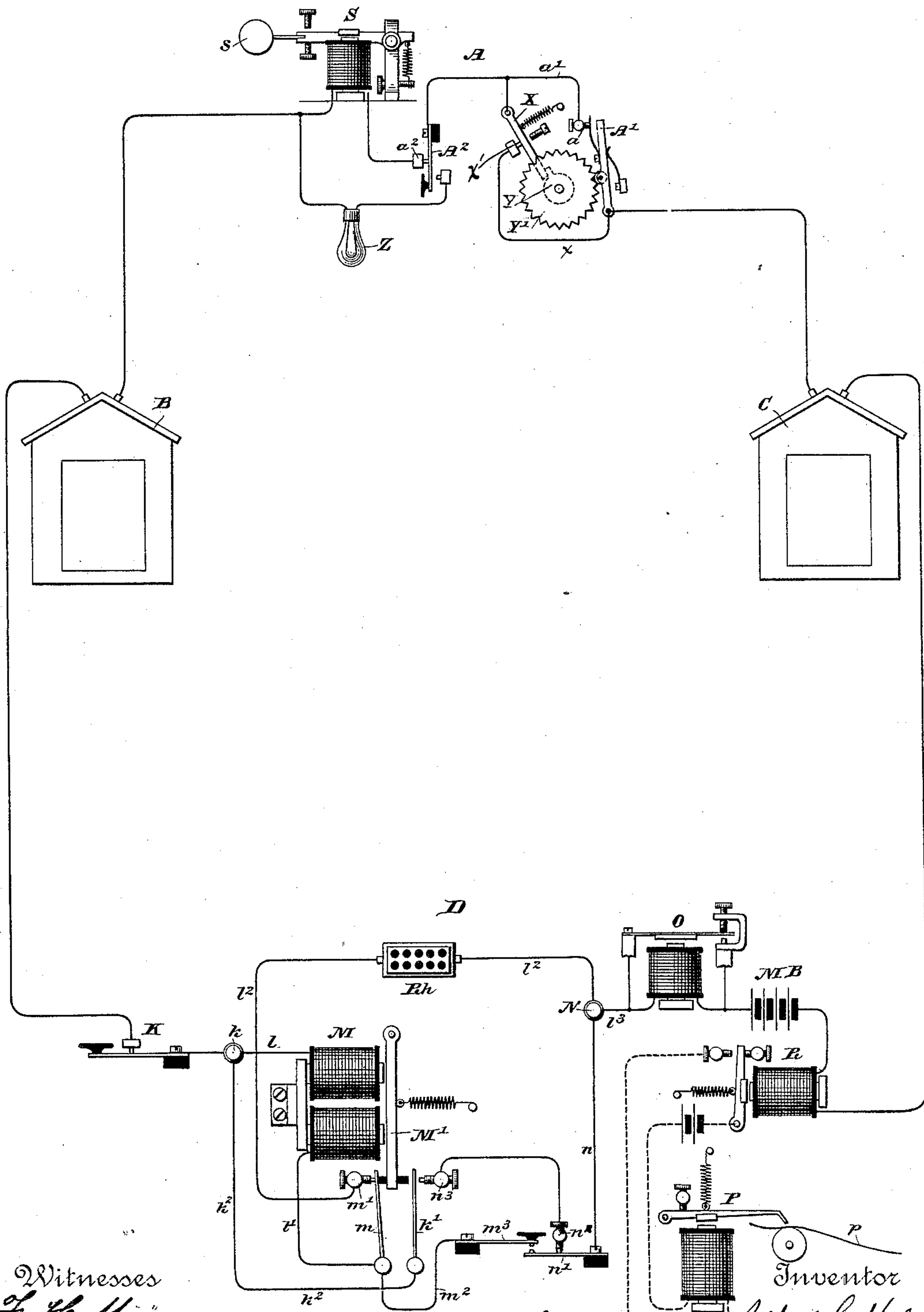


(No Model.)

A. G. HOLCOMBE.
ELECTRICAL COMMUNICATING SYSTEM.

No. 432,618.

Patented July 22, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

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ELECTRICAL COMMUNICATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 432,618, dated July 22, 1890.

Application filed January 6, 1890. Serial No. 335,985. (No model.)

To all whom it may concern:

Be it known that I, ALFRED G. HOLCOMBE, a citizen of the United States, residing at Long Island City, State of New York, have invented certain new and useful Improvements in Electrical Communicating Systems, of which the following is a specification.

My invention relates more especially to systems of police signaling or such like systems in which a number of sub-stations are connected for communication with a central station.

The object of the invention is to provide an efficient single-circuit system in which the sub-stations are connected in series in the circuit. I employ a closed circuit and provide an organization by which an increase of current is thrown upon the line during the transmission of a signal. To accomplish this I preferably employ a single battery, a resistance being normally in the line-circuit and shunted or cut out when the line is ready for the transmission of a signal as well as during the sending of a signal.

The various features of my invention will be obvious from the following specification, and accompanying drawings, which is a diagrammatic view illustrating a central station and three outlying or sub-stations.

A B C represent the sub-stations, and D the central station. Starting from one pole of the main battery M B, the circuit is through the coil of a receiving-relay R, thence through the sub-station apparatus A B C, as presently described, through the stop and lever of a key K at the central station to a post k , where the circuit divides. One branch l passes through the coils of a magnet M, thence by wire l' to a spring-finger m , that is pressed against the stop m' by a block of insulating material on the armature-lever M', which is attracted by the magnet M. From m' the circuit extends by wire 12 through a rheostat Rh to a post N, where the line again branches. One branch 13 extends through the coil of a buzzer O, and thence to the opposite pole of the main battery. This is the normal closed circuit, and the resistance Rh being included in the line the buzzer O is not actuated, but the strength of the current is sufficient for the magnet M to attract its armature, as above

mentioned, and for the relay R to attract its armature, thereby keeping open the local circuit of the ordinary recorder or register P. Between the posts k and N there is a branch circuit around the resistance that is closed when a signal is to be transmitted. Starting from the post N a wire n runs to a spring-arm n' , normally resting against an upper stop n^2 , electrically connected with a stop n^3 , against which a spring-arm k' is pressed by the armature-lever M' when retracted by its spring. From k' a wire k^2 runs to the post k . The spring-finger m is connected by a wire m^2 with a key-lever m^3 , adapted to be pressed down upon the spring-arm n' to force it out of contact with the post n^2 , for a purpose hereinafter described. The circuit passes through each sub-station, as indicated at A—that is, a line runs to a signal-transmitting lever A', carrying a spring-contact bearing normally upon a contact-post a , which is electrically connected by wire a' with a key or switch-lever A², normally bearing upon a post or contact a^2 , from which the line passes through the coil of a sounder or magnet of a visual indicator, as the case may be. From the lever A' a branch wire x runs to a stop x' , against which a contact-arm X is normally pressed by a projection on the spring-drum Y of an ordinary call-box, the arm X being connected to the wire a' . The lever A' carries the ordinary roller that works in the notches of the ordinary toothed signal-wheel Y'. The back or under stop of the switch or key lever A² is connected by a wire, including an incandescent lamp Z, with the main line beyond the sounder S.

The operation is as follows: Assuming that the line is not in use and that a patrolman wishes to send a signal from box A to the central station, he sends in the desired signal by moving the spring-drum Y in the ordinary way, as is well understood, merely permitting the lever X to be retracted by its spring and open the branch circuit $x x'$ at the call-box. In returning to its normal position the spring-drum Y carries with it the toothed wheel Y', the teeth of which acting upon the lever A' opens the main circuit at a the desired number of times, and at the first breaking of the line-circuit the magnet M at the central station releases its armature M', which, being

retracted by its spring, throws the spring-arm k' against the stop n^3 and permits the spring-arm m to leave the stop m' . The resistance R and magnet M are now shunted or cut out of the circuit, the current passing from the post N by wire n , spring-arm n' , stop n^2 , post n^3 , spring-arm k' , and wire k^2 to the post k and line. The full strength of the battery becomes effective and the buzzer O commences to sound, thereby attracting the attention of the central-station attendant. At each break in the circuit the armature-lever of the relay R goes to its back stop, closing the local of the register P and recording the signal upon the paper strip p . In addition to this signal transmitted by the lever A' , and which should include the number of the box and the particular signal sent, as is well understood, the patrolman may telegraph to the central station, according to any predetermined code, by the manipulation of the key or switch A^2 , all such signals being received upon the register P , and in like manner the attendant at the central station may telegraph to the sub-station by the manipulation of the key K , such signals being manifested at the sub-station upon the sounder S or by flashing of the incandescent lamp Z , according to the position of the key or switch A^2 .

Whenever the line is in use, the increased current causes the armature-levers of the sounders S to be attracted at all the sub-stations, and this serves as an indication to any one coming to the boxes that the line is in use. To better evidence this fact an indicating-disk s may be carried by the armature-lever and arranged in suitable relation to an aperture in casing or frame of the box, as is well understood, or the fact that a line is in use may be indicated by the lamps Z being lighted, as they will be when the switch or lever A^2 is properly placed. When communication with any sub-station has ceased, the line is restored to its normal condition for the reception of a signal from any box in the following manner, the central-station operator being reminded of his duty by the continued action of the buzzer.

The key m^3 at the central station is momentarily depressed against the arm n' , forcing it out of contact with the stop n^2 , the effect being to open the shunt or branch around the resistance and magnet M at the point n^2 and completing a circuit through n' , m^3 , m^2 , and l' through the coils of the magnet M to line, thereby energizing the magnet, which attracts its armature and re-establishes the normal condition with the resistance in the line, as already described.

The details of the call-boxes may be of any suitable character, as may also those of the other parts of the apparatus.

I claim as my invention—

1. The combination, substantially as set forth, of a normally-closed circuit including a source of electric energy, and central-sta-

tion apparatus and sub-station apparatus in series, a resistance and magnet M , normally included in the circuit at the central station, and a normally-open branch or shunt around the resistance and magnet, and contact devices by which said shunt is closed when the main circuit is opened and the armature of the magnet retracted.

2. The combination, substantially as set forth, of a normally-closed circuit including a source of electric energy and central-station apparatus and sub-station apparatus in series, a resistance and a magnet M normally included in the circuit at the central station, and a normally-open branch or shunt around the resistance and magnet, and contact devices by which said shunt is closed when the main circuit is opened and the armature of the magnet retracted, and a buzzer or indicator in the main circuit that is thrown into action when said shunt is completed.

3. The combination, substantially as set forth, of a normally-closed circuit including a source of electric energy and central and sub station apparatus, a resistance and magnet M normally in circuit, a branch or shunt around said magnet and resistance that is closed when the main circuit is broken and the armature-lever retracted, and a key or switch m^3 , whereby said branch is broken and a second branch or derived circuit including the coils of the magnet M momentarily completed, whereby the armature of said magnet is again attracted to restore the normal condition of the circuit.

4. The combination, substantially as set forth, of a normally-closed main line including a source of electrical energy and central and sub station apparatus, a resistance and magnet M normally in circuit, a branch or shunt around said magnet and resistance that is closed when the main circuit is broken, a signaling device at each sub-station for opening and closing the circuit, a receiving or recording apparatus at the central station for indicating such breaks in the circuit, a key K at the central station for signaling the sub stations by opening and closing the circuit, and a receiving apparatus at each sub-station by which such signals are manifested.

5. The combination, substantially as set forth, of a normally-closed main line including a source of electrical energy and central and sub station apparatus, a sounder or visual indicator at each sub-station, a branch wire including an incandescent lamp around said sounder, and a switch for opening the circuit through the sounder-coil and completing the circuit through the branch including the lamp.

6. The combination, substantially as set forth, of a normally-closed main line including a source of electrical energy and central and sub station apparatus, a resistance and magnet M normally in line, a branch or shunt circuit around said resistance and magnet that is completed when the main line is opened and the armature-lever of said mag-

net retracted, a receiving-relay R in the line
at the central station, a toothed wheel and a
signal-transmitting lever A' in the line at
each sub-station, and an indicator at each
5 sub-station upon which signals either trans-
mitted from or received at the sub-station are
manifested.

In testimony whereof I have hereunto sub-
scribed my name.

ALFRED G. HOLCOMBE.

Witnesses:

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MAMIE J. KELLEY.