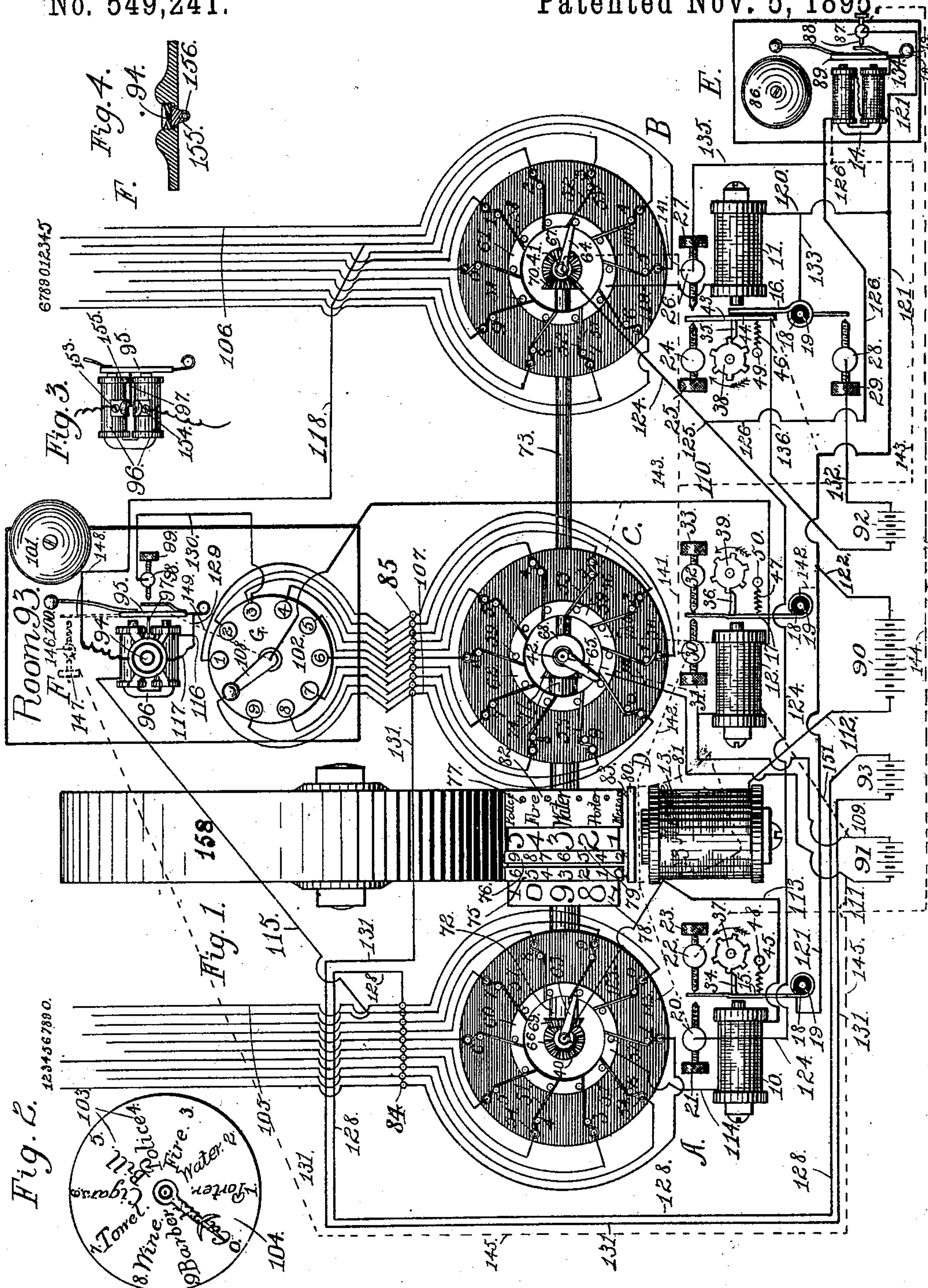


(No Model.)

R. L. HUNTER.
ELECTRICAL ANNUNCIATOR.

No. 549,241.

Patented Nov. 5, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT L. HUNTER, OF MINNEAPOLIS, MINNESOTA.

ELECTRICAL ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 549,241, dated November 5, 1895.

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To all whom it may concern:

Be it known that I, ROBERT L. HUNTER, of Minneapolis, Hennepin county, Minnesota, have invented certain Improvements in Electrical Annunciators, of which the following is a specification.

My invention relates to improvements in electrical annunciators; and it consists in the improved construction and combination of two or more motor-driven indicators so co-operating together that they will jointly indicate any number in the combination of their dial-numbers.

My invention further consists in the specific construction and combination hereinafter more particularly described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a view of my improved annunciator, partly in plan and partly conventional and diagrammatic, showing its combination with the want-indicator and the recording mechanism; and Fig. 2 is a plan view of the dial of the want-indicator.

In the drawings, A and B are the indicators, the markings of the indicator A standing for tens and those of the indicator B for units.

C represents a want-indicator; D, a recording mechanism; E, a signal-bell, and 10, 11, 12, 13, and 14 their respective magnets.

The magnet-armatures 15, 16, and 17, belonging, respectively, to the indicators A, B, and C, have their bearings filled with insulation 18 and turn upon the posts or pins 19, between adjusting-screws 21 and 23, 25 and 27, and 31 and 33, respectively fitted to the posts 20 and 22, 24 and 26, and 30 and 32. These armatures are fitted with dogs 34, 35, and 36, respectively, engaging the cog-wheels 37, 38, and 39, which are operated by clockwork and connected by intermediate gearing (not shown) with the indicator-shafts 40, 41, and 42. The dogs are held normally in engagement with the cog-wheels by means of their tension-springs 45, 46, and 47, attached to posts 48, 49, and 50; but upon the energizing of the magnets the armatures are drawn toward them against the tension of said springs, so as to disengage the dogs from the wheels and permit the clockwork to drive the same.

Within the indicators A, B, and C are ar-

ranged series of springs 51, 52, and 53 upon the pins 54, 55, and 56, respectively, which are fitted to the base of insulating material. The springs, normally bearing against the pins 57, 58, and 59, respectively, are fixed to the insulated conducting-rings 60, 61, and 62, and are thrown out of engagement with said pins by means of the arms 63, 64, and 65 in the operation of the devices.

The bevel-gears 66, 67, and 68, keyed, respectively, on the shafts 40, 41, and 42, mesh with bevel-gears 69, 70, and 71, respectively, the gear 69 being mounted on the sleeve-shaft 72, the gear 70 upon the solid shaft 73, which turns within the sleeve 72, and the gear 71 upon the sleeve-shaft 74, also turning upon the shaft 73. These three shafts 72, 73, and 74 carry, respectively, type-cylinders 75, 76, and 77 and form part of the recorder D. The indicator-cylinders 78 and 79 are attached to and carried by the type-cylinders 75 and 76, respectively.

Arranged in the rear of the type and indicator cylinders is the tape-wheel 158, and below the cylinders and between them and the recorder-magnet is the armature 80, which on the breaking of the circuit is drawn up by the spring, (not shown,) so as to press the paper tape 81 against the type-cylinder, by means of which there is imprinted upon the tape the corresponding room-number and the want. In order to insure distinct printing of the indications on the tape, I provide the cylinders with hollow cones 82, with their bases outward, and the armature with projecting cones 83, which enter the hollow cones 82, and thereby insure such position of the cylinders as to present the face of the type squarely upon the paper.

At the central station, in addition to two series of push-buttons of the return-call mechanism, are provided the main bell E, with its gong 86, regulating post and screws 87 and 88, armature 89, and magnet 14, and the battery 90 for the recorder D and indicators A and B, and battery 91 for the recorder C, battery 92 for the bell E, and the battery 93 for the return-call mechanism. At each point from which a call can be sent is placed a combined bell-magnet and push-button F, so constructed and electrically connected that when the circuit has been closed therethrough by

depressing a button 94 and the armature 95 has been drawn to the magnet 96 the circuit is held closed by the prong 97 locking down the button 94 until the circuit is broken at some external point, whereupon the magnet is de-energized and releases the armature 95, which is thrown back by its spring against the screw 99, held in the post 98, and causing its hammer 100 to strike the gong 101. At each call station or point there is also a switch G, having a switch-arm 108 and a series of contact-plates 102, corresponding and connected to the springs 53 of the want-indicator C and also corresponding with the printed want-indications 103 on the dial 104, connected to the indicator C.

From the spring-contact supports 54, 55, and 56 of the indicators A, B, and C extend, respectively, the series of wires 105, 106, and 107. The wires of the series 105 and 106 extending from the indicators A and B are numbered "0" to "9," inclusive, to correspond with the markings upon the type and indication cylinders and their corresponding springs 51 and 52. Branches from each wire of the series 107 of the indicator C are extended to each call station or point, and are there connected to the corresponding contact-plates on the dial of the switch G. As shown in the drawings, room "93" is shown connected with the apparatus and the want is "Cards." The occupant first rotates the arm 108 on the dial G to the corresponding "0" plate, thereby making a circuit in which the current will flow from the battery 91, through the wire 109, to and through the magnet 12, so as to energize it and draw to it the armature 17. This disengages the dog 36 from the cog-wheel 39, permitting the want-indicator C to operate and the short-circuiting arm 65 to revolve. From the magnet 12 the current flows through the wire 110 to the arm 108 and "0" plate on the dial G, from said plate through the "0" wire of the series 107, the "0" spring-support 56, the spring 53, pin 59, the metallic ring 61 of the indicator C, and the wire 111 to the opposite pole of the battery 91. When in the course of its revolution the short-circuiting arm 65 strikes the "0" spring, the current will be short-circuited, thus de-energizing the magnet 12 and allowing its armature to be drawn away from it by its spring 47 and causing its dog 36 to re-engage the cog-wheel 39, thus causing the indicator C to instantly stop with its needle pointing to the indication "Cards" and the type-cylinder 77 presenting the indication "Cards" to the recorder tape and armature 80 and 81.

The person calling, having set the armature 108 of the dial G upon that plate of the series 102 corresponding to the desired want, then pushes the button 94, thereby closing the circuit through the battery 90, the wire 112, the recorder-magnet 13, the wire 113, the magnet 10, the wire 114, the ring 60, the "9" post 57, the spring 51, its support 54, the "9" wire of the series 105, its branch 115, the mag-

net 96, the point 116, the wire 117 to the push-button, thence through the branch 118 of the "3" wire of the series 106, the "3" support 55, the spring 52, the pin 58, the metallic ring 61, the wire 119, the magnet 11, and the wires 120, 121, and 122 to the opposite pole of the battery 90. Upon the making of this circuit the armatures 15, 16, and 80 of the indicators A and B and recorder D are drawn to their magnets, thereby permitting the starting of each machine. When the short-circuiting arm 63 of the indicator A arrives at and touches the spring 51 in circuit, (in this instance "9,") the current from the recorder-magnet 13 is switched through the wire 123 and the arm 63, thereby short-circuiting the magnet 10 and stopping the machine with the indicator-cylinder showing "9," and the printing-cylinder presents "9" to the tape 81 and armature 80.

When the short-circuiting arm 64 of the indicator B in its revolution touches the spring 52 in circuit, (in this instance "3,") the current from the spring to the battery 90 is switched through the arm 64, the wire 124, the post and screw 20 and 21, armature 15, and wires 121 and 122 (if the indicator A is still running; but if not, to the point 125, wire 126, bell-magnet 14, armature 89, screw and post 88 and 87, and wires 121 and 122) to the battery 90. Upon the first vibration of the armature 89 of the bell E the last-described circuit through the magnet 96 at station 93 is broken. Thereupon the armature 95 is drawn back by its spring and its hammer 100 strikes the gong 101, indicating to the person calling that the call is completed; also, upon the breaking of this circuit, of which the windings of the recorder-magnet form a part, the armature 80 of said magnet is released and its spring presses the paper tape 18 against the type upon the cylinders 75, 76, and 77, thus imprinting the call and call-station. A return call is given by the attendant by pressing the "9" push-button of the series 84 of the wires, the wires from the indicator A, and the "3" push-button of the series 85 of the indicator B, thereby closing the circuit from the battery 93 through the wire 128, the "9" push-button of the series 84, the "9" wire of the series 105, the wire 115, the windings of the magnet 96, the point 116, the wire 129, the armature 95, the screw and post 99 and 98, the wire 130, the plate "3" of the dial G, the wire "3" of the series 107, the depressed push-button "3" of the series 85, and the wire 131 of the battery 93.

While the indicator B is in operation its armature 16 will be turned to the right, closing a circuit from the battery 92 through the wire 132, post 28, screw 29, armature 16, wire 133, wire 120, wire 121, post 87, screw 88, armature 89, wire 134, windings of magnet 14, wire 126, wire 135, post 26, screw 27, insulated strip 43, carried by the armature 16, and wire 136 to the battery 92, thereby causing the bell E to ring and notifying the at-

tendant that the call has been received. In the drawings there is also shown in dotted lines an alternative plan of wiring and connections by which upon the depression of the push-button 94 the circuits are closed as follows: through the battery 90 to the wire 112, the recorder-magnet 13, the wire 113, the magnet 10 of the indicator A, the wire 114, the ring 60, the "9" post 57, the "9" spring 51, "9" support 54, "9" wire 105, the branch wire 115, the magnet 96, the point 116, the push-button 94, the wire 118, the "3" wire 106, the "3" support 55, the "3" spring 52, the "3" pin 58, the ring 61, the wire 119, the magnet 11, and the wires 120, 121, and 122, to the opposite pole of the battery. This circuit is changed by the short-circuiting arm 63 of the indicator A touching the "9" spring 51 to close the circuit through the wire 123 and arm 63, as in the first described arrangement of parts; but when the short-circuiting arm 64 of the indicator B touches the "3" spring 52 the current is switched through the arm, the dotted wire 104, dotted wire 141, and, if the indicator C is running, the post 30, screw 31, armature 17, dotted wire 142, and wires 121 and 122 to the opposite pole of the battery. If the indicator C is not running and the indicator A is running, the circuit is from the end of the wire 141 through the wire 142, post 20, screw 21, armature 15, and wires 121 and 122 to the battery. If the indicator C has also stopped, the circuit from the wire 141 is through the wire 143, the bell mechanism E, the wire 144, the post 22, the screw 23, the armature 15, and wires 121 and 122 to the battery. It will be seen that the last-named circuit, which includes the main bell, is never made except when the three indicators have each completed their indications and their type-cylinders are in position for recording. Necessarily upon the first stroke upon the main bell this circuit is broken, thereby releasing the bell and push-button armature at the call-station and permanently breaking the circuit. The last break releases the recording-machine armature, which then presses the paper tape against the type-cylinders. In this alternative plan of wiring, although the arm 108 at the call-station is first set, the apparatus cannot start until the main circuit has been made by depressing the push-button, and the armature 96 is therefore drawn to the magnet, thereby closing the circuit in which the current flows from the battery 91 by the wire 145, post 146, screw 147, extension 148 on the armature 95, armature 95, wire 149, arm 109, "0" plate 102, "0" wire 107, "0" post 56, "0" spring 53, "0" post 59, ring 62, wire 150, windings of the magnet 12, and dotted wire 151 to the battery 91. The return-call system in this alternative wiring is the same as above described, and the advantage is that each and all of the machines must have completed their indications before the recorder-armature

is released and the impression made on the machine.

The magnet push-button F consists of the opposite conducting-poles 153 and 154, insulated upon the windings of the magnet 96. When the push-button 94 is pressed into contact with these poles, connection is made through them, and then maintained by the V-shaped conducting-piece 155, mounted upon the bottom of the button 94, being held between the poles by the drawing of the armature 95 to the magnet 96, and thereby inserting the end of the prong 97 through the hole 156.

I claim—

1. In an electrical annunciator, the combination with one or more call indicators and a want indicator, all operative conjointly by any one of several circuit closers and adapted to give a combined indication, of the return calls in circuit partly in common severally with the indicator circuits and operative only when the indicator circuits are broken.

2. In an electrical annunciator, the combination with a plurality of indicators operative conjointly and simultaneously by any one of several circuit closers, of the common recording mechanism operative by the breaking of the indicator circuit when all of the indicators have made their indications.

3. In an electrical annunciator, the combination with one or more call indicators and a want indicator, operative conjointly and simultaneously by any one of several circuit closers, of the common recording mechanism operative by the breaking of the indicator circuit, when all of the indicators have made their indications.

4. In an electrical annunciator, the combination of call and want indicators operative conjointly by means of any one of several circuit closers, a main call bell in the indicator circuit when the indications have been completed, and the return calls in circuits severally partly in common with the indicator circuits, said return calls being operative only when the indicator circuits are broken.

5. In an electrical annunciator, the combination of call and want indicators operative conjointly by means of any one of several circuit closers, a main call bell in the indicator circuit when the indications have been completed, a recording mechanism in the indicator circuit operative upon the ringing of said bell, and the return calls in circuits severally partly in common with the indicator circuits, said return calls being operative only when the indicator circuits are broken.

6. In an electrical annunciator, the combination of a plurality of motor driven call and want indicators, having their individual movement controlling magnets located in series and operative conjointly by means of any one of several circuit closers to give a combined indication, and the recorder mechanically connected to said call and want indi-

icators and having its printing magnet in series with said individual magnets of said indicators and adapted to print the indicated call and want upon the breaking of the circuit through the last of said indicator magnets.

7. In an electrical annunciator, the combination with a plurality of indicators all operative conjointly and simultaneously by any one of several circuit closers and adapted to give a combined indication, of the automatic means for holding the circuit closed until all of the indicators in the circuit have made their indications, and then resetting the operated circuit closer ready for another operation.

8. In an electrical annunciator, the circuit normally made up of a battery, the movement controlling magnets and the connected lines, of a plurality of series of normally open branch lines in series multiple therewith, but changing to include a less number of the controlling magnets, and upon the completion of the indication including none of said magnets but having substituted therefor the alarm bell.

9. In an electric annunciator consisting of two or more motor driven, electro-magnet controlled indicators having extending from each a series of wires corresponding to their individual annotations, circuit closers for connecting wires of different series and an alarm bell, the circuit normally including the battery, said controlling magnets, the connected wires of the different series and the circuit closer connecting said wires but changing during the making of the indication by the short-circuiting of said magnets, and upon completion of the indication including only said battery, connected wires, circuit closer and alarm bell.

10. In an electric annunciator consisting of two or more motor driven, electro-magnet controlled indicators having extending from each a series of wires corresponding to their individual annotations, circuit closers for connecting wires of different series and an alarm bell, the circuit normally including the battery, the said controlling and recorder magnets, the connected wires of the different series and the circuit closer connecting said wires but changing during the making of the indication by the short-circuiting of said controlling magnets and upon the completion of the indication including only said battery, recorder magnet, connected wires, circuit closer and an alarm bell.

11. In an electric annunciator consisting of two or more motor driven, electro-magnet controlled indicators having extending from each a series of wires corresponding to their

individual annotations, circuit closers for connecting wires of different series, and automatically remaining closed until each of the indicators has completed its indication and an alarm bell, the circuit normally including the battery, said controlling magnets, the connected wires of the different series and the circuit closer connecting said wires but changing during the making of the indication by the short-circuiting of said magnets, and upon the completion of the indication including only said battery, connected wires, circuit closer and alarm bell.

12. In an electric annunciator consisting of two or more motor driven, electro-magnet controlled indicators having extending from each a series of wires corresponding to their individual annotations, circuit closers for connecting wires of the different series, the alarm bell, and the want indicator, the circuit normally including the battery, said controlling magnets, the connected wires of the different series, and the circuit closer connecting said wires but changing during the making of the indication by the short circuiting of said magnets and upon the completion of the indication with the exception of the want indicator including only said battery, connected wires and circuit closer and upon the completion of the indication and that of the want indicator including said battery, connected wires, circuit closer and alarm bell.

13. In an electric annunciator consisting of two or more motor driven, electro-magnet controlled indicators having extending from each a series of wires corresponding to their individual annotations, circuit closers for connecting wires of the different series, the alarm bell, the recorder and the want indicator, the circuit normally including the battery, the said controlling and recorder magnets, the connected wires of the different series and the circuit closer connecting said wires but changing during the making of the indication by the short circuiting of said magnets and upon the completion of the indication with the exception of the want indicator including only said battery, recorder magnet, connected wires and circuit closer and upon the completion of the indication and that of the want indicator including said battery, recorder, magnet, connected wires, circuit closer and alarm bell.

In testimony whereof I have hereunto set my hand this 6th day of January, 1894.

ROBERT L. HUNTER.

Witnesses:

W. C. SWIFT,

F. G. BRADBURY.