

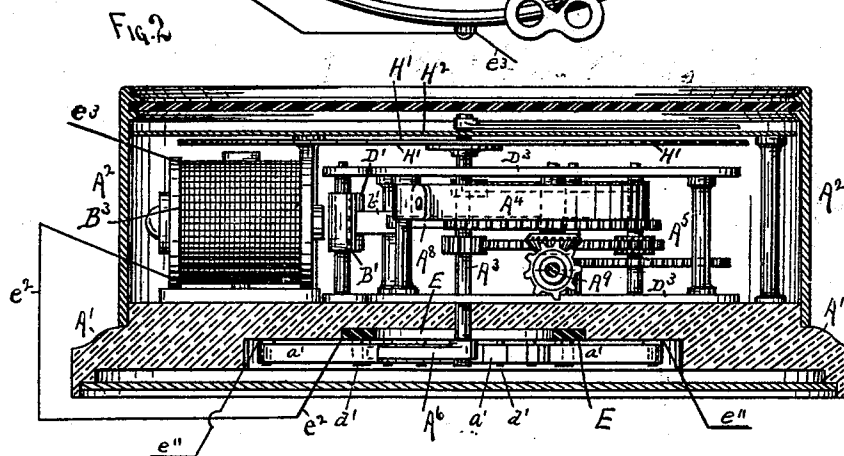
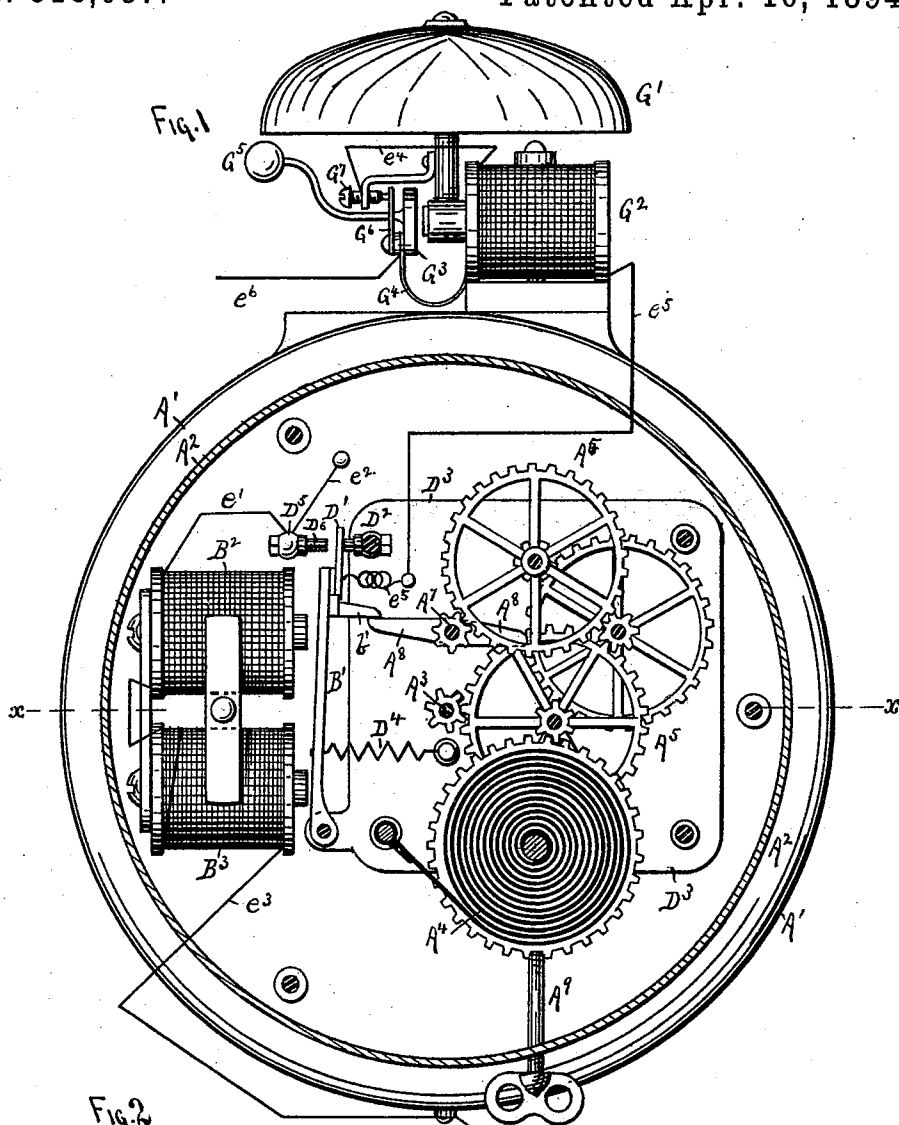
(No Model.)

4 Sheets—Sheet 1.

R. L. HUNTER.
ELECTRICAL ANNUNCIATOR.

No. 518,037.

Patented Apr. 10, 1894.



WITNESSES.
H. S. Webster
H. A. Phillips

Robert L. Hunter, Inventor, By
Charles N. Woodward, Att'y.

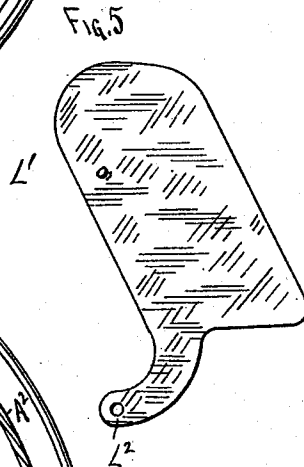
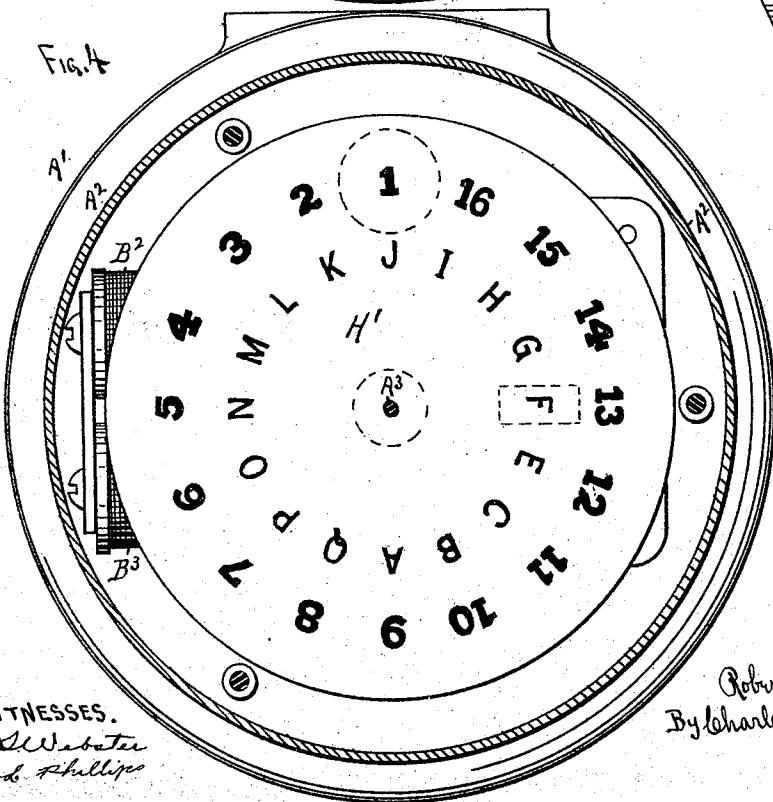
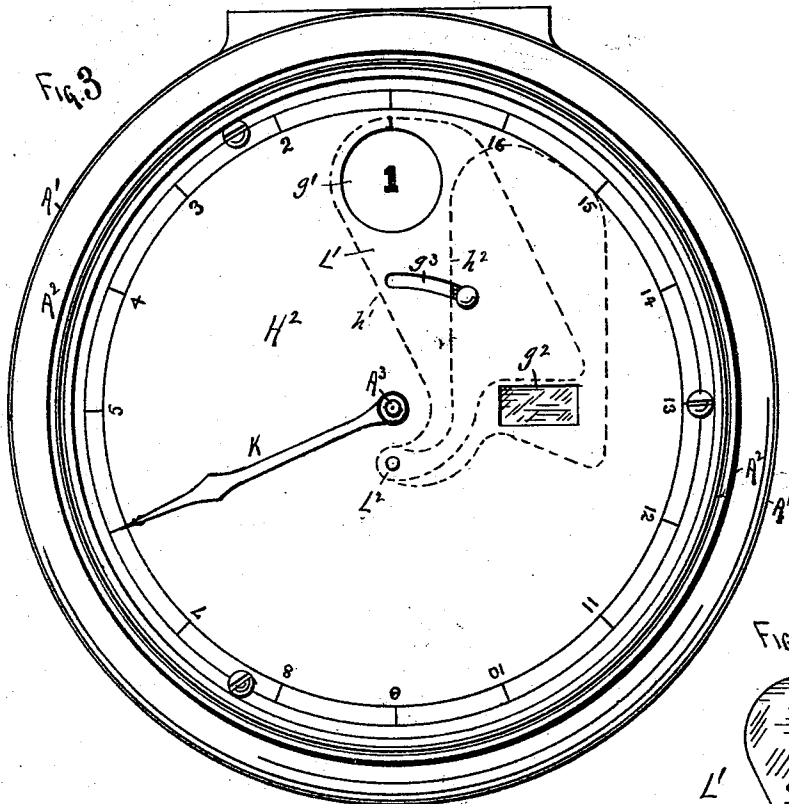
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4 Sheets—Sheet 2.

R. L. HUNTER.
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WITNESSES.
A. L. Webster
H. L. Phillips

Robert L. Hunter, INVENTOR
By Charles N. Woodward
Atty.

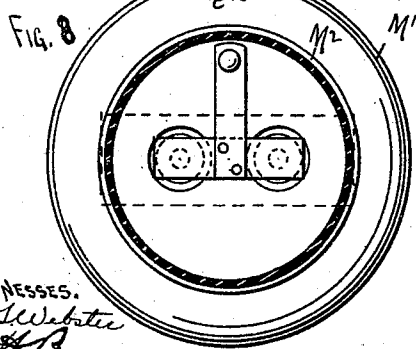
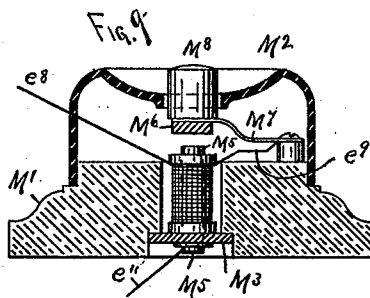
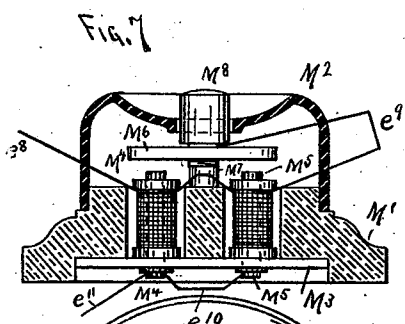
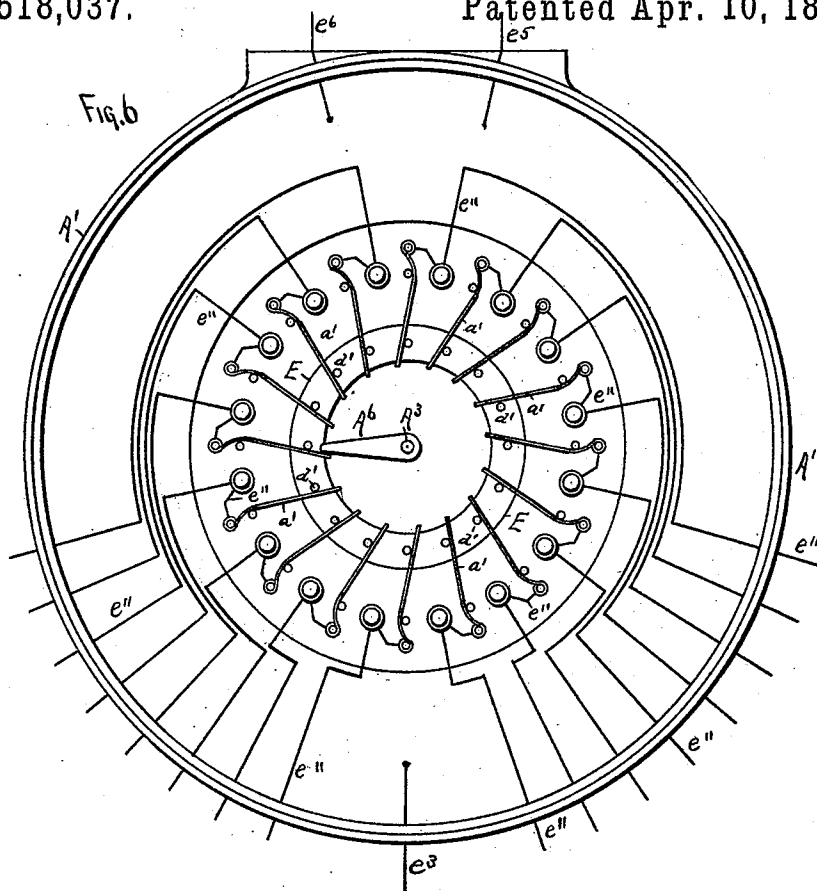
(No Model.)

4 Sheets—Sheet 3.

R. L. HUNTER.
ELECTRICAL ANNUNCIATOR.

No. 518,037.

Patented Apr. 10, 1894.



WITNESSES.
A. L. White
C. H. Brownson

Robert L. Hunter, INVENTOR, By
Charles M. Woodward, Atty.

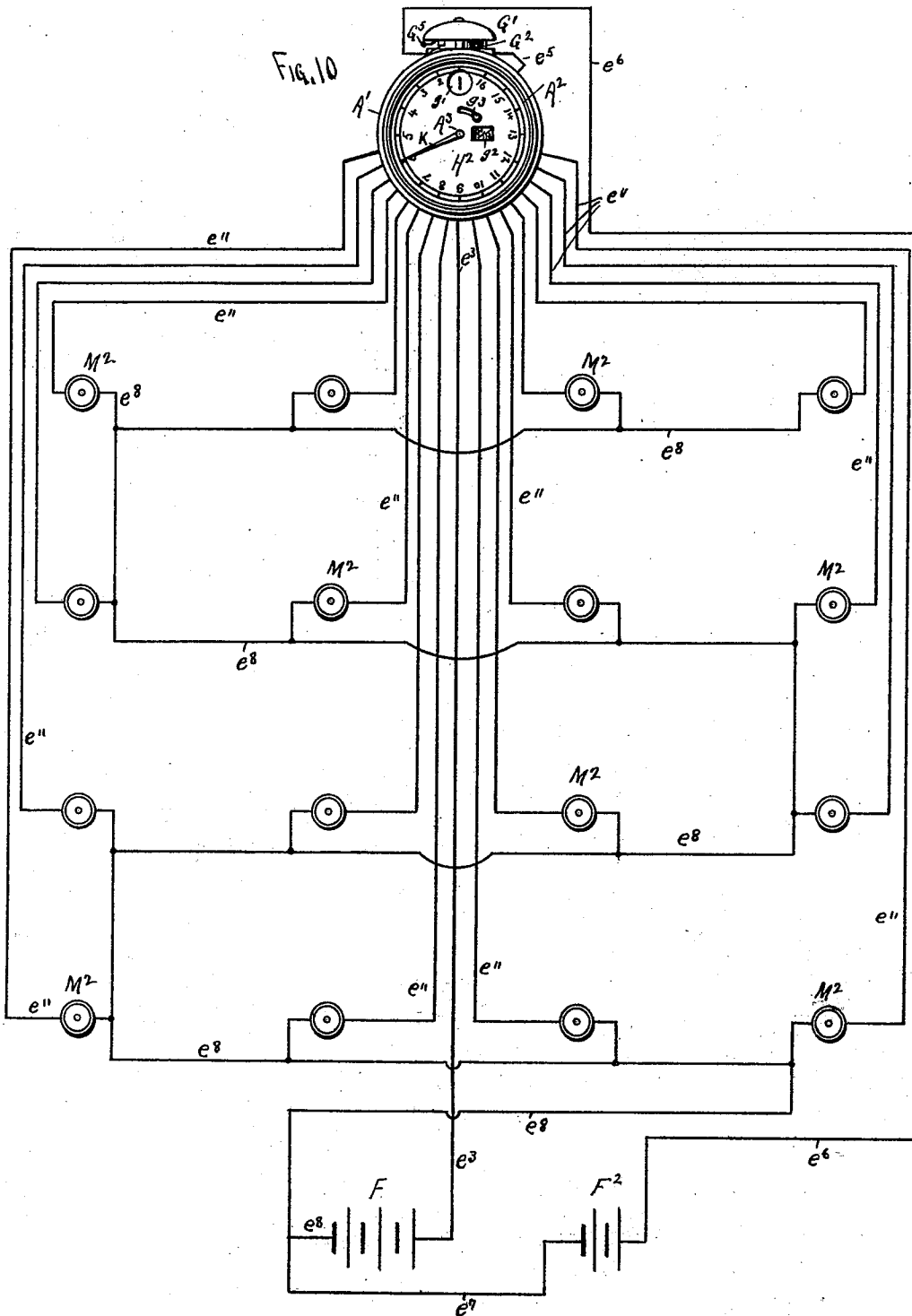
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4 Sheets—Sheet 4.

R. L. HUNTER.
ELECTRICAL ANNUNCIATOR.

No. 518,037.

Patented Apr. 10, 1894.



WITNESSES.
H. L. Webster
H. L. Phillips

Robert L. Hunter, INVENTOR By
Charles W. Woodward, Atty.

UNITED STATES PATENT OFFICE.

ROBERT L. HUNTER, OF ST. PAUL, MINNESOTA.

ELECTRICAL ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 518,037, dated April 10, 1894.

Application filed February 13, 1893. Serial No. 462,196. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. HUNTER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Electrical Annunciators, of which the following is a specification.

This invention relates to electrical annunciators or indicators, and consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings,—Figure 1 is an elevation in longitudinal section, of the indicating mechanism, and return signal bell. Fig. 2 is a cross section on the line *xx* of Fig. 1. Fig. 3 is a front elevation of the indicating mechanism. Fig. 4 is a sectional elevation with the indicator face removed. Fig. 5 is a detached view of the shut off plate of the indicator. Fig. 6 is a rear elevation of the indicating mechanism with the rear cover removed. Fig. 7 is a sectional side elevation of the push button mechanism. Fig. 8 is a plan view of the same, with the casing or cover in section, and with the button removed. Fig. 9 is a cross sectional view of the same. Fig. 10 is a diagrammatical view, illustrating the system of wiring.

In this invention is comprised a central indicating mechanism into which all the conductor wires lead from an electric battery or other source of electric energy, and with a series of push buttons or circuit closers at the locations from which the signals proceed, and through which the circuits pass from the source of electric energy, the indicating mechanism and circuit closers being connected so that one complete circuit only is required from all the circuit closers or push buttons in any one system of the indicating mechanism.

The invention also comprises a signal bell connected into the denoting mechanism.

The main indicator mechanism consists of a base *A'* and casing *A²*, containing a main shaft *A³* arranged to be actuated by a spring *A⁴* through reducing gears *A⁵*, and provided with an arm *A⁶* adapted to come in contact with a series of springs contacts *a'* arranged in a circle, as shown more clearly in Fig. 6. These spring contacts are insulated from the base

A' and all trend inward and rest by their inner ends against pins *d'* in a ring *E* set into the under side of the base *A'*. The springs do not touch the plate *E*, so that when they are detached from the pins *d'* by the revolving arm *A⁶*, the electrical connection between them and the pins is broken, as hereinafter explained. One of the shafts *A⁷* of the train of gears is provided with a stop arm *A⁸*, preferably double, as shown, against which a stop *b'* on an armature *B'* rests to hold the shaft *A³* locked and prevent it from turning.

B² B³ represent a pair of magnets across whose cores the armature *B'* is pivoted, as shown. The armature *B'* is provided with an insulated extension *D'* resting against a contact point *D²* in one of the posts *D²* of the frame *D³* in which the spring and gear mechanism is supported, the armature *B'* and its extension *D'* being held back by a spring *D⁴*, as shown. The shaft *A⁷* being at the extreme outer end of the train of gears a very slight force exerted upon the arm *A⁸* will be sufficient to hold the spring *A⁴* and shaft *A³* stationary, while on the other hand a small attractive force exerted through the magnets *B² B³* will be sufficient to release the gearing and allow the shaft *A³* to be revolved by the spring.

D⁵ is another post having an adjustable contact screw *D⁶* against which the extension *D'* comes in contact when the magnets *B² B³* are energized and the armature *B'* actuated, the contact screw being connected electrically to the fields of the magnets *B² B³* as shown by line *e'* and also by wire *e²*, to the ring *E* containing the stop contact pins *d'*.

A⁹ represents the mechanism by which the spring *A⁴* will be wound up.

The base *D³*, shafts *A³ A⁷*, posts *D²*, spring *A⁴*, stop arm *A⁸*, gears *A⁵*, armature *B'*, and arm *A⁶*, are not insulated one from the other, so that electric currents pass freely through them, as hereinafter set forth.

The magnets *B² B³* are connected to the carbon sides of a main battery as indicated by line *e³*, the battery being represented at *F'* in Fig. 10.

In the drawings, and in all the references in the specification, it should be borne in mind that the long thin lines in the represen-

tations of the batteries F' F^2 , are intended to denote the zinc poles, and the thicker and shorter lines, are intended to denote the carbon poles.

5 At some convenient point upon or in connection with the casing A' is a bell mechanism, consisting of a gong G' mounted in any suitable manner and with small electro magnets G^2 arranged in proximity thereto. The
10 armature G^3 of the magnets G^2 is shown connected by an insulated spring G^4 by which it is held in its outward position, and with the hammer G^5 of the bell attached to the armature, as shown.

15 G^6 is a small spring resting against an adjustable screw contact G^7 connected by wire e^4 to the fields of the magnets G^2 , the latter connected in turn by wire e^5 to the insulated extension D' of the armature B' , as shown.

20 The spring contact G^6 is connected electrically by wire e^6 to the zinc side of a small auxiliary battery F^2 , as shown in Fig. 10, the latter being in turn connected by wire e^7 from its carbon side to the corresponding carbon
25 side of the main battery F' , as shown in Fig. 10. The two batteries are thus coupled, making the battery F^2 a portion of the main battery, and thereby also creating a duplex current between the main battery and main
30 magnets B^2 , and the magnets of the bell mechanism, as hereinafter described.

The annunciator or indicator mechanism will be placed at any convenient point, and in the system illustrated in the present ap-
35 plication as many of the spring contacts a' are inserted as there are calls intended to be employed in the system. Two or more indicators may be coupled to enable two or more indications to be noted at the same time, but
40 that system will be made the subject of future applications. In the devices shown in the drawings sixteen of these spring contacts a' are shown, hence sixteen different indications can be noted.

45 Upon the outer end of the main shaft A^3 is attached a face or indicator disk H' , revolving with the shaft beneath the stationary face plate H^2 of the casing A' . This revolving disk is divided into as many sections as there
50 are contacts a' , (in the drawings sixteen,) and numbered consecutively, as shown, or otherwise denoted, as circumstances or the use for which the annunciator is employed may require.

55 g' is a perforation in the face plate H^2 through which the figures or other notations on the disk H' may be read, one at a time, as the disk is revolved beneath it. Another set of notations is shown upon the disk H' , (see
60 Fig. 4,) arranged in a circle inside the outer row, and adapted to be read one at a time through a perforation g^2 through the face plate H^2 as the disk is revolved. Any required number of these sets of notations may
65 be employed, limited only by the size of the disk H' , or the number of the contacts a' it

is found practical to employ. An indicator hand K may also be employed, either as an adjunct to the disk H' or in place of it, as may be required.

70 Generally only one set of notations will be employed with each indicator, but when two or more sets are employed, a shut off plate L' will be employed swiveled at L^2 upon the under side of the face plate H^2 , so that when
75 turned in one direction, as shown by dotted lines at h' in Fig. 3, the perforation g^2 will be closed and the perforation g' open, and when turned in the opposite direction the perforation g' will be closed, and the perforation g^2
80 left open. Thus either one of the two sets of notations may be exposed, as required. The form of this shut off plate is more clearly shown in Fig. 5, which represents it removed from the casing. By simply enlarging the
85 plate L' and elongating the slot g^3 , both perforations may be closed at the same time, which action may be found necessary when the hand K is employed in addition to the notations on the disk H' .

90 A peculiar form of push button is employed in connection with this system, its construction being shown in Figs. 7, 8, and 9.

M' represents the base and M^2 the cap or cover. Two small magnets are attached to a
95 cross bar M^3 by their cores M^4 M^5 , and projecting through the base M' into the open space beneath the cap M^2 as shown.

M^6 is the armature supported by a spring M^7 , and adapted to be depressed to come in
100 contact with the cores of the magnets by a push button M^8 . The wire e^8 from the main battery F' leads into the fields of the magnets, the latter being connected by wire e^9 to the armature M^6 , as shown. The cores of the
105 magnets are connected by wire e^{10} and also by wire e^{11} to the contacts a' of the indicator.

In Fig. 10 is shown a diagrammatic view of the whole system to illustrate the wiring and
110 connections. In this diagram are shown sixteen of the push buttons, denoted by the letter M^2 , (which represents the caps or covers, the only portions which appear to the eye,) and are supposed to be located in different rooms of a building, or in other different lo-
115 cations as may be required.

In Fig. 6, sixteen wires e^{11} are shown leading outward from the contacts a' , and in Fig.
120 10 each of these wires is shown leading to one of the push buttons, being connected therein into the cores M^4 M^5 of the magnets. The wires e^8 are also shown leading out from the opposite sides of the push buttons and coupled to a main lead wire running to the main
125 battery F' .

130 While I have shown the gearing A^5 and arm A^6 arranged to be actuated by a spring A^4 , any other suitable means, such as a weight, a small electric motor, or other power, may be substituted, if desired. The electric con-
135 nections, as shown in the drawings, are from the zinc side of the battery F' by wire e^8 to

the magnets $B^2 B^3$, thence by wire $e^1 e^2$ to the ring E, thence through the pins d' and spring contacts a' , and thence by separate wires e^{11} to the cores $M^5 M^4$ of the push button magnets, thence by wires e^9 to the armatures M^6 of the push button magnets, where the connections end until the push buttons are depressed. From the fields of the push button magnets the connections continue by wires e^8 , to the carbon side of the battery F' . When thus connected the apparatus remains quiescent, with the shaft A^3 locked by the armature B' , as shown in Fig. 1. When the push button is depressed the circuit is closed by the contact of its armature M^6 with the cores $M^4 M^5$, thus energizing the magnets $B^2 B^3$, which by attracting the armature B' releases the shaft A^3 and permits the arm A^6 to revolve with its outer end in contact with the free ends of the spring contacts a' , throwing them one after the other away from the pins d' but without affecting anything until the particular spring contact connected by one of the wires e^{11} with the particular push button which has been actuated, is released. The releasing of this particular spring contact breaks the circuit through the actuated push button and magnets $B^2 B^3$ and permits the spring D^4 of the armature to draw the armature B' outward again and cause its stop b' to again instantly lock the shaft A^3 , the revolution of the shaft A^3 also causing the disk H' to revolve until the notation corresponding to the particular spring contact a' connected to the actuated push button, appears beneath the opening g' , where it will remain until another push button is actuated. The moment the circuit is thus broken the spring armature M^6 in the push button is released and resumes its former position ready for action again. When the armature B' is attracted by the closing of the circuit by the depression of the push button, the insulated extension end D' of the armature B' is brought in contact with a point D^5 , thus dividing the duplex currents leading from the portion F^2 of the battery, and switching the current from the portion F^2 through the bell by wire e^7 through the push button, spring contact a' , ring E, wire e^2 , point D^5 , extension contact D' , wire e^5 , bell magnets G^2 , and thence back to the auxiliary battery F^2 again by wire e^6 , thus causing the bell to be sounded every time a push button is depressed. When the indicating mechanism is at rest after the indication has been given, if a second depression of the same push button be made the bell will be sounded without actuating the annunciators, the current then being from the portion F^2 of the battery through the contact springs a' , arm A^6 , thence through the actuating mechanism to the post D^2 , thence to the extension D' , thence by wire e^5 through the bell mechanism, and thence out by wire e^6 to the battery again. During this time the current from the main battery is in-

terrupted permanently because the contact spring a' is held out of contact with the ring E, thus keeping the annunciator mechanism out of service. After a push button has been actuated, the same push button may be depressed as many times as desired and the bell thereby sounded, but without affecting the disk H' , which remains in the same position and showing the same notation through the opening g' until another push button is depressed. After the indication is given the push button is then only in the circuit of the portion F^2 of the battery, which flows only through the bell magnets, that current being broken mechanically by the action of the bell mechanism, thereby releasing the armature of the push button at every stroke of the bell.

Having thus described my invention, what I claim as new is—

1. In an annunciator, an indicating mechanism, an electro magnet connected to a source of electric energy, a series of circuit closers in circuit with said source of electric energy and corresponding with and connected to the indications in said indicator, in combination with a signal bell mechanism connected into the indicator annunciator circuit by a separate electrical connection, whereby a duplex circuit is formed so that the signals and indications are given simultaneously and the signals rendered capable of repetition without the necessity for again actuating the indicating mechanism.
2. In an annunciator, a disk or plate having notations thereon and an arm movable therewith, a series of electric contacts corresponding to said notations and adapted to be actuated by said arm, means for locking said arm and disk, electro magnets connected to a battery or other source of electric energy and adapted when energized to release said disk and arm, a push button for each of said contacts consisting of an electric magnet connected separately by its fields and cores to said contacts and said source of electric energy, substantially as and for the purpose set forth.
3. In an annunciator, a disk or plate having notations thereon and an arm movable therewith, a series of electric contacts corresponding to said notations and adapted to be actuated by said arm, means for locking said arm and disk, electro magnets connected to a battery or other source of electric energy and adapted when energized to release said disk and arm, a ring having pins in contact with said series of contacts and connected electrically to said electro magnets, connecting each of said contacts with said source of electric energy, and a series of push buttons connected between said source of electric energy and said electric contacts, said push buttons arranged to hold the circuits broken until depressed, substantially as and for the purpose set forth.
4. In an annunciator, a disk or plate having

notations thereon and an arm movable there-
with, a series of electric contacts correspond-
ing to said notations and adapted to be actu-
ated by said arm, an electro magnet having
5 an armature adapted to lock said disk and
arm stationary, said magnet being connected
to a battery or other source of electric energy
so that when energized it will withdraw said
armature and release said disk and arm, an in-
10 sulated extension upon said armature con-
nected to the magnet of an electric signal
bell, a contact with which said insulated ex-
tension connects when said armature is at-
tracted by the energizing of said magnets,
15 said contact being connected electrically with
said main magnet and with said series of con-
tacts, separate electrical connection between
said signal bell, battery and main magnets,
and a series of push buttons interposed be-

tween said series of contacts and said source 20
of electric energy, substantially as and for
the purpose set forth.

5. In an annunciator, a disk supplied with
two or more series of notations and adapted
to be revolved to designate the location from 25
which the signal proceeds, stationary face
plate having a separate opening for each se-
ries of notations, and cut off plate arranged
to cover and uncover said openings so that
only one is open at a time, substantially as 30
and for the purpose set forth.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

ROBERT L. HUNTER.

Witnesses:

J. F. HOYT,

C. N. WOODWARD.