft and visible from the elevator-car, an electric circuit including said lamp and having a break in it which must be closed to light  
10 the lamp, a lamp-circuit closer at said break and comprising means for automatically closing said break, a detent device which holds the lamp-circuit open, normally, at said break, said device comprising a box or frame, a horizontally-arranged slide 2 therein, a collar 4  
15 on said slide and having a shoulder 4<sup>a</sup>, a pivoted hook-latch 5 to engage said shoulder, the springs 5<sup>a</sup> and 6, the metal contact-cone 7, carried by the collar 4, and the cone-shaped terminals 8, 8, of the lamp-circuit, means substantially as described for operating the hook-latch of said detent device, an elevator-car, and a cam-piece 3 on said car and adapted to  
20 press back said slide 2, substantially as set forth.

3. In an electrical indicator for elevators, the combination with the lamp-circuit, the operative circuit, and their generators, of a  
30 the said lamp-circuit, a contact-piece adapted to be moved into contact with said terminals and close the circuit through the lamp, a detent which holds said contact-pieces out of contact with said terminals, and an electro-  
35 magnet in the said operative circuit and adapted, when excited, to attract and disengage said detent, substantially as set forth.

4. In an electrical indicator for elevators, the combination with the lamp-circuit, the  
40 operative circuit, and their generators, of a lamp-circuit closer, comprising a frame or casing situated near the elevator-shaft, a spring-slide mounted therein and adapted to

project into said shaft, a contact-piece carried by said slide and adapted to move into  
45 contact with terminals at a break in the lamp-circuit, a detent which holds said slide withdrawn, an electromagnet adapted, when excited, to remove said detent out of engagement and free the slide, and means carried  
50 by the elevator-car for pressing back said slide until it is caught by the said detent, substantially as set forth.

5. In an electrical indicator for elevators, the combination with the lamp-circuit, the  
55 lamp therein, the operative circuit, the push-button for closing the same, and the generators for supplying said circuits, of the elevator-car, provided with a cam-piece 3, and the lamp-circuit closer, the latter comprising a  
60 casing, a slide 2, mounted in said casing and adapted to be pushed out into the path of the cam-piece on the elevator-car, the collar 4 on said slide, the spring which actuates said slide when freed, the conical contact-piece 7, on  
65 the slide, the two terminals 8, of the lamp-circuit adapted to be connected electrically by the piece 7 when the slide is protruded, the hinged hook-detent 5, and its spring, said hook being adapted to engage some part of  
70 the slide and hold it withdrawn, the armature *m*, carried by said detent, and the electromagnet M, having its coils in the operative circuit, substantially as set forth.

In witness whereof we have hereunto signed  
75 our names in the presence of subscribing witnesses.

WILLIAM H. BAKER.  
FREDERIC E. KIP.

Witnesses for William H. Baker:

FRED. M. ARMSTRONG,  
JOHN N. BUTMAN.

Witnesses for Frederic E. Kip:

FRANK F. OSMERS,  
FRANK JORDAN.