

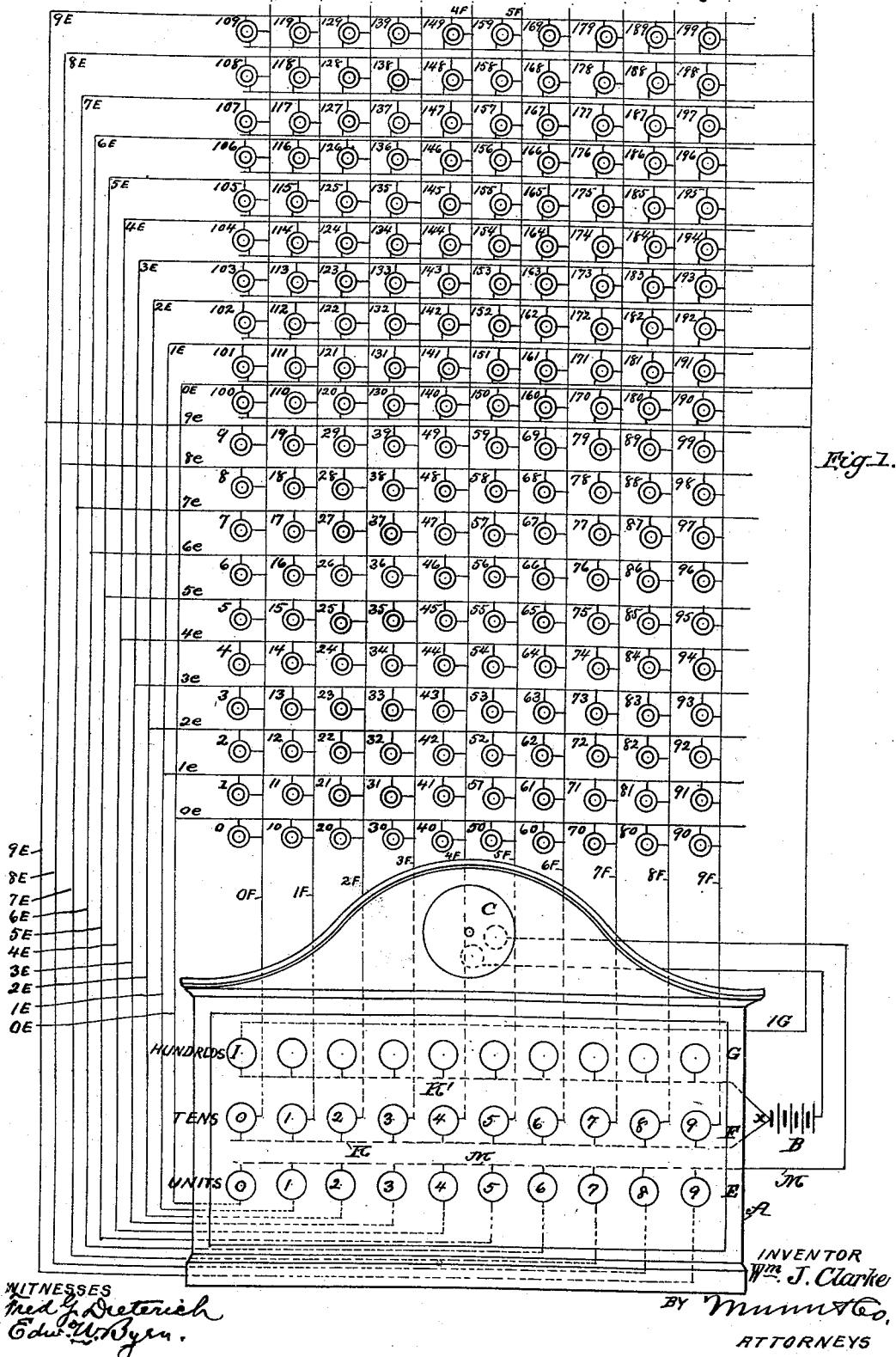
(No Model.)

3 Sheets—Sheet 1.

W. J. CLARKE.
ELECTRIC ANNUNCIATOR.

No. 542,926.

Patented July 16, 1895.



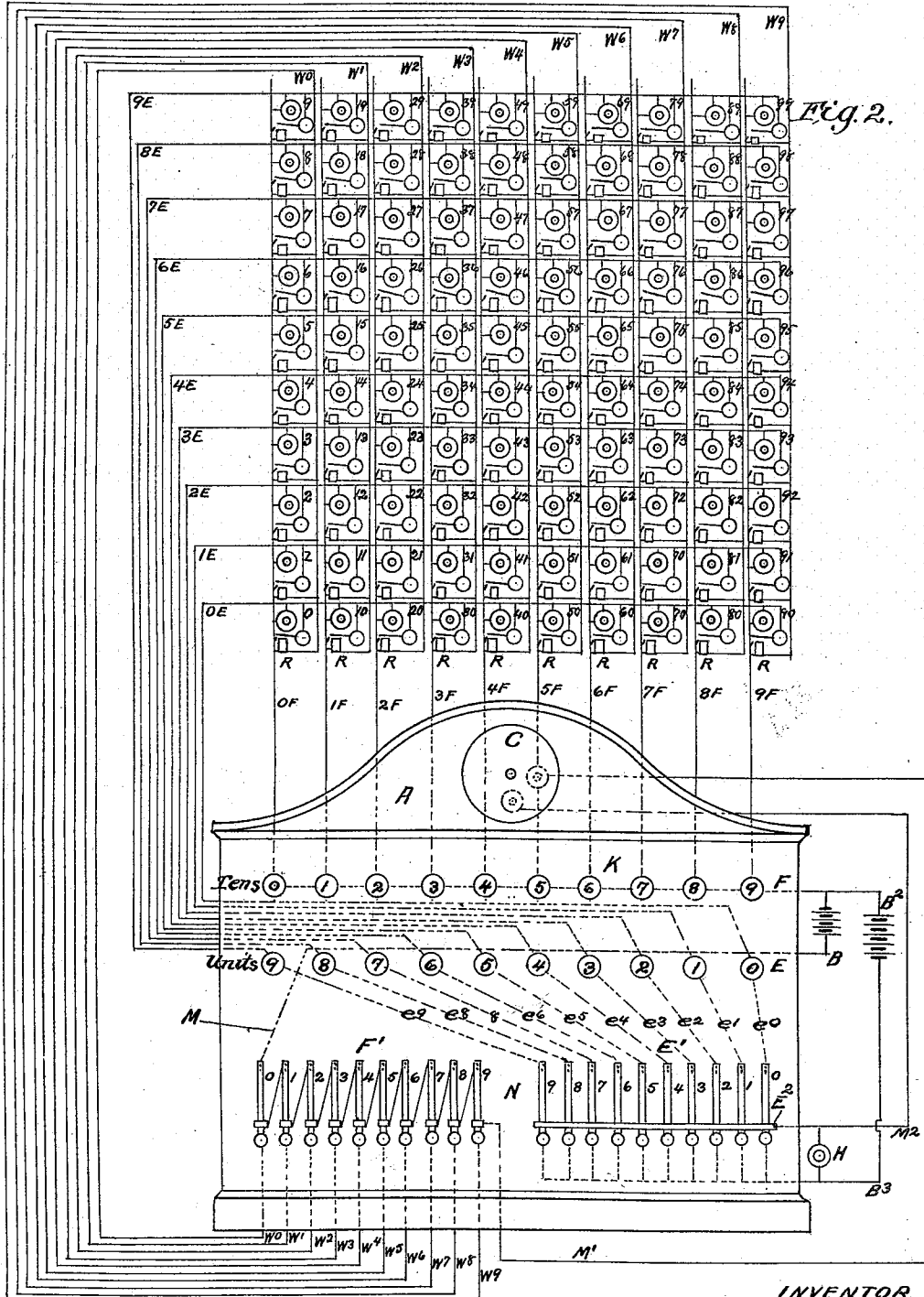
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WITNESSES
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ATTORNEYS

(No Model.)

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Fig. 3.

Fig. 2a

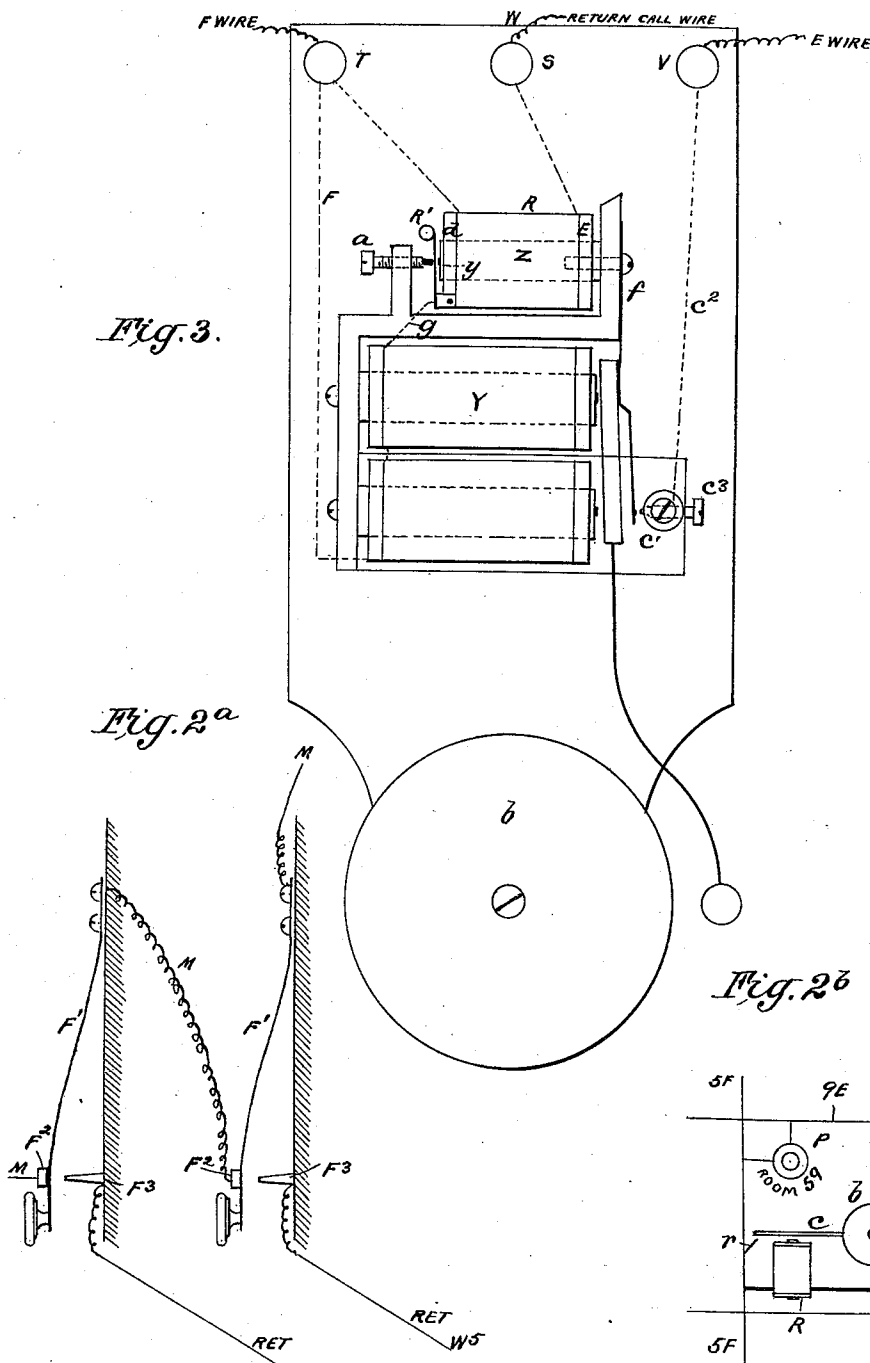
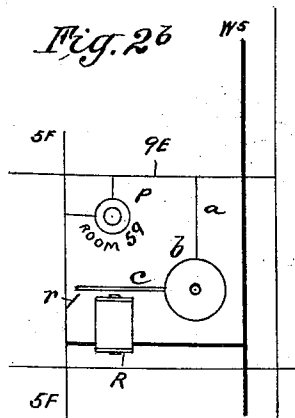


Fig. 2b



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UNITED STATES PATENT OFFICE.

WILLIAM J. CLARKE, OF TRENTON, CANADA.

ELECTRIC ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 542,926, dated July 16, 1895.

Application filed February 5, 1895. Serial No. 537,366. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. CLARKE, a citizen of Canada, residing at Trenton, in the county of Hastings and Province of Ontario, Canada, have invented a new and Improved Electric Annunciator and Return-Call, of which the following is a specification.

My invention is intended to apply to all electric call-bell systems that require more than ten indications, and by its use eleven connecting-wires are required for the first ten rooms, after which only one additional wire is required for every ten rooms up to one hundred rooms, and after that only one additional wire for every one hundred rooms.

My annunciator is provided with the usual electric alarm-bell; but instead of being provided with the usual separate indication for each room it only requires one indication for each of the connecting-wires—that is to say, eleven indications for the first ten rooms connected and one more indication for each additional ten rooms up to one hundred rooms, after which but one indication is required for each additional one hundred rooms.

The annunciator-face is provided with drops or indications which do not correspond in number to the rooms, but are arranged in segregated groups arranged decimally—that is to say, one group of ten representing "units," another group representing "tens," and another representing "hundreds," &c.—whereby the number of any one room is indicated in a collective manner by the falling of a drop in two or more of the groups. Thus room 125 would be indicated by the falling of drop 1 in hundreds group, drop 2 in tens group, and drop 5 in units group, all of which are operated by the single push-button of that room. By this arrangement only thirty drops are required for one thousand rooms and a great saving is effected in the size and mechanical structure of the annunciator and in the wiring and labor of construction.

Figure 1 is a face view of an annunciator constructed for one thousand rooms, the wiring being shown for two hundred rooms. Fig. 2 is a similar view showing the application of the return-call, but in an annunciator having only two groups of drops or one arranged for one hundred rooms. Fig. 2^a is a detail showing the connections of the return-call keys;

Fig. 2^b, the connections in each room; and Fig. 3 is an enlarged view of the bell used for each room for the return-call.

In the accompanying drawings, A in Fig. 1 is the annunciator, having the usual alarm-bell C. The case of the annunciator is made of a size to provide for two rows or sections of indication if the number of rooms to be connected does not exceed one hundred and of a size to provide for three rows or sections of indications if the number of rooms is more than one hundred, as shown, and not more than one thousand. The lower or unit row E contains the indications numbered respectively 0 1 2 3 4 5 6 7 8 9. The second or tens row F contains one indication numbered 0 if but ten rooms are to be connected, two indications numbered 0 and 1 for twenty rooms, three indications numbered 0, 1, and 2 for thirty rooms, and so on, adding one indication for each additional ten rooms and numbering the same one unit higher than the number of the last indication. In like manner the third or hundreds row (which, as explained before, is only added when the number of rooms exceed one hundred) contains one indication numbered 1 if the number of rooms exceed one hundred and does not exceed two hundred, two indications numbered 1 and 2 if the number exceeds two hundred and does not exceed three hundred, and so on, adding one indication for each additional one hundred rooms and numbering the same one unit higher than the number of the last indication. As clearly indicated in the drawings, one end of the wire in each indication-magnet in the lower or units row E is connected to one common or trunk wire M, which is connected through the bell C with one pole of the battery B. The other pole of battery B is connected to a common or trunk wire K, which is in turn connected to one end of the wire on each of the indication-magnets in the second or tens row F, and through a trunk-wire K' to the magnets of the third or hundreds row G. The other side of the magnets in each row is connected to the push-buttons in the rooms, as shown, said push-buttons being numbered 0 to 99 for the rooms connecting with the two series E and F, and 0 to 199 for the rooms connected with the two series E and F and the first drop 1 of the hun-

dreds series G, ordinary or two-point push-buttons being used in all rooms up to and including 99, and three-point push-buttons being used in all rooms above that number. It will be clearly seen that if, say, push-button 59 is pressed the current from battery B will travel along wire K to indication 5, in second or tens row, through indication 5 and along wire 5^F to push-button 59, through push-button 59 and along branch wire 9^e to wire 9^E to indication 9 in lower or units row, through indication 9 and along wire M to the bell C and to the other pole of battery B. It will thus be seen that pressing button 59 will ring bell C and operate indication 5 in the second or tens row and indication 9 in the lower or units row, thus clearly indicating that button 59 has been pressed. In like manner if button 127 is pressed the current will travel from battery B, dividing at point *x*, where part goes through wire K' and indication 1 in the third or hundreds row along wire 1^G to push-button 127, through push-button 127 and along wire 7^E to indication 7 in lower or units row, through indication 7 and back to battery B through wire M and the bell-magnets C. The other part of the current, which divides at *x*, goes through indication 2 in the second or tens row, thence along wire 2^F to push-button 127, through push-button 127 and returns along wire 7^E to indication 7 in lower or units row, through indication 7 and back to battery by wire M and the bell-magnets. It will then be readily seen that pressing push-button 127 will ring the bell and cause indication 1 to operate in the third or hundreds row, indication 2 in the second or tens row, and indication 7 in the lower or units row, thus clearly indicating that push-button 127 has been pressed. I would advise, for the sake of ease and convenience in reading the numbers, that a first-class quality of electromagnetic drop be used for each indication, that the figures be black printed on white, and that the front of the annunciator, through the openings in which the numbers show, be as dark a color as possible.

It is readily seen that needles or any other style or kind of indication may be used, and that it is not necessary that the two or three rows of indications be arranged one above the other, but that any arrangement of these sets of numbers that will enable the attendant to distinguish between the units, tens, and hundreds is all that is required. It is necessary, however, that the indicator-face of the annunciator should have its drops arranged in decimal series or groups with the units segregated from the tens and hundreds, the tens from the units and hundreds, and the hundreds from the units and tens.

My invention also comprehends a return-call and fire-alarm system, and for this it is only necessary to provide in connection with my annunciator ten additional connecting-wires for each hundred rooms, a relay bell, Fig. 3, for each room, and a return-call board

having twenty open and close circuits-buttons for the first hundred rooms, and ten more ditto for each additional hundred rooms, also one additional battery for entire return-call and fire-alarm.

For the sake of simplicity my improved return-call and fire-alarm arrangement is shown in Fig. 2 in connection with an annunciator having only two series of drops, in which N is the return-call board, which is usually placed convenient to or arranged to form a part of the annunciator, and is connected in the manner shown.

The push-buttons F' on the left represent the tens of the return-call, and those E' on the right represent the units. The push-buttons on the left F' are connected to the rooms by wires W⁰ W' W² W³ W⁴ W⁵, &c. The connections of these wires in the rooms is shown in Fig. 2^b, in which R is a relay that is placed in a branch wire connecting one of the return-call wires W⁵, as shown, to the series of wires F 5^F, as shown. For ordinary calling from the room the series of wires E 9^E and F 5^F are connected by the push-button P. For the return-call these series of wires are connected through the circuit *a b c r* by the agency of the return-call wire W⁵ and relay R, whose armature *c* puts the bell *b* in circuit by bringing armature *c* against contact *r* and causing the current to flow from 9^E through *a*, the bell-magnets at *b*, armature *c*, contact *r*, and wire 5^F whenever relay R is energized through the return-call wire W⁵.

The connections of the tens push-buttons F' of the return-call are shown in Fig. 2^a. Each spring push-button F' has a lower contact-bearing F³ connected to its own return-call wire W, W⁴, and W⁵, as shown, while its upper contact F² is connected to the adjacent push-button, forming an unbroken circuit M, but when a push-button F' is depressed the circuit M is broken between the push-buttons and is made to flow out through one of the return-call wires W⁴ or W⁵, &c.

Suppose it is required to ring the bell in room 59, the operator will press return-call push-button 5 on the left or tens side of the board and 9 on the right or units side of the board. When push-button 5 on the left is pressed, the current from battery B through wire M is broken at the upper contact F² and flows to wire W⁵ and through the same to rooms 50 to 59, inclusive, dividing in each of said rooms and passing through the relay-magnets R to wire 5^F, returning by said wire to battery B through indication 5 in the tens-row F. This, it will be seen, energizes the magnets R and causes their armatures *c* to put the bell *b* in circuit between the wires 9^E and 5^F in each of the ten rooms. The bell C of the annunciator on one side is connected through a wire M² to a metal bar E² above the keys E', and against which the latter normally lie, and on the other side the bell is connected by wire M' with the series of keys F'. When the key 9 in the units series E'

is pressed, wire e^3 is disconnected from bar E^2 , wire M^2 , and bell C and connected to the battery B^2 by a wire B^3 . It will thus be seen that the current from battery B^2 is caused to flow through wire B^3 , key $9^{E'}$, wire e^3 , indication 9 in E or units series of drops, wire 9^E , bell in room 59, relay-contact r , wire 5^F , indication 5 in the F or tens series, and to return to its other pole by wire K. This, it will be seen, will cause bell in room 59 to vibrate, and as said vibrations of current pass through indication 9 in the units-row the armature of this indication is also caused to vibrate and produce a buzzing sound, which ceases when the occupant of room 59 presses button 59, and thus short-circuits bell 59 and causes its vibrations to cease, thus indicating that the call has been answered.

In Fig. 3 I show a form of return-call bell which I have devised for use with my annunciator and which is necessary to its successful use.

When a return-call 5, key F' , is pressed, the current enters by return-call wire at post S, goes through relay-magnet R, and out by post T to wire F. When return-call E' is pressed, key F' being still kept down, battery-current B^2 enters by wire F at post T, follows wire F to magnet-spools Y of bell, goes through magnet-spools and by wire g to relay-armature R' . This armature is made of tin or light iron and is pivoted to the square piece of insulation d , which forms one head of relay-magnet R. From armature R' the current goes to relay-magnet core Z, thence to spring f , and insulated split post c^3 , via platinum points c' , and thence to post V and wire E via wire c^2 .

When it is necessary on account of fire or for any other reason to ring all of the bells connected with the annunciator, it is only necessary to press button H and then ring ten bells at a time by pressing in succession each of the ten buttons on the left-hand or tens button.

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

1. An electric annunciator having its face provided with drops or indications segregated decimally into groups of ten each, representing different denominations for the different groups; in combination with a series of ten "unit" wires leading from one group of drops to all the rooms, but having one set of branches leading to the first hundred rooms

and another set of branches leading to the second hundred rooms and so on; another series of ten wires leading from the "tens" series of drops to all the rooms, a third single wire leading from each of the third or "hundreds" series to each of the groups of one hundred rooms after the first hundred rooms, a battery and a bell substantially as and for the purpose described.

2. In an electric annunciator, the combination of a face provided with drops or indications segregated decimally into groups of ten each representing different denominations for the different groups, and the groups having wires running to the separate rooms as shown and described; relay bells arranged in each room, a set of return call keys segregated decimally into groups of ten each representing different denominations, one of said groups having a separate set of return call wires running to the rooms, the other set of return call keys being connected with the rooms through the circuits of the annunciator drops, a battery for the indicator drop circuits and relays, a separate battery for the return call circuit and room bells, the bell for each room being provided with a relay arranged in the circuit of the return call keys and adapted as described to co-operate with the circuits of the annunciator drops, substantially as and for the purpose described.

3. The combination with the annunciator drop circuits and their battery, and the annunciator return call circuits and their battery; of a bell for each room comprising magnets with a vibrating armature, three binding posts and circuit wires, a relay connected with two of the binding posts and the return call circuits and having a switch armature controlling the bell ringing circuit through the other two posts by the action of said relay substantially as and for the purpose described.

4. The combination with the two batteries B and B^2 and their circuit wires M^2 and B^3 , the return call keys F' and E' , the fire alarm switch or push button H connecting the circuits M^2 and B^3 , and the relays, and alarm bells in the rooms, and circuit wires leading thereto substantially as and for the purpose described.

WILLIAM J. CLARKE.

Witnesses:

EDWD. W. BYRNE,
SOLON C. KEMON.