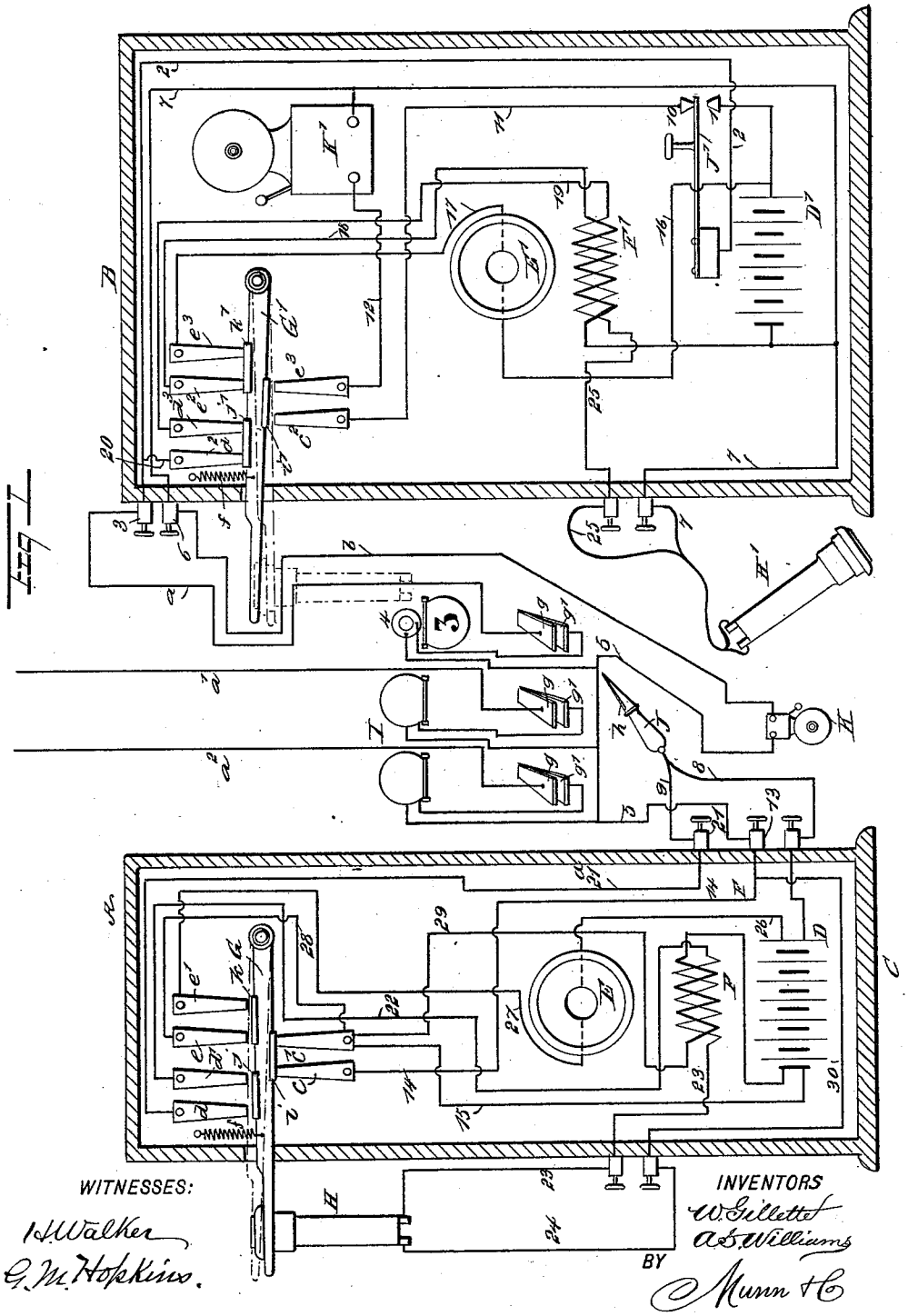
(No Model.) 2 Sheets—Sheet 1.

W. GILLETTE & A. S. WILLIAMS.

ELECTRIC SIGNAL SYSTEM.

No. 536,467. Patented Mar. 26, 1895.



WITNESSES:

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(No Model.) 2 Sheets—Sheet 2.

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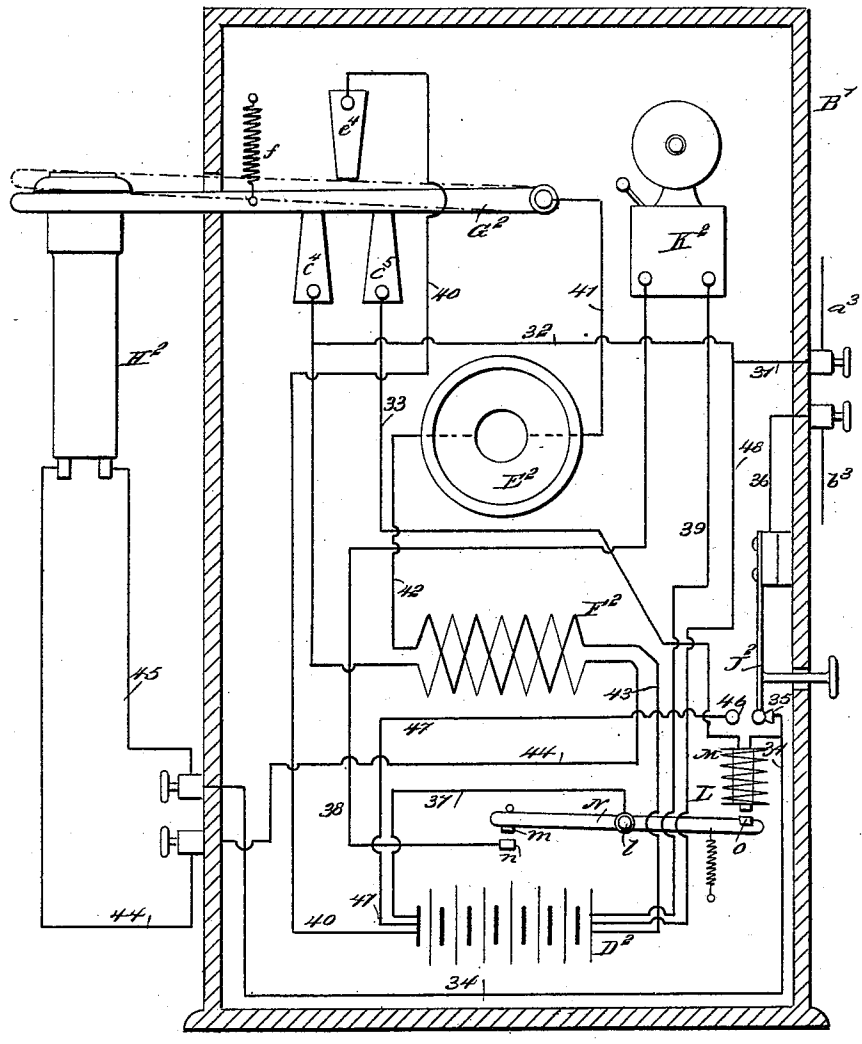
Fig 2



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UNITED STATES PATENT OFFICE.

WEBSTER GILLETTE, OF NEW YORK, AND ALEXANDER SCOTT WILLIAMS, OF LONG ISLAND CITY, NEW YORK; SAID GILLETTE ASSIGNOR TO SAID WILLIAMS.

ELECTRIC SIGNAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 536,467, dated March 26, 1895.

Application filed October 30, 1894. Serial No. 527,412. (No model.)

To all whom it may concern:

Be it known that we, WEBSTER GILLETTE, of New York city, in the county of New York, and ALEXANDER SCOTT WILLIAMS, of Long Island City, in the county of Queens, State of New York, have invented a new and Improved Electric Signal System, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a diagrammatic representation of our improved system; and Fig. 2 is a modification of the same.

Similar letters and figures of reference indicate corresponding parts in both views.

The object of our invention is to provide a simple and effective signal system which may be used in connection with the existing wiring of hotels, factories, small telephone exchanges, or with smaller wiring arranged specially for use in connection with our improved system.

Our invention consists in an arrangement of, switches keys or buttons, batteries and telephone instruments, all as will be hereinafter more fully described.

In the form shown in Fig. 1, two instruments A, B, are connected by the wire *a* and return wire *b*, the wire *a* being one of a series of wires running to different rooms or stations and communicating with the instrument A; a', a^2 being similar wires connected to an instrument similar to instrument B. Instrument A is located at the hotel office or central station as the case may be.

In the case C, are located the battery D, transmitter E, induction coil F, the telephone switch lever G, contact springs *c c'*, *d d'* and *e e'*.

The telephone receiver H hangs on the switch lever G, and normally holds the said lever down in opposition to the tension of the spring *f*.

The annunciator I, in the present case has three numbers, but it is not limited to any particular number. Each number has two springs *g g'*, which are normally in contact, and instrument A is provided with a plug J of insulating material, having upon one side a conductor *h*, connected with wires extending from the handle end of the plug.

Each wire *a*, a', a^2 is connected with its appropriate annunciator, and in the return wire *b* is placed a call bell K, which rings whenever the room circuit is completed in the manner presently to be described.

The room or subscriber's instrument B includes the battery D', transmitter E', induction coil F', telephone switch lever G', the contact springs c^2 c^3, d^2 d^3 and e^2 e^3, and the receiver H'. It is also provided with a call bell K' and back contact key J'. The telephone switch levers G G' are formed of insulating material, and are respectively provided with three metal contact pieces *i*, *j*, *k*, *i'*, *j'*, *k'*, for making connection between the pairs of contact springs *c c'*, *d d'*, *e e'*, c^2 c^3, d^2 d^3 and e^2 e^3.

The modified form of instrument B', shown in Fig. 2, is provided with a battery D^2, transmitter E^2, induction coil F^2, telephone switch lever G^2, receiver H^2, back contact key J^2, call bell K^2, and the electro-magnetic switch L, this switch comprising a magnet M, armature lever N, pivoted at *l* and carrying the contact point *m*, which is capable of forming an electrical contact with the point *n*. In this modification the lever G^2 is made of conducting material. As the transmitter, receiver, induction coil, battery and bell used in this system are of well known construction, it is not deemed necessary to describe them each in detail.

When it is desired to call the office from the room instrument B, the back contact key J' is pressed down, bringing it against the lower contact 1, thus taking the current from one pole of the battery D' through the lower contact 1, the key J', wire 2, binding post 3, wire *a*, springs *g g'*, annunciator 4, wire 5, wire *b*, bell K, binding post 6, and wire 7 back to the remaining pole of the battery, D', thus tripping the annunciator and giving an alarm at the office, the telephone switch lever G' being at this time depressed by the weight of the telephone, as shown in dotted lines. At the office the plug J is inserted between the springs *g g'* belonging to the annunciator 4,

when the wire a is thrown into communication with the metallic contact piece h of the plug J, thus establishing electrical communication between the wire a and the wires 8 and 9. This causes the bell K′ to ring, the current passing from the battery D, through wire 8, plug J, spring g, wire a, binding post 3, wire 2, key J′, back contact 10, wire 11, spring c^2, contact piece i', spring c^3, wire 12, bell K′, wire 7, binding post 6, wire b, wire 5, binding post 13, wire 14, spring c, contact piece i, spring c', wire 15 back to the remaining pole of the battery D. By removing the receivers H, H′ from their respective levers, the instruments are placed in condition for telephoning, the lever G′ at this time being in the position shown by full lines, and the lever G being in the position shown by dotted lines. The current under these conditions passes from the battery D′ through the wire 16, transmitter E′, wire 17, spring e^3, contact piece k', spring e^2, wire 18, primary wire of the induction coil F′ back to the battery.

The current from the secondary wire of the induction coil passes through wire 19 to spring d^3, contact piece j', spring d^2, wire 20, binding post 3, wire a, spring g, contact plate h of the plug J, wire 9, binding post 21, wire 21^a, spring d, contact piece j, spring d', wire 22, secondary wire of the induction coil F, wire 23 to the receiver H, thence by the wire 24 to binding post 13, wire 5, wire b, binding post 6, wire 7, receiver H′, and wire 25 back to the induction coil F′.

In the instrument A at the office, the connections are similar and work in a similar way, that is to say, the current from the battery D passes to the transmitter E, through the wire 26, thence through wire 27 to the spring e', the lever G being in an elevated position, through the contact piece k, spring e, wires 28, 29, primary of the induction coil F back to the remaining terminal of the battery. The secondary current from the induction coil passes through wire 23, receiver H, wire 24, wire 30, binding post 13, wire 5, wire b, binding post 6, wire 7, receiver H′, wire 25, secondary of the induction coil F′, wire 19, spring d^3, contact j', spring d^2, wire 20, binding post 3, wire a, spring g, contact plate h of the plug J, wire 9, wire 21, spring d, contact j, spring d', wire 22 back to the secondary of the induction coil F. The connections are restored to their normal conditions by placing the receivers H, H′ on their respective levers.

In the modification shown in Fig. 2, the circuit is closed by the electro-magnetic switch L, which is operated as follows: The current from the distant station arriving by the wire a^3 passes through the wires 31, 32, spring c^4, metallic switch lever G^2, spring c^5, wire 33, magnet M, thence through the wires 34, and 35, the back contact of the key J^2, wire 36 to the wire b^3, which completes the circuit to the source of current. The magnet M being energized, draws the armature o of the armature lever N upwardly toward the magnet, thus completing the circuit between the contacts m, n, when the current from the battery D^2 flows through the wire 37, lever N, contacts m, n, wire 38, bell K^2, wire 39 back to the battery, thus giving a signal on the bell. When the subscriber removes the receiver H^2 from the lever G^2, the battery current flows through the wire 40, spring e^4, lever G^2, wire 41, transmitter E^2, wire 42, primary of the induction coil F^2, wire 43, back to the battery. The current from the secondary of the induction coil flows through the wire 44, receiver H^2, wires 45, 34, 35, the back contact of the key J^2, the key, the wire 36 and the distant station, so that telephonic communication can be kept up between the two stations.

When it is desired to call a distant station the back contact key J^2 is pushed forward into contact with the point 46, when the current flows from the battery D^2 through the wire 47, contact point 46, key J^2, wire 36 and wire b^3 to the distant station, returning by the wire a^3, wire 31, wire 48 to the battery.

It is obvious that while the conductors are all closed, the circuits of the batteries are open, and that the conductors are always in condition for sending and receiving signals and for use for telephonic communication.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In an electric signal system, a closed conductor connecting two stations, a battery arranged for cutting into the closed conductor for signaling, and a telephone support provided with switch contacts for completing the local and line circuits, as herein specified.

2. In an electric signal system, the combination of the switch lever G, contact points i, j, k, springs $c\ c'\ d\ d'$, $e\ e'$, induction coil F, transmitter E, receiver H, battery D, the plug switches, connected with the local battery and receiver circuits, annunciators line and local circuit wires, and the connecting devices, substantially as specified.

3. The combination with the telephone switch for controlling the line and local circuits, of a single plug having a single contact surface switch for throwing one pole of the connections of the battery and one pole of the secondary of the induction coil into electrical connection with the line.

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