

(No Model.)

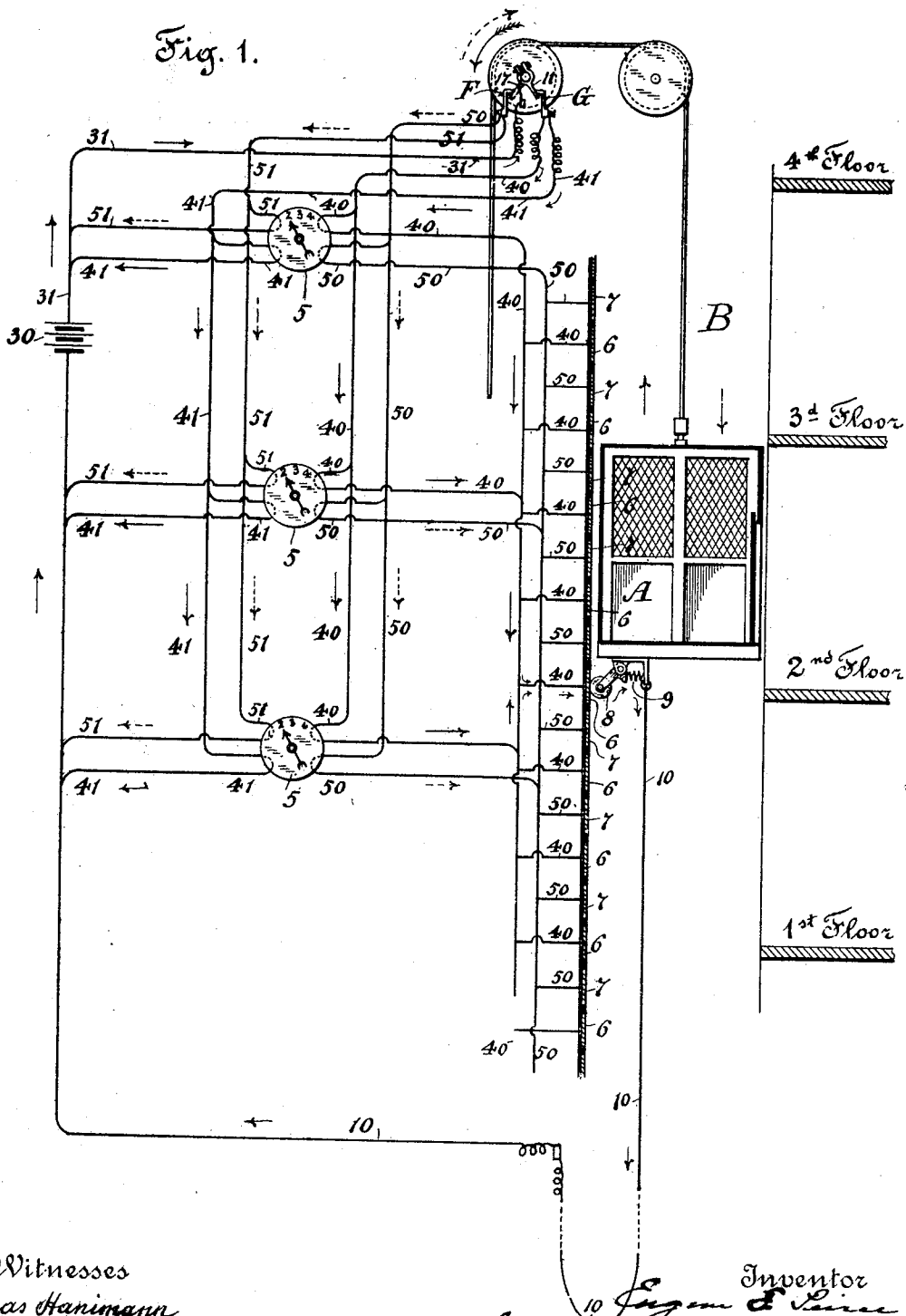
E. E. PEIRCE.

3 Sheets—Sheet 1.

ELECTRICAL INDICATOR FOR ELEVATORS.

No. 502,315.

Patented Aug. 1, 1893.



Witnesses
Chas Hanemann
N. Marler

10 *Eugene F. Lane* Inventor
By *h* Attorney *Chas. W. Forbes*

(No Model.)

E. E. PEIRCE.

3 Sheets—Sheet 2.

ELECTRICAL INDICATOR FOR ELEVATORS.

No. 502,315.

Patented Aug. 1, 1893.

Fig. 2.

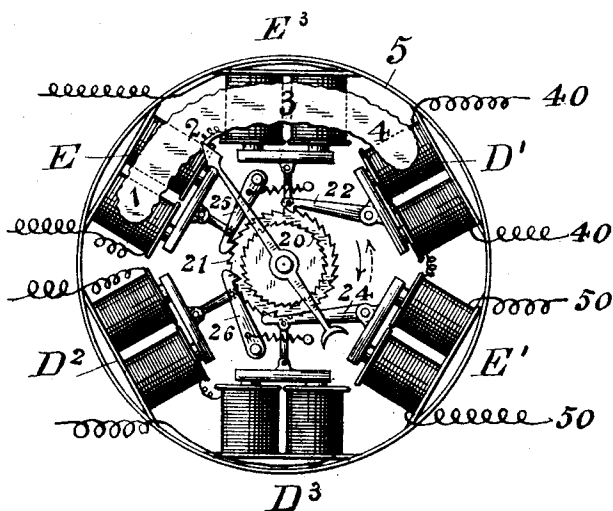


Fig. 4.

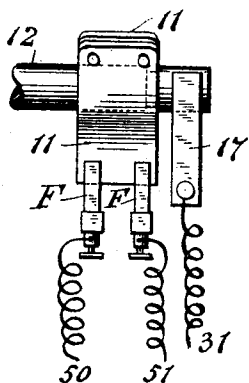
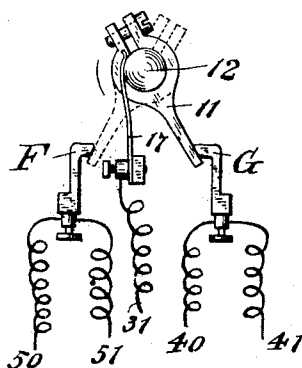


Fig. 3.



Witnesses
Chas. Hanemann
A. Maier

Inventor
Eugene E. Peirce
By *Lin* Attorney
Chas. M. Corbin

(No Model.)

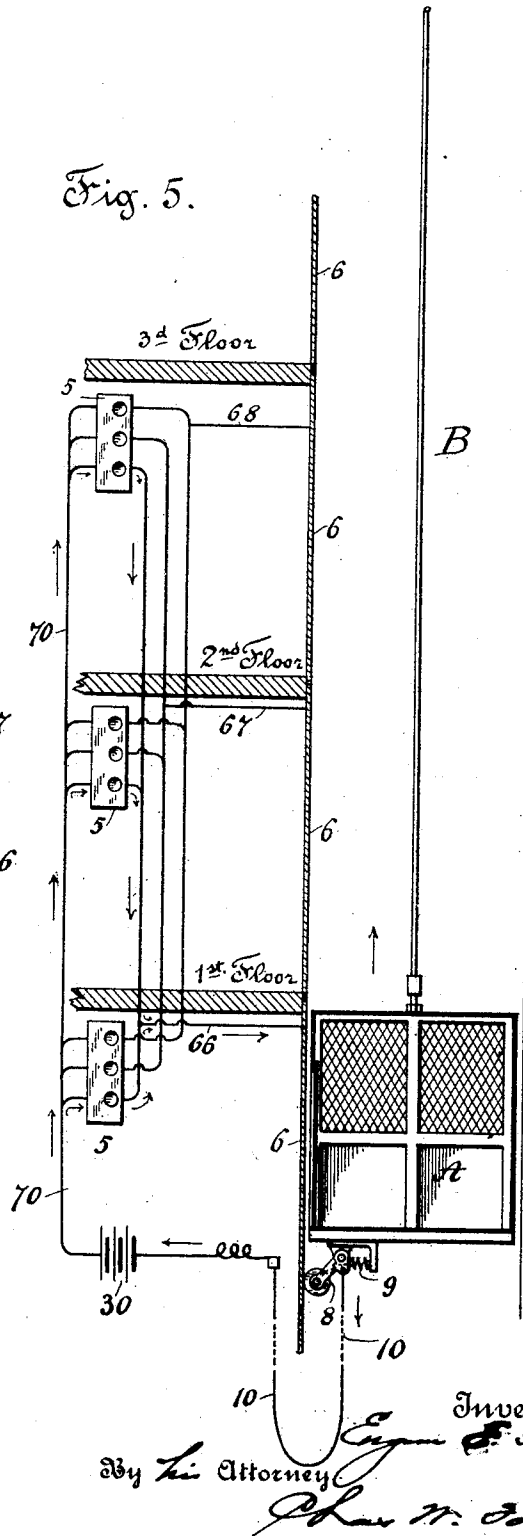
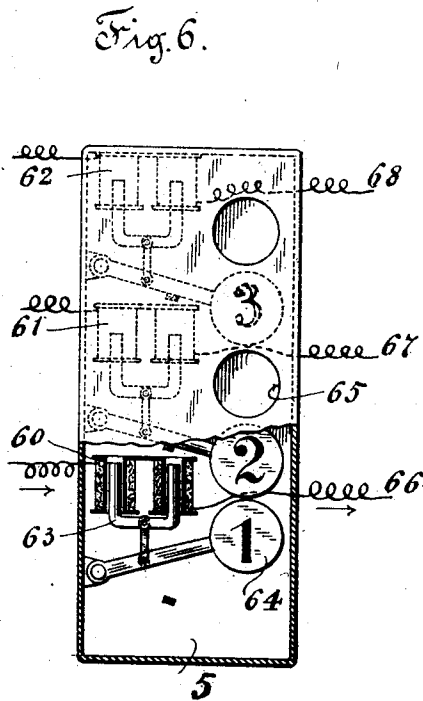
E. E. PEIRCE.

3 Sheets—Sheet 3.

ELECTRICAL INDICATOR FOR ELEVATORS.

No. 502,315.

Patented Aug. 1, 1893.



Witnesses
Chas. Hanemann
N. Marler

Inventor
E. E. Peirce
By his Attorney
Chas. H. Corbin

UNITED STATES PATENT OFFICE.

EUGENE EDGETT PEIRCE, OF BOSTON, MASSACHUSETTS.

ELECTRICAL INDICATOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 502,315, dated August 1, 1893.

Application filed July 5, 1892. Serial No. 438,960. (No model.)

To all whom it may concern:

Be it known that I, EUGENE EDGETT PEIRCE, a citizen of the United States, residing at the city of Boston, county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Electrical Indicators for Elevators, of which the following is a specification.

My invention relates to means for operating electrical indicators which indicate the position of an elevator with reference to the several floors of a building through a mechanism intermittently actuated by an electric current which is interrupted during the progressive movement of the elevator, and in order to enable others skilled in the art to which my invention appertains, to understand and use the same, I will proceed to describe the details of its construction, explain its operation and subsequently point out in the appended claims its novel characteristics.

Referring to the accompanying drawings in which similar characters of reference indicate corresponding parts throughout the several views: Figure 1, is a sectional elevation through the floors of a building showing the elevator car and the open shaft for its passage, and diagrammatically illustrating one form of the electrical apparatus and its connections. Fig. 2, is an enlarged front sectional elevation of one of the indicators in Fig. 1 showing the actuating mechanism therein. Fig. 3, is an enlarged end view illustrating in detail one suitable form of automatic current switch adapted to Fig. 1; and Fig. 4, a side elevation of Fig. 3. Fig. 5, is a sectional elevation of the elevator, the several floors of a building, and an indicating device, illustrating a modified application of my invention; and Fig. 6, is an enlarged detail view partly in section of one of the indicators in Fig. 5.

My invention consists in an interrupting device for the current, having its contact-making surfaces composed of insulated plates distributed along the shaft B, for the passage of the elevator in a permanently fixed relation to the movements of the car A, and a contact-making device 8, directly attached to the car. The plates may be variously arranged. In Fig. 1, they are employed in two

series 6, 6, 6, and 7, 7, 7, independently electrically connected, and means are provided for automatically including or cutting out one or the other of said series of plates from circuit according to the direction of motion of the car. Electrical connections are established between the separate series of plates 6 and 7 and the opposed systems of actuating mechanism in the indicators 5, 5, 5, whereby when the one or the other of said series are included in circuit, the indicating mechanism will be actuated correspondingly to the direction of motion of the car.

1, 2, 3, 4, represent the several floors of a building through which extends the vertical shaft or passage way B, for the car A.

5, 5, 5, represent the indicating dials located at each floor in a suitable visible position, bearing numbers corresponding to the numbers of the floors.

The mechanism within each indicator of Fig. 1, which is illustrated in Fig. 2, consists as follows:

20, 21, are ratchet wheels fixed to the index shaft 28, provided at their peripheries with oppositely disposed teeth.

22, 24, are the actuating pawls pertaining to the said respective ratchet wheels 20, 21; and 25, 26, the respective retaining pawls. The pawls which oppose each other are alternately thrown into or out of action by means of the electro-magnets as follows:—D' is the actuating electro-magnet for moving the index when the car ascends, by actuating the pawl 22 and ratchet 21; and E' is the actuating electro-magnet for moving the index in the reverse direction when the car descends, by actuating the pawl 24 and ratchet 20. The electro-magnet D² when included in circuit throws the retaining pawl 26 of the ratchet 20 into an inactive position when the electro-magnet D' is included to actuate the ratchet 21, and the electro-magnet E when included in circuit throws the pawl 25 of the ratchet 21 into an inactive position when the electro-magnet E' is included in circuit to actuate the ratchet 20. The electro-magnet D³ when included in circuit withdraws the actuating pawl 24 from interference when the electro-magnet D' is to be operated, while the electro-magnet E³ when included correspondingly

withdraws the actuating pawl 22 from interference when the electro-magnet E' is to be operated.

The circuit wires 40, 41, include the electro-magnets D', D², D³, which move the indicator to indicate the ascent of the car, and the circuit wires 50, 51, include the electro-magnets E', E², E³, which move the indicator to indicate the descent of the car.

In Fig. 1, 31, represents the main line of the circuit including a battery 30, or other source of energy, connecting at one end to the contact 17 of the switch 11, and at the other end to the circuit branches 40, 41, and 50, 51, and to the contact-making device on the elevator through the wire 10, a part of which latter is flexibly suspended from the car as indicated, or connected through a suitable sliding contact, or otherwise permanently connected with said contact 8 irrespective of the movements of the car.

The contact-making device 8, as represented, is composed of a contact roller maintained against the plates 6 and 7, by means of a suitable spring 9.

The switch 11 may be constructed in any suitable or well known form adapted to establish a connection of the main line 30 alternately with the branches 40, 41, or with the branches 50, 51, automatically, according to the direction of motion of the car A. I illustrate a construction, shown more fully in detail in Figs. 3 and 4, which consists in a split collar 11, upon the shaft 12, adapted to be moved by frictional engagement therewith, according to the direction of rotation of such shaft, closing the circuit through contacts F, F, and wires 50, 51, when the car ascends, or closing the circuits through the contacts G, G, and wires 40, 41, when the car descends. The contact 17 of the main line 31 bears permanently upon the shaft 12, electrically connected to the switch arm 11.

The number of interrupting contact plates 6, 6, or 7, 7, of the interrupter between each floor is to be determined according to the number of teeth on the ratchet wheels 20, 21, corresponding to the intended movement of the index hand for each floor.

The operation of the device shown in Figs. 1 to 4 inclusive, is as follows:—When the car A ascends, the switch 11 will close the circuit from the battery 30 and main line 31, through the branches 40, 41, thence through the system of electro-magnets D', D², D³, actuating the ratchet wheel 21, as hereinbefore described to give the corresponding indication. The current through wire 41 sensitizes the magnets D², D³, so as to retract the pawls 24, 26, and then returns to battery through line 31. The current simultaneously passing through wire 40, sensitizes the magnet D', actuating the pawl 22 and ratchet 21, and thence passes to the contact plates 6 of the interrupter to the contact-making device 8, and through wire 10 to battery. When the car A descends, the switch 11 will close the

circuit from the battery 30 and main line 31 through the branches 50, 51, thence through the system of electro-magnets E', E², E³, actuating the ratchet wheel 20, to give the indication corresponding thereto. The current through the wire 51 sensitizes the magnets E², E³, so as to retract the pawls 22, 25, and thence returns to battery through line 31. The current simultaneously passing through wire 50, sensitizes the magnet E', actuating the pawl 24 and ratchet wheel 20, and thence passes to the contact plates 7, of the interrupter to the contact-making device 8 and through wire 10 to battery.

It will be obvious that the series of plates 6, 6, 6, &c., may be aligned in one successive series while the plates 7, 7, 7, &c., may be placed in another successive series; the two series lying side by side; a double contact-making device 8 being provided to act thereon.

Referring now to Figs. 5 and 6, the interrupting device for the current is composed of a single series of insulated contact plates 6, 6, 6, distributed along the shaft B of the elevator in a permanently fixed relation to the movements of the car A. The contact-making device 8 directly attached to the car is constructed as hereinbefore described with reference to Fig. 1. The indicators 5 are constructed as fully illustrated in Fig. 6. The electro-magnets 60, 61, 62, have movable armatures 63 mechanically connected to raise the disks 64 into a visible position opposite the opening 65 when the magnets are sensitized; the said disk at other times dropping into a position of concealment. Each of the contact plates 6, 6, 6, pertaining to the several floors 1, 2, 3, are independently electrically connected to corresponding electro-magnets 60, 61, 62 through wires 66, 67, 68, in the manner indicated, so that while the car A moves with its contact-making device 8 upon the plates 6, 6, 6, in succession, each electro-magnet will be consecutively included in circuit and raise the disks 64 into view successively according to the motions of the car with reference to the respective floors. The several wires 66, 67, 68, pass from the electro-magnets to a common line 70, and thence through battery 30 and flexible wire 10 to contact-making device 8.

The feature which is common to Figs. 1, and 5, consists in that each insulated plate constituting the interrupting device in the passage of the elevator is so electrically connected to the indicating mechanism as to impart one unit of motion thereto corresponding to the passage of the contact-making device 8 over each successive plate.

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

1. The combination with an elevator, and an indicating device for indicating the position of said elevator, of two electro-magnets or two series of electro-magnets, and mechanism operated by one of these magnets for

actuating the indicator in one direction, and operated by the other electro-magnet for actuating the indicator in the opposite direction, means for automatically including the one or
5 the other such electro-magnet or series thereof in circuit according to the direction of motion of the car, and an interrupting device composed of a series of insulated plates in the passage of the car, and a contact-making
10 device attached to and movable with the car, all substantially as and for the purposes herein described.

2. The combination with an elevator and an indicating device for indicating the position of said elevator of two electro-magnets
15 or two series of electro-magnets and mechanism operated by one of these magnets for actuating the indicator in one direction and operated by the other electro-magnet for actuating the indicator in the opposite direction,
20 a circuit interrupting device consisting in two series of insulated contact making plates in the passage of the car, a main electric circuit and branches thereof independently including the said two electro-magnets or series

thereof and independently connected to the said two series of contact plates, and means for automatically including one or the other said branches in circuit according to the direction of motion of the car.

3. The combination with an elevator, and an indicating device for indicating the position of said elevator, of two electro-magnets or series thereof, and means for including automatically the one or the other such electro-
35 magnets or series thereof in circuit according to the direction of motion of the car, two opposed pawl and ratchet mechanisms connected to the index of the indicator respectively operated by said two electro-magnets or
40 series thereof effecting a practically continuous motion, and a current interrupter operated by the car producing a plurality of interruptions during the travel of said car from one floor to either adjacent floor.

EUGENE EDGETT PEIRCE.

Witnesses:

HERBERT F. TAYLOR,
FREDERICK N. WALES.