

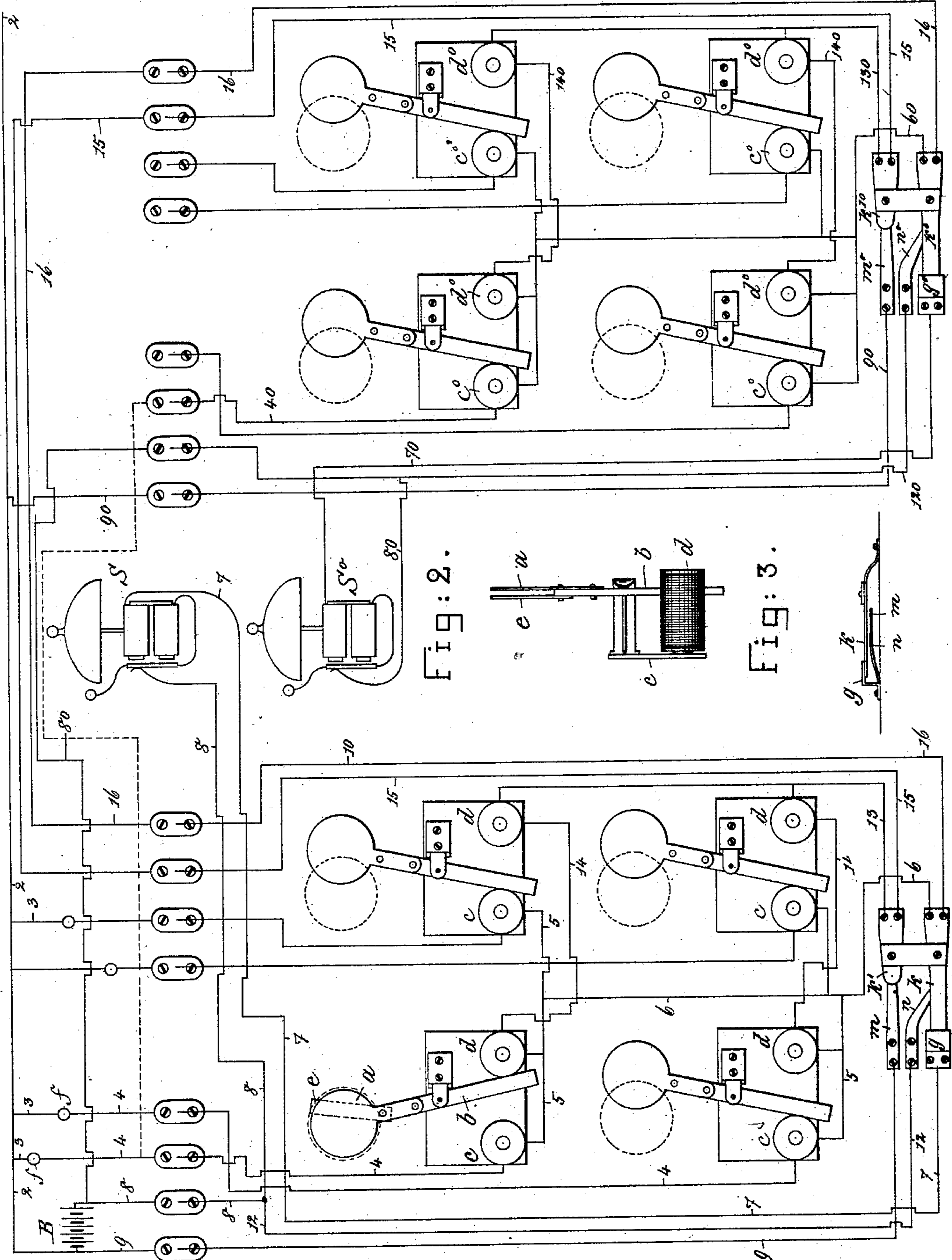
(No Model.)

C. W. HOLTZER.

MEANS FOR RESETTING ANNUNCIATOR DROPS.

No. 315,035.

Patented Apr. 7, 1885.



Witnesses.
Arthur Lippert.
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Fig. 1.

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by Leroy Gregory atty's.

UNITED STATES PATENT OFFICE.

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MEANS FOR RESETTING ANNUNCIATOR-DROPS.

SPECIFICATION forming part of Letters Patent No. 315,035, dated April 7, 1885.

Application filed May 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HOLTZER, of Brookline, county of Norfolk, State of Massachusetts, have invented an Improvement in Annunciators, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to annunciators of that class in which the numbered signal or indicator is supported upon a magnetized bar pivoted with one pole between the cores of two electro-magnets, so that when one of the said magnets is energized with the proper polarity it will repel the adjacent pole of the bar, causing it to oscillate on its pivot, so as to displace or conceal the numbered signal carried by it. The electro-magnets which when energized cause the different signals to be displayed are placed in a series of normally-open branches of a battery-circuit controlled by keys in the different rooms or points from which the indicators are to be operated. The coils of the other electro-magnets by which the indicating-signals are thrown into concealment have heretofore been connected in multiple-arc circuit only with the said battery and controlled by keys at or near the annunciator, so that by closing one of the said keys the current will pass through all the said magnets controlled by the said key, being divided among them in accordance with the well-known law. The resistance of the magnets is so slight that when a large number of them are thus connected together in multiple-arc circuit the current is so divided as to be unable to affect them sufficiently to move the indicators, and the limit that can be operated in practice is in the neighborhood of from twelve to fifteen, so that in a large annunciator they have had to be grouped in several divisions, each of which is controlled by a corresponding key or circuit-closer.

The present invention has for its object to enable all the restoring-magnets of a large annunciator to be controlled by a single key as well as to enable a number of annunciators located at different points to be all operated simultaneously from a key at any one of the said points; and it consists, partly, in a novel arrangement of the circuits and controlling devices for accomplishing this object.

The invention further consists in details of construction of the annunciator-signaling instruments, hereinafter specified.

Figure 1 is a diagram showing two sections of an annunciator connected to operate in accordance with this invention, it showing the drop-instruments in front elevation; Fig. 2, a side elevation of one of the said drop-instruments; and Fig. 3 a side view of one of the keys by which the instruments are restored to their normal positions or the signals concealed.

The indicating-instruments are composed of a visual signal, *a*, which may be marked with a number or otherwise characterized, the said signal being supported on a magnetized bar, *b*, pivoted near its center of gravity; with one of its poles between two electro-magnets, *c* *d*, so that when one of the said magnets is energized with the proper polarity it will repel the said pole, if the latter is adjacent to the said magnets, causing the said bar *b* to turn on its pivot and thus move the signal *a* laterally in one or the other direction, as the case may be.

It is essential in instruments of this class that the bar *b* should be carefully balanced with its center of gravity slightly above the pivot, so that when it has passed the middle point or a vertical position when moving in either direction it will continue its movement under the action of gravity, and will remain in its inclined position, resting against one of the magnets *c* or *d*, under the action of gravity, until repelled therefrom by the magnetic force. In order to thus balance the indicator-bars, they have, as heretofore constructed, had a piece of malleable wire soldered to them, so that by bending the wire the position of the center of gravity of the entire device could be varied, bringing it to the proper balance. This construction is objectionable from the fact that it is somewhat difficult to bend the wire just right, and the wire is likely to be broken or detached from the bar, and in order to obviate this objection the bars are in this instance provided with a balancing-piece, *e*, connected by a rivet with the bar, so that it may be turned to the one side and to the other, and will be retained by friction in the position in which it is placed. It is thus possible to adjust the counter-balances *e* without the use of pliers. The signal-

disks *a* are composed of thin sheet metal, riveted or otherwise securely attached to the bar *b*, this material retaining its shape without warping.

5 The electro-magnets are energized to actuate the indicators by the current from a battery, B, having one pole connected with a wire, 2, which extends to all the points from which it is intended to operate the signals, it being
10 connected at each of the said points by a branch wire, 3, with one portion of a circuit-closer, *f*, the other portion of which is connected by wire 4 with one terminal of the coil of the magnet *c*. One branch, 3 4, passes
15 through each room or station to a corresponding one of the magnets *c*, the indicator of which is marked to represent the said room or station in the usual manner, and the other terminal of the magnets *c* is connected by
20 wire 5 with a common wire, 6, connected with a spring-key, *k*, normally in contact with an anvil or contact-piece, *g*, connected by wire 7 with one terminal of an audible signal, S, (shown as a vibrating bell of usual construction,) the other terminal of which is connected
25 by wire 8 with the other pole of the battery B, so that whenever one of the circuit-closers *f* is operated to close the corresponding branch 3 4 a circuit will be completed through the
30 corresponding magnet *c* and bell S, causing the corresponding indicator *a* to move and the signal S to sound at the same time to attract the attention of the operator at the annunciator.

35 The indicating-instruments are inclosed in a case, as usual, the front of which is provided with a series of openings, the position of which is indicated by dotted lines, and the signaling-indicators *a* are normally concealed behind the front of the case, but are moved by the repellent force of the magnets *c* into position to be seen through one of the said openings.

40 After one of the indicators has been operated and been seen by the attendant at the annunciator it is necessary to restore it to its normal position or move it into concealment, which is done by energizing the corresponding magnet *d*; but as all the said magnets *d* are to be operated by an attendant at one point it is not necessary or desirable to have a separate
45 branch or key to each one of the said magnets, as is the case with the magnets *c*; but, on the contrary, it is desirable to operate as many as possible of the said magnets *d* with a single key.

55 Heretofore the magnets *d* in annunciators of this class have been connected in multiple arc, one magnet only in each branch, and it is possible to operate only a comparatively small number in this manner, twelve to fifteen
60 being the maximum limit, and about eight to ten being the greatest number usually operated by a single key in practice. Thus, in a large annunciator containing from fifty to one hundred or more indicators, the said indicators have usually been placed in vertical
65 columns of eight or ten, each column having a key for restoring the indicators therein, and

it is necessary for the operator to select the proper key in order to restore the annunciator in a given column. This is a source of inconvenience which is still more objectionable in another form of annunciator which will now be described. 70

In many places annunciators are made in sections, each section being placed in a different part of the building, but all being operated by a single battery. In some cases, especially in apartment-houses, the sections are exact duplicates of one another, and a key, *f*, at any room controls the corresponding indicator at each section, there being one section, for instance, at each floor of the building. Thus when the full number of attendants do not happen to be present an attendant on one floor may respond to a signal from another floor; but when the indicators have been restored in accordance with the plans previously in use it is impossible to restore the indicator of one section from another section, so that when an indicator has been operated in all of the sections it is necessary for the attendant to go to each section to restore it, or else it will remain until the proper attendant returns, and the said attendant will not know whether or not the call has been attended to. The present invention is intended to remove these objections and to enable all the indicators of a large annunciator or one made in a number of sections to be operated from a single point, and in the case of a sectional annunciator to be all operated from any given one of the said sections that may be desired. 75 80 85 90 95 100

The diagram Fig. 1 represents two sections of an annunciator, each of which is provided with a single circuit-controlling device for restoring not only all the indicators of its own section, but also those of the other sections. This is accomplished by means of the key *k*, before referred to, together with a key, *k'*, mechanically connected therewith, but electrically insulated therefrom, so that both keys *k* *k'* may be depressed at a single operation, and constitute practically a single circuit-controlling device. The same pole of the battery B that is connected with the wire 2 is also connected by wire 9 with a contact-piece, *m*, for the key *k'*, the said contact-piece being normally disconnected from the said key, but brought into connection therewith by the depression of the key. The wire 8, leading from the signal-bell S to the other pole of the battery B, is connected by wire 12 with a contact-piece, *n*, of the key *k*, so that when the said keys *k* *k'* are depressed the former is disconnected at *g* from the wire 7 and brought into connection with the wire 12 and one pole of the battery B, thus removing the bell S from the circuit. The key *k* is thus connected directly with one pole of the battery and the key *k'* with the other pole, and the said key *k'* is connected by wire 13 with a series of branch wires, 14, each passing through the coils of a series of the magnets *d* to the wire 6, connected with the key *k*, so that the current, instead of being 105 110 115 120 125 130

divided between a small number of the magnets d , is divided between a number of series of the said magnets, each series containing a sufficient number of the magnets to produce a resistance in each branch that will render the current effective in it.

By properly proportioning the number of magnets connected in series in each of the different branches to the number of branches connected in multiple arc it is possible to operate a hundred or more magnets with the same battery that will operate only eight or ten connected side by side, or only in multiple arc, as heretofore practiced.

When the annunciator consists of two or more sections, as shown in Fig. 1, all the sections may be substantially alike, as shown, the one battery-wire 2 operating for all the magnets c c^0 of both sections, and being connected by a branch wire, 90, in the second section with the anvil-piece m^0 for the key k^{10} , while the other pole of the battery is connected by wire 80 with the wire 120 and the anvil-piece n^0 for the key k^0 , the said wire 120 having a branch, 80, 70 passing through the signal S^0 to the contact-piece g^0 of the key k^0 , which latter is thus connected with the same pole of the battery as the key k .

The branches 40 passing through the magnets c^0 may either be independent branches from the wire 2, or may be connected, as shown, by wire 41 with the corresponding branches 4 of the other section when corresponding drops of the different sections are to be operated simultaneously.

The key k^0 is connected by wire 60 with the different branches from the magnets c^0 d^0 , and the key k^{10} is connected by wire 130 and branches 140 with the different series of magnets d^0 . The keys $k' k^{10}$, &c., of the different sections are connected together by wires 15, and keys $k k^0$ of the different sections are connected together by wire 16. Thus when any one of the pairs of keys $k k'$ or $k^0 k^{10}$ are depressed the circuit will be as follows: from one pole of battery B by wire 9, to the spring n , key k' if the keys $k k'$ are operated, wire 13 and branch 14, through all the magnets d of the first section to wire 6, key k , spring n , and wires 12 8, to the other pole of the battery. At the keys $k k'$ the current divides, a portion passing by wires 15 and 16 to the keys $k^0 k^{10}$ of the next section, and so on to all the sections, the circuit passing from the said key k^{10} and wires 130 and 140, and all the magnets d^0 of the second section to the key k^0 , and if there are more sections the wires 15 and 16 will be still further branched to include the remaining sections, each of which

forms a loop in the circuit of the battery B. If the keys $k^0 k^{10}$ had been depressed, they would have been brought into connection with the battery, and from thence the current would branch through the magnet $d d^0$ of the different sections, as just described. Thus by single mechanical operation at any section of the annunciator the indicating-signals of all the sections will be simultaneously restored.

I claim—

1. An annunciator consisting of a series of indicating-instruments, each comprising a pivoted magnetized bar and two electro-magnets by which the said bar is moved in opposite directions on its pivot, combined with a series of normally-open independent branch circuits, one passing through one of the magnets of each instrument, and a series of branch circuits connected together in multiple arc, and each passing through the coils of the other magnets of a series of the said instruments and circuit-controlling devices, whereby an electric current is caused to traverse the said circuits, substantially as described.

2. An annunciator having sections located at different points, each section composed of a series of indicating-instruments, each comprising a pivoted magnetized bar and two electro-magnets to act on opposite sides thereof, combined with a series of independent normally-open branch circuits, each including the coil of one of the magnets of the said indicating-instruments, and a series of branch circuits connected together in multiple arc, each including the coils of the other magnets of a series of the said instruments, the said branches including different sections of the annunciator, and a circuit-controlling device at each section of the annunciator, whereby a current is applied to the said connected branches and energizes the magnets in circuit therewith at all the sections of the annunciator, substantially as described.

3. In an annunciator, an indicating-instrument composed of a pivoted magnetized bar provided with a visual signal and electro-magnets to act in opposite sides of the said bar, combined with a counter-balance pivotally connected with the said bar and frictionally held in adjusted position thereon, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. HOLTZER.

Witnesses:

JOS. P. LIVERMORE,
W. H. SIGSTON.