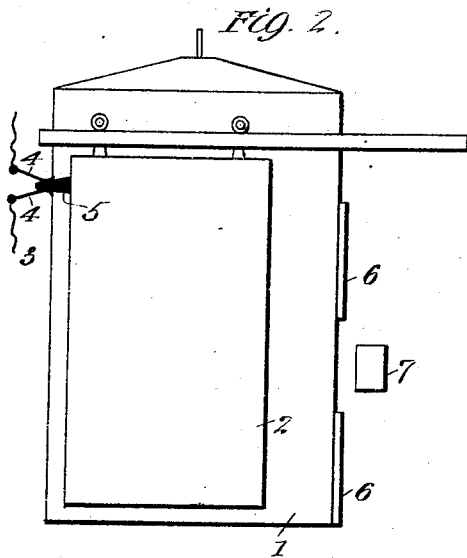
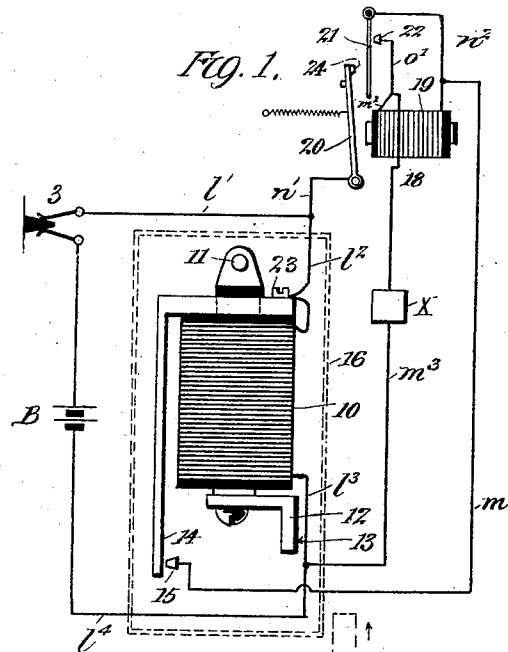
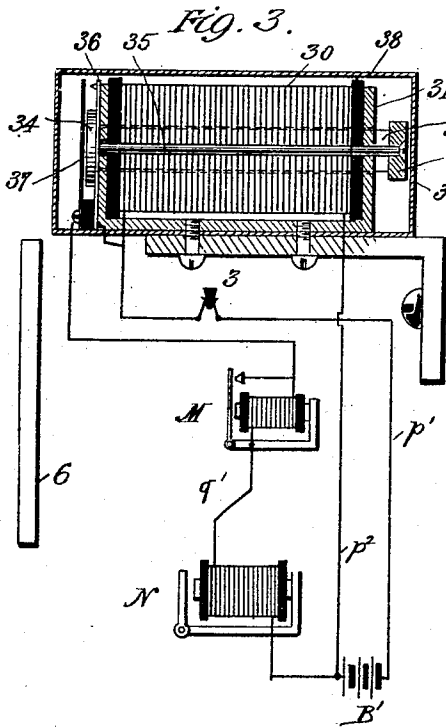
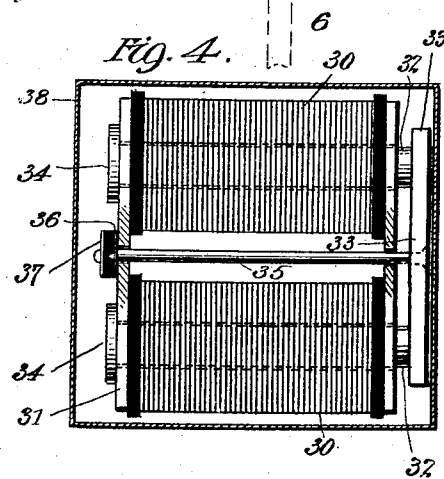
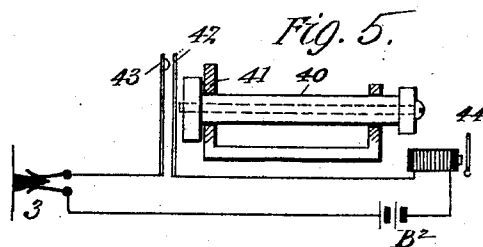


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APPLIANCE FOR ELEVATORS AND OTHER MOVABLE OBJECTS AND BODIES.
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APPLIANCE FOR ELEVATORS AND OTHER MOVABLE OBJECTS AND BODIES.

No. 909,433.

Specification of Letters Patent.

Patented Jan. 12, 1909.

Application filed January 30, 1908. Serial No. 413,398.

To all whom it may concern:

Be it known that I, ADAM LÜNGEN, a citizen of the United States, residing at the city of New York, in the borough of the Bronx and State of New York, have invented certain new and useful Improvements in Appliances for Elevators and other Movable Objects and Bodies, of which the following is a full, clear, and exact description.

My invention relates to appliances for elevators, cars, conveyances, and other movable objects and bodies, and having the broadly stated purposes and functions of Patent No. 715,648, issued to F. T. Ellithorpe.

The purpose of this apparatus is to provide for indicating or recording or both indicating and recording the failures of operators to properly close the doors at elevator landings before the car has left the same.

The principal object of the present invention is to provide a device or system for attaining the foregoing purposes, and in which no parts are subjected to the shock, jar, wear and noise incident to their engagement by a rapidly moving car or surface. I also provide for the complete inclosure of all the delicate operating parts within an entirely inclosed casing, which may be hermetically sealed, if desired, so as to absolutely preclude the entrance of dampness or dust. For this purpose I make use of a part displaced by a magnetic field, such magnetic field being rendered effective by certain magnetic bodies or elements carried upon or moved during the passage of the elevator car.

More particularly stated, my invention consists in providing a magnetic freely movable part or device at the various car landings, and which is displaced under certain circumstances by the passage of iron cheeks or shoes fastened to the car so as to pass in proximity to said magnetic part.

It is the object of my invention to render this magnetic actuation effective to produce a signal or alarm in case a door is improperly left open after a car has passed the landing thereof, and continue such signal until the door is closed.

With these and other objects in view my invention consists in the features of construction and combination as hereinafter set forth and claimed.

In the drawings: Figure 1 is a complete diagrammatic view illustrating a preferred embodiment of my invention. Fig. 2 is a

diagrammatic view showing the manner in which the apparatus is arranged when applied to an elevator; Fig. 3 is a vertical sectional view of a slightly modified construction; Fig. 4 is a top view of the same, the casing being shown in section; and Fig. 5 is a side view partly in section of another modified construction.

Referring to the drawings in which like parts are designated by the same reference sign, 1 indicates an elevator car, and 2 the door at one of the landings.

3 designates a circuit-closing device of any ordinary or preferred construction which closes a circuit when the door is open and conversely. For this purpose I may employ two spring blades 4, which are displaced to break a circuit connection therebetween by an insulating plug 5, on or in the path of the door in its closing movement. It is obvious that a circuit-closing device of this character is actuated to close its circuit whether the door is left open through a great or a small distance.

6 designate cheeks or shoes of iron or magnetic material fastened to the car so as to be movable in a single vertical line past any given point or points in the elevator shaft.

7 indicates broadly a magnetically-controlled circuit completing device embodying the principles of my invention, and which is located at a point or points in the elevator shaft in proximity to the path of movement of the cheeks or shoes 6 on the car. At a given landing, the relation is preferably that shown in Fig. 2 where the device 7 lies between but substantially out of the influence of the cheeks 6 while the car is opposite the same. In this way one or another of the cheeks 6 comes into influencing proximity to the device 7 when the car starts in either direction of movement from the landing.

The magnetically influenced circuit-completing device 7 may be constructed in widely different ways, and still secure the essential principle of the present invention, namely, having a circuit completing part displaced by magnetic influence through co-operating bodies or parts on the car in its passage. In Fig. 1 I have illustrated a preferred construction having a magnet 10, suspended or flexibly hung from a point 11. 12 indicates depending pole pieces from the magnet which may be of the angular form shown so as to present surfaces 13, of considerable area toward the cheeks 6 of the car.

14 denotes an extension rigidly depending from the frame of the magnet 10 so as to swing therewith under all circumstances. The extension 14 has its forward movement 5 limited by a contact 15, which thereby makes an electrical connection whenever the magnet is swung forwardly. All these parts may be hermetically inclosed in a casing 16.

18 designates a device which exerts a double function as follows: first, insuring the continuance of the alarm circuit when once completed until prescribed acts have been performed; and, second, making an audible buzz or sound so as to itself constitute an 15 indicator or alarm. This device includes a magnet 19, having an armature 20, movable toward and from the pole thereof. 21 indicates a circuit-closing element in the path of the armature 20 and adapted to complete a circuit at 22, when the armature 20 is fully 20 attracted. The circuits will be best understood from a description of their operation.

The action of the above described mechanism is as follows: Supposing a door has been 25 left open, it is clear that circuit closing device 3 will complete circuit of battery B, through wire l' , wire l^2 , magnet 10, wire l^3 , wire l^4 , back to battery B. The magnet 10 is therefore fully energized and its magnetized poles 30 12 are presented in the path of movement of the cheeks 6 on the elevator car. If the car now starts from the landing in either direction, one of the cheeks 6 will pass within the zone of influence of the poles 12, which exert 35 a strong attraction and draw the magnet 10 toward the right in Fig. 1. A circuit is thereby completed at the point 15 as follows: battery B, circuit-closing device 3, wire l' , wire l^2 , (which is connected to extension 14 at the point 23), contact 15, wire m' , magnet 40 19, wire m^2 , wire m^3 , wire l^4 , back to battery B. The magnet 19 is thereby energized and attracts its armature 20 which engages the element 21 at the point 24, and completes a circuit therewith as follows: battery B, circuit-closing device 3, wire l' , wire n' , armature 20, contact 24, element 21, wire N^2 , 45 magnet 19, wire m^2 , wire m^3 , back to battery B. It is evident that this circuit continues the energization of magnet 19 absolutely independently of the circuit through the magnet 10, so that magnet 19 continues to be energized notwithstanding the opening of the circuit at 15, which, of course, occurs as soon 50 as the elevator car has moved very far, owing to the removal of the cheek 6 from the poles 12. The energization of magnet 19 not only completes a circuit at 24, but also eventually at 22, since the circuit closing element 60 21 is finally borne inward against contact 22. The contact at 22 simply short circuits the magnet 19 as follows: wire o' , contact 22, and wire n^2 . The current flow through the magnet 19 is therefore effectively terminated 65 by the shunt or short circuit formed. The

magnet 19 deenergizes under this short circuit so that armature 20 commences its return movement, but the return movement only proceeds for a minute distance of travel, and before contact is broken at 24, when the 70 contact at 22 again becomes broken. It is evident that the contact at 22 will be broken before that at 24, because element 21 moves with the armature during the initial return movement of the latter. But the opening of 75 the circuit at 22 at once produces a reenergization of magnet 19, which arrests the return movement of its armature and again attracts the same before the armature has had time to interrupt the circuit at the point 24. 80 The re-attraction of the armature causes the above cycle to be indefinitely repeated so that this device acts as a buzzer and produces an audible sound. As the contact at 24 is not broken, this action continues indefinitely or until the door-controlled device 85 opens the main circuit of the battery. After the inception of the action, the magnet 10 has no effect, so that the briefest momentary closure of the circuit at 15 is all that is necessary to start the apparatus into action, 90 after which it buzzes continuously until the door at the landing has been closed. It is evident that any other desired recording or indicating device X may be inserted in the 95 circuit of battery B to produce a notification or record of the operator's error in leaving the door open.

In Figs. 3 and 4 I have illustrated another form of the invention in which 30 designates 100 magnet windings or bobbins fixed in predetermined parallel and spaced-apart relation by a non-magnetic frame 31, between the end portions of which the bobbins are secured. 32 indicates iron cores passing loosely 105 through the bobbins 30, and joined together by connecting iron yoke 33. At their forward ends these cores are expanded and flattened to form pole cheeks 34, adapted to exert an attractive influence on the shoes or 110 cheeks 6 of the car with a maximum efficiency. 35 designates a rod projecting forwardly from the yoke 33 between the bobbins 30 and engaging a spring 36. The spring 36 is normally out of electric connection 115 with a fixed blade 37, but is capable of being displaced forwardly to make contact therewith when impelled by the rod 35. Under normal circumstances the spring 36 keeps the rod 35 pressed to the right in Fig. 120 4, so that the cores 32 are drawn rearwardly in their inclosing bobbins. All of the operating parts may be hermetically inclosed in a casing 38.

M denotes a buzzer and N an indicator of 125 ordinary or any preferred construction, and electrically connected with the bobbins 30 and the battery B' by circuit operating as follows: Supposing that a door is left inadvertently open, a circuit is completed at 3, from 130

battery B', through wire p' , and wire p^2 . The bobbins 30 accordingly strongly energize the cores 32 and if the car starts so as to present a shoe or cheek 6 opposite the pole pieces 34, it is evident that the latter will be drawn forwardly and impel blade 36 against blade 37, through the rod 35. This engagement completes a circuit through the buzzer M, and the indicator N, from battery B', through the wire q' , blade 37, blade 36, and wire p' , back to battery. It is evident that only a momentary buzz and indication is made with this apparatus during the interval that the car is passing.

Substantially the same functions as last described can be obtained with the form of apparatus shown in Fig. 5. In this case 40 indicates a permanent magnet slidable through a guiding frame 41, of non-magnetic material. 42 and 43 designate spring blades which are brought into contact by the forwardly sliding movement of the permanent magnet 40. 3 designates the door circuit closer, and it is evident that a circuit from the battery B² is completed through an indicator or buzzer 44, when the circuit is completed at 3, and the blades 42 and 43 are brought into contact by the attraction of the magnet 40 by the passing shoe or cheek 6 on the elevator car.

What I claim, is:

1. In combination with a normally open circuit, a movable object carrying a magnetic body, means displaceable at predetermined points in the path of movement of said object for closing said circuit whenever so displaced, and means operating magnetically when said body on the movable object is at a predetermined position, for completing said circuit.

2. In elevators, a circuit, a door-operated circuit-closing device, means magnetically displaced by the movement of the car past a given point for completing said circuit, and a dust proof casing inclosing said means.

3. In combination with a circuit having a circuit-closing device therein, a conveyance, means magnetically displaced by the movement of the conveyance past a given point for completing said circuit, and means for maintaining said circuit completed after said magnetically displaced means has returned to normal position.

4. In combination with a circuit having a circuit-closing device therein, a movable ob-

ject, means magnetically displaced by the movement of the movable object past a given point for completing said circuit, and an alarm arranged to maintain said circuit completed after said magnetically displaced means has returned to normal position.

5. In combination with a circuit having a circuit-closing device therein, a conveyance, means magnetically displaced by the movement of the conveyance past a given point for completing said circuit, and a magnet having an armature displaced thereby to maintain said circuit completed after said magnetically displaced means has returned to normal position.

6. In combination with a circuit having a circuit-closing device therein, a movable object, means magnetically displaced by the movement of the movable object past a given point for completing said circuit, a magnet having an armature displaced thereby to maintain said circuit completed after said magnetically displaced means has returned to normal position, and means for causing said armature to vibrate through a limited distance whereby an audible alarm is given.

7. In combination with a circuit having a circuit-closing device therein, a conveyance, means magnetically displaced by the movement of the conveyance past a given point for completing said circuit, a magnet having an armature displaced thereby to maintain said circuit completed after said magnetically displaced means has returned to normal position, and a shunt circuit closed by the movement of said armature for causing said armature to vibrate through a limited extent, whereby an audible alarm is given.

8. In combination with a circuit having a circuit-closing device therein, a movable object, means magnetically displaced by the movement of said object past a given point for completing said circuit, a dust-proof casing inclosing said means, and a device arranged to maintain said circuit complete after said magnetically displaced means has returned to normal position.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

ADAM LÜNGEN.

Witnesses:

J. M. STUTCHLUNNY,
GEORGE H. JONES.