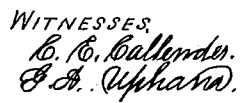


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INVENTOR
Charles E. Russell

UNITED STATES PATENT OFFICE.

CHARLES E. BUELL, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN TELEPHONE-ALARM SYSTEMS.

Specification forming part of Letters Patent No. **221,512**, dated November 11, 1879; application filed August 6, 1879.

To all whom it may concern:

Be it known that I, CHARLES E. BUELL, of the city and county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Signaling Apparatus, of which the following is a specification.

My invention relates to signaling by electricity, and has for its object to sound or indicate calls or signals at any one of several stations in the same electric circuit without the calls being produced at any station other than the one for which they are intended.

A further object of my invention is to combine the said signaling apparatus with a system of telephone transmission.

I accomplish the object of my invention by the employment of several electro-magnets of different adjustment in the same main electric circuit, which I make operative separately by varying the tension of the circuit to a different and definite amount for each, and by holding those electro-magnets of a more delicate adjustment closed, while making operative separately those electro-magnets of a higher adjustment.

The accompanying drawing represents a side elevation of the call-bell electro-magnets M M M at the receiving-stations 1, 2, and 3, together with the switches and telephones of a telephone system, and the resistance-coils R R² R³, and the keys K', K², and K³, switch-blocks C', C², and C³, plug P, and galvanometer G of a sending-station.

The call-bell magnet M at station 3 is made operative by the manipulation of the transmitting-key K', which makes and breaks the circuit through the entire resistance. The electro-magnets M and M of stations 1 and 2, being too highly adjusted, do not respond to the force charging the circuit with the entire resistance included therein.

To make the magnet M at station 2 respond, I manipulate the key K², which cuts off the resistance R³ and increases the force, charging the circuit sufficiently to cause the magnet M at station 2 to respond, but not sufficiently to make operative the magnet M of station 1, which only responds to the manipulation of the key K³, which still further

adds to the force charging the circuit by cutting off both the resistance-coils R² and R³.

To make the magnet M of station 2 respond separately, I hold closed the electro-magnet M of station 3 by depressing key K', or by inserting the plug P in the switch-block C'.

To make operative the magnet M of station 1 without producing the same calls on magnets M and M of stations 2 and 3, I hold key K² depressed, or insert the plug P in the switch-block C² while manipulating key K³.

By holding those electro-magnets of a more delicate adjustment closed, any reasonable number of call-bell electro-magnets can be thus made to respond separately.

An automatic electro-magnet or clock mechanism may be employed to manipulate the desired magnet.

The electro-magnets may be of different resistance as well as of different adjustment.

Any conducting resistance may be substituted for resistance-coils, and one set of transmitting apparatus may be used to control several circuits successively.

Any convenient form of switch may be used in place of those shown.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a main electric circuit, the combination, with two or more electro-magnets of different construction or different adjustment and conducting resistances for varying the circuit's tension to different and definite degrees, of means for holding those more delicately adjusted electro-magnets closed while making operative electro-magnets of a higher adjustment to separately produce calls and signals.

2. The combination, with one main electric circuit, of two or more switches, which interpose telephones in the circuit or in a fragment thereof, and two or more electro-magnets, which are made operative separately by holding those more delicately constructed or adjusted magnets closed, while making others to respond separately by varying the circuit's tension.

3. The combination, with two or more elec-

tric circuits, of the resistance-coils and keys of an individual call-bell apparatus and means for switching the several circuits successively into connection therewith.

4. The combination, with the means for separately making operative two or more electromagnets of different construction or adjustment by holding those of a more delicate adjustment closed while varying the circuit's tension, of a variable resistance and a galva-

nometer for adjusting the tension of a main electric circuit.

I have hereunto subscribed my name in the presence of these witnesses this 4th day of August, A. D. 1879.

CHARLES E. BUELL.

Witnesses:

C. E. CALLENDER,
G. A. UPHAM.