C. SCHENCK & J. M. GRAHAM.

ELECTRIC INDICATOR.

APPLICATION FILED MAY 12, 1911.

1,089,589. **Patented Mar. 10, 1914.**

2 SHEETS—SHEET 1.

Fig. 2.

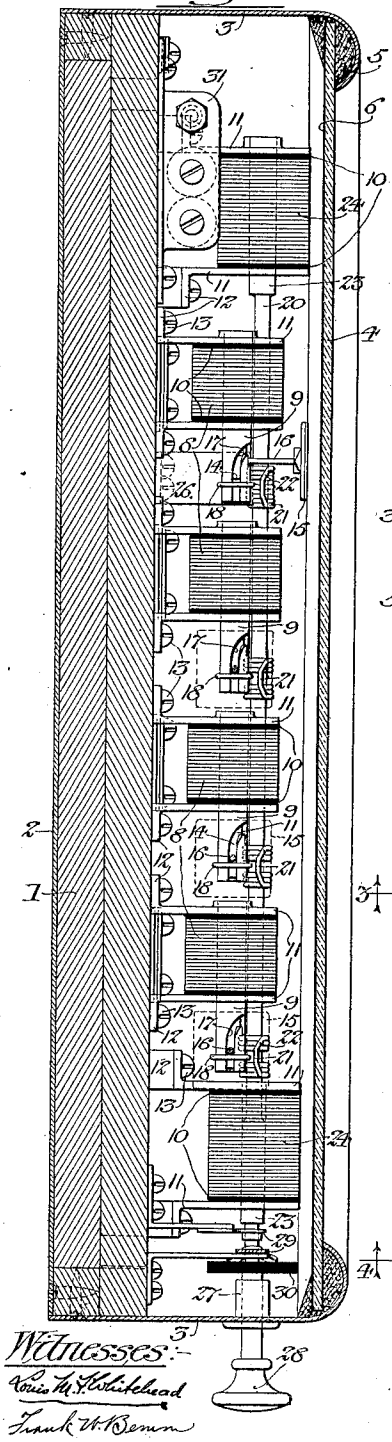
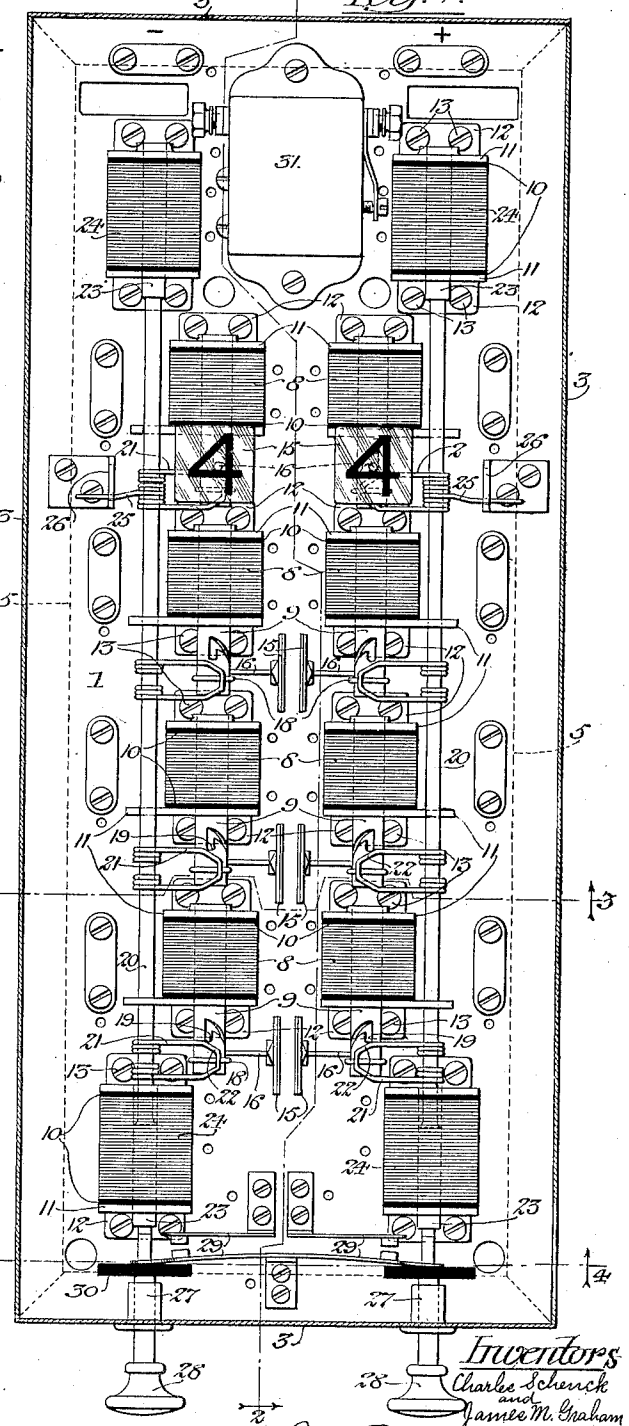


Fig. 1.



Witnesses:
Louis W. Whitehead
Frank W. Benson

Inventors
Charles Schenck
and
James M. Graham
by: Peirce, Fisher & Clapp Attys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

C. SCHENCK & J. M. GRAHAM.

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2 SHEETS—SHEET 2.

Fig. 3.

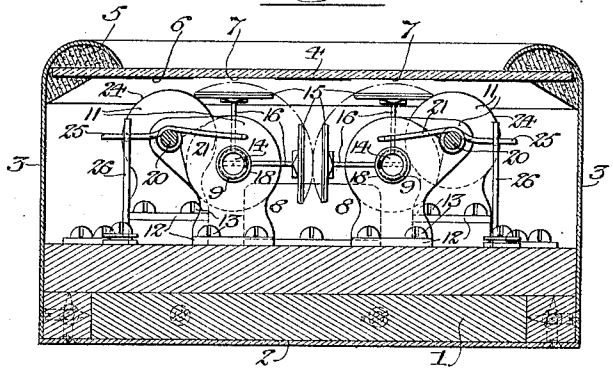


Fig. 4.

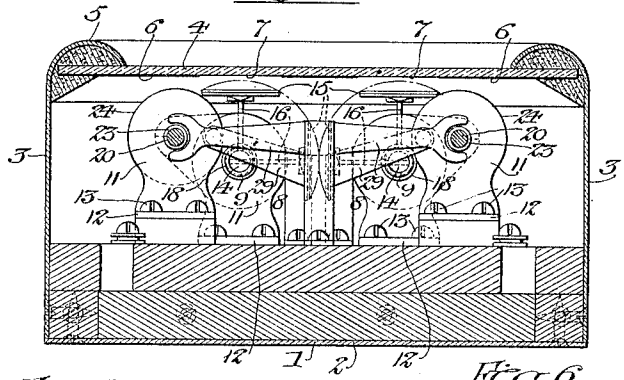


Fig. 5.

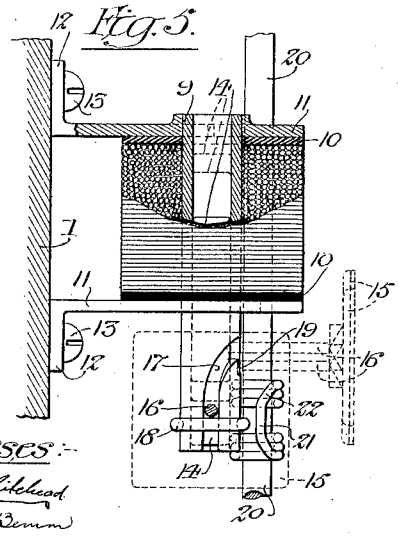
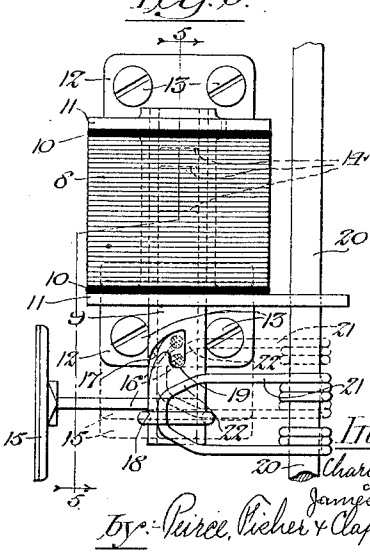


Fig. 6.



Witnesses:-

Louis W. Whitehead

Frank W. Benson

Inventor:-

Charles Schenck

and

James M. Graham

By:- Pierce, Fisher & Clapp

Attys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES SCHENCK AND JAMES M. GRAHAM, OF CHICAGO, ILLINOIS, ASSIGNORS TO ELEVATOR SUPPLY & REPAIR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTRIC INDICATOR.

1,089,589. Specification of Letters Patent. **Patented Mar. 10, 1914.**

Application filed May 12, 1911. Serial No. 626,854.

To all whom it may concern:

Be it known that we, CHARLES SCHENCK and JAMES M. GRAHAM, citizens of the United States, and residents of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electric Indicators, of which the following is a full, clear, and exact description.

The invention relates to electric indicators and more particularly to annunciator indicating devices.

The improvement seeks to provide a simple form of indicator which can be economically manufactured, together with means for shifting the indicating target or drop to set position and for restoring it to normal position, so arranged that while the target or drop is readily shifted, it cannot be easily jarred either from its normal or its set position.

The invention consists in the features of improvement hereinafter set forth, illustrated in the preferred form in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in elevation of an annunciator with the improved indicators applied thereto, the annunciator casing being shown in section. Fig. 2 is a vertical section on line 2—2 of Fig. 1. Figs. 3 and 4 are horizontal sections on lines 3—3 and 4—4 of Fig. 1. Fig. 5 is a detail view in side elevation of one of the improved indicators, with parts shown in section on line 5—5 of Fig. 6. Fig. 6 is a view in front elevation of the parts shown in Fig. 5.

The annunciator casing may be of any suitable construction. The form shown comprises a back or base board 1 preferably formed of wood and arranged within a sheet metal casing comprising a rear wall 2, top, bottom and side walls 3 and a front plate 4. In the form shown, the front plate 4 is formed of glass preferably secured at its edges within flanges 5, on the top, bottom and side walls 3. The rear face of the glass plate is provided with an opaque coat 6 which is omitted at intervals to form view openings 7 through which the indicating targets or drops are exposed when in set position.

While the improved indicator is adapted for a variety of uses, the annunciator shown is especially adapted for use in elevator cars and contains two indicators for each floor of the building, one giving the "up" signals and the other for giving the "down" signals, the "up" signaling indicators being arranged in one vertical row and the "down" signaling indicators in another.

The indicators are alike in construction and each comprises a solenoid magnet 8, the coil of which is preferably wound upon a simple sleeve 9 of brass or the like, the coil being arranged between two disks 10 of insulating material mounted on the sleeve. Small metal brackets 11 are secured to the opposite ends of the sleeve 9 and are provided with feet or perforated ears 12. Fastening screws 13 extending through the ears secure the magnets to the base-board 1. The solenoid magnets are secured in vertical position upon the base-board, with the magnets of each series preferably arranged one above the other, as shown.

The vertical sleeves 9 of the solenoid magnets extend downwardly from the coils thereof and below the lower supporting brackets 11. Each magnet is provided with a core 14 arranged loosely within the sleeve 9. The core is arranged to shift an indicating target or drop 15 in vertical direction and a cam member is arranged to effect the oscillation of the target or drop in horizontal direction. In accordance with the preferred arrangement, the core is free to oscillate within the sleeve 9 as well as shift vertically therein, and the target is fixed to an arm or pin 16 projecting from the core, so that the latter serves as a pivotal support for the target. The horizontal oscillating movement of the target, in accordance with the preferred plan of the invention, is effected by an inclined cam slot 17 formed in the lower projecting end of the sleeve 9 and through which the laterally projecting arm or pin 16 extends. A suitable stop is provided at the lower end of the slot 17 upon which the arm 16 normally rests. In the form shown, this stop comprises a ring 18 fixed upon the lower end of the sleeve 9. In this normal position of the parts, the arm or pin 16 projects laterally from the pivotal

supporting rod or core 14 and the target or drop 15 on the arm is disposed at one side of the lower end of the sleeve 9.

The lower end of the sleeve 9 is provided with a notch or seat 19 which extends downwardly from the upper end of the inclined cam slot 17 and this seat is arranged to receive the pin or arm 16 to hold the indicating target or drop in set position. The arm 16 then projects forwardly from the pivotal supporting rod or core 14 and the face of the indicating target or drop which, in the form shown, is provided with a suitable number, is exposed through the corresponding view opening 7 in the front plate 4 of the casing.

In Figs. 1, 2, 3 and 4, the targets or drops of the two uppermost indicators are shown in set position, while the other targets are shown in normal position. In Fig. 5 the different positions of the target or drop are shown in dotted lines, and in Fig. 6 the normal position of the target is shown in full lines and the other positions thereof in dotted lines. Whenever the coil of one of the indicating magnets 8 is energized, the core 14 thereof and the target 15 carried thereby are lifted vertically and at the same time the cam slot 17 coöperates with the pin or arm 16 as the latter moves to its upper end to oscillate the shifted parts through a quarter revolution. Then, when the coil is deënergized, the pin or arm 16 drops into the seat 19 and the indicating target or drop 15 is held in position behind the corresponding view opening 7.

Suitable means are provided for restoring the indicating drops or targets. In the form shown, vertically shiftable restoring rods or members 20 are provided, one for each vertical series of indicators. Each rod is provided with a series of lugs or arms 21 which are conveniently formed of U-shaped wire pieces coiled upon and rigidly fixed at their ends to the rods. There is one of these lugs or arms 21 for each indicator and each lug or arm is provided with an inclined cam portion 22 which is arranged to engage the pin or arm 16 of the target and lift it from the seat 19 in the sleeve 9, as shown in dotted lines in Figs. 5 and 6, so that the pin 16 and parts connected thereto can drop by gravity, the pin passing through the inclined cam slot 17.

The ends of the restoring rods 20 are preferably enlarged and form the cores 23 of two solenoid magnets 24. These magnets are somewhat larger than the magnets 8, but are otherwise similar in construction and are secured in vertical position in the upper and lower portions of the annunciator casing. The vertical restoring rods extend through openings in some of the brackets 11 and through the coils of the magnets 24. To prevent the rotation of the rods, arms 25 thereon extend through slotted lugs 26 mounted upon the base or back board 1. The lower ends of the rods preferably extend through guide pieces 27 fixed to the bottom wall of the casing and are provided at their lower ends with push bottons 28. The circuits of the indicator setting magnets 8 are controlled in the usual manner by switches located at any suitable points. Where the annunciator is used in an elevator car, these push buttons will be located on the different floors adjacent the elevator shaft.

The switches for controlling the restoring magnets 24 may be operated manually by the conductor of the elevator car, or other individual receiving the signals, or, if desired, such circuits could be controlled automatically, as, for example, by suitable means controlled by the travel of the elevator car. In the particular form shown, pairs of switch contacts 29 for controlling the circuits of the restoring magnets 24 are arranged within the lower portion of the annunciator casing and these switch contacts are arranged to be engaged by insulating disks 30 fixed upon the lower ends of the restoring rods 20. By reason of this arrangement a slight push upon the lower end of the restoring rod will energize the magnets 24 and insure the complete shift of the rod and the restoration of the indicating targets or drops to normal position. In the form shown, a buzzer 31 is arranged in the upper end of the annunciator casing and is preferably arranged to ring whenever one of the indicators is operated to shift its target or drop to set position.

It should be noted that with the indicating target or drop either in normal or in set position, and with the pin or arm 16 either at the lower end of the cam slot 17 or in the seat 19, these parts must be first lifted before the target or drop can be swung laterally from position. The indicating targets are thus securely held by gravity and without the use of catches or like devices, both in their normal and in their set positions. They cannot, therefore, readily be jarred from either position and are, hence, well adapted for use on elevator cars. Furthermore, the construction is extremely simple and can be economically manufactured.

It is obvious that numerous changes may be made in the details set forth without departure from the essentials of the invention as defined in the claims.

We claim as our invention:—

1. An electric indicator comprising a vertically reciprocating, horizontally oscillating support provided with a laterally projecting arm, a magnet for vertically shifting said support, a cam engaging said arm for oscillating said support, and a target fixed

to said support, said cam having a high portion intermediate its ends over which said arm is lifted by said magnet.

2. An electric indicator comprising a vertically reciprocating, horizontally oscillating support provided with a laterally projecting arm, a magnet for vertically shifting said support, a cam engaging said arm for oscillating said support, a target fixed to said support and arranged to shift therewith from normal to set position, and restoring means for said support and said target, said cam having a high portion intermediate its ends over which said arm is lifted by said magnet and by said restoring means.

3. An electric indicator comprising a vertically reciprocating, horizontally oscillating support provided with a laterally projecting arm, a cam member having an inclined slot engaging said arm with a seat therefor at the upper end of said slot, a solenoid magnet arranged to vertically shift said support and carry said arm into engagement with said seat and a target mounted upon said support.

4. An electric indicator comprising a vertically reciprocating, horizontally oscillating support provided with a laterally projecting arm, a cam member having an inclined slot engaging said arm with a seat therefor at the upper end of said slot, a solenoid magnet arranged to vertically shift said support and carry said arm into engagement with said seat, a target mounted on said support and restoring means arranged to lift said support and target and disengage said arm from said seat.

5. An electric indicator comprising a vertically reciprocating, horizontally oscillating support, a fixed member coöperating with said movable support, one of said parts having an inclined cam slot with a seat at one end and the other of said parts having a pin arranged to engage said slot and said seat, a solenoid magnet arranged to vertically shift said support to engage said pin with said seat and a target mounted on said support.

6. An electric indicator comprising a vertically reciprocating, horizontally oscillating support, a fixed member coöperating with said movable support, one of said parts having an inclined cam slot with a seat at one end and the other of said parts having a pin arranged to engage said slot and said seat, a solenoid magnet arranged to vertically shift said support to engage said pin with said seat, a target mounted on said support and restoring means arranged to lift said support to disengage said pin from said seat.

7. An electric indicator comprising a vertical sleeve having an inclined cam slot with a seat at its upper end, a movable part in said sleeve having a pin engaging said slot, a target or drop carried by said part, a solenoid magnet for shifting said part and the target carried thereby to set position with said pin engaging said seat, and restoring means for said part and target.

8. An electric indicator comprising a vertical sleeve having an inclined cam slot with a seat at its upper end, a movable part in said sleeve having a pin laterally projecting therefrom through said slot, a target fixed on said pin, and a magnet for shifting said part and the target carried thereby to set position with said pin engaging said seat, and a restoring device for lifting said target to disengage said pin from said seat and permit the return of the target to normal position.

9. An electric indicator comprising a vertically disposed solenoid magnet, a vertical sleeve whereon the coil of said magnet is wound, a movable core in said sleeve, one of said parts having an inclined cam slot with a seat in its upper end and the other having a pin engaging said slot, and a target carried by said core.

10. An electric indicator comprising a solenoid coil, a vertically mounted sleeve whereon said coil is wound, said sleeve having an inclined cam slot in its lower projecting end with a seat at the upper end of said slot, a core in said sleeve having a pin projecting through said slot, a target on said pin, and a restoring device arranged to engage said pin to lift it from said seat.

11. An electric indicator comprising a vertically reciprocating, horizontally oscillating support, a sleeve wherein said support is mounted, having an inclined cam slot with a seat at its upper end, a pin fixed to said support and arranged to engage said cam slot and said seat, a solenoid magnet for vertically lifting said support to engage said pin with said seat, a target fixed to said support and a restoring device arranged to lift said support and target to disengage said pin from said seat.

12. An electric indicator comprising a vertically disposed solenoid magnet, a core therefor having a laterally projecting arm provided with a target and a fixed cam member for horizontally oscillating said target as said core is shifted, said cam member having a high portion intermediate its ends over which said target is lifted by said magnet.

13. An electric indicator comprising a vertically disposed solenoid magnet, a core therefor having a laterally projecting arm provided with a target, a fixed cam member for horizontally oscillating said target as said core is shifted, restoring means for said target, said cam member having stops or seats at its ends for positioning said target, and an intermediate high portion over

which the target is lifted by said magnet and said restoring means.

14. In an annunciator, the combination with a casing, a vertically reciprocating, oscillating support in said casing provided with a laterally projecting pin and a target mounted on said pin at right angles thereto, a solenoid magnet for vertically shifting said support and target, a fixed cam member having an intermediate high portion for horizontally oscillating said parts as the same are shifted in vertical direction, said casing having a front arranged parallel to the set position of said target and provided with a view opening through which the target is exposed in set position.

CHARLES SCHENCK.
JAMES M. GRAHAM.

Witnesses:
HARRY L. CLAPP,
KATHARINE GERLACH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."