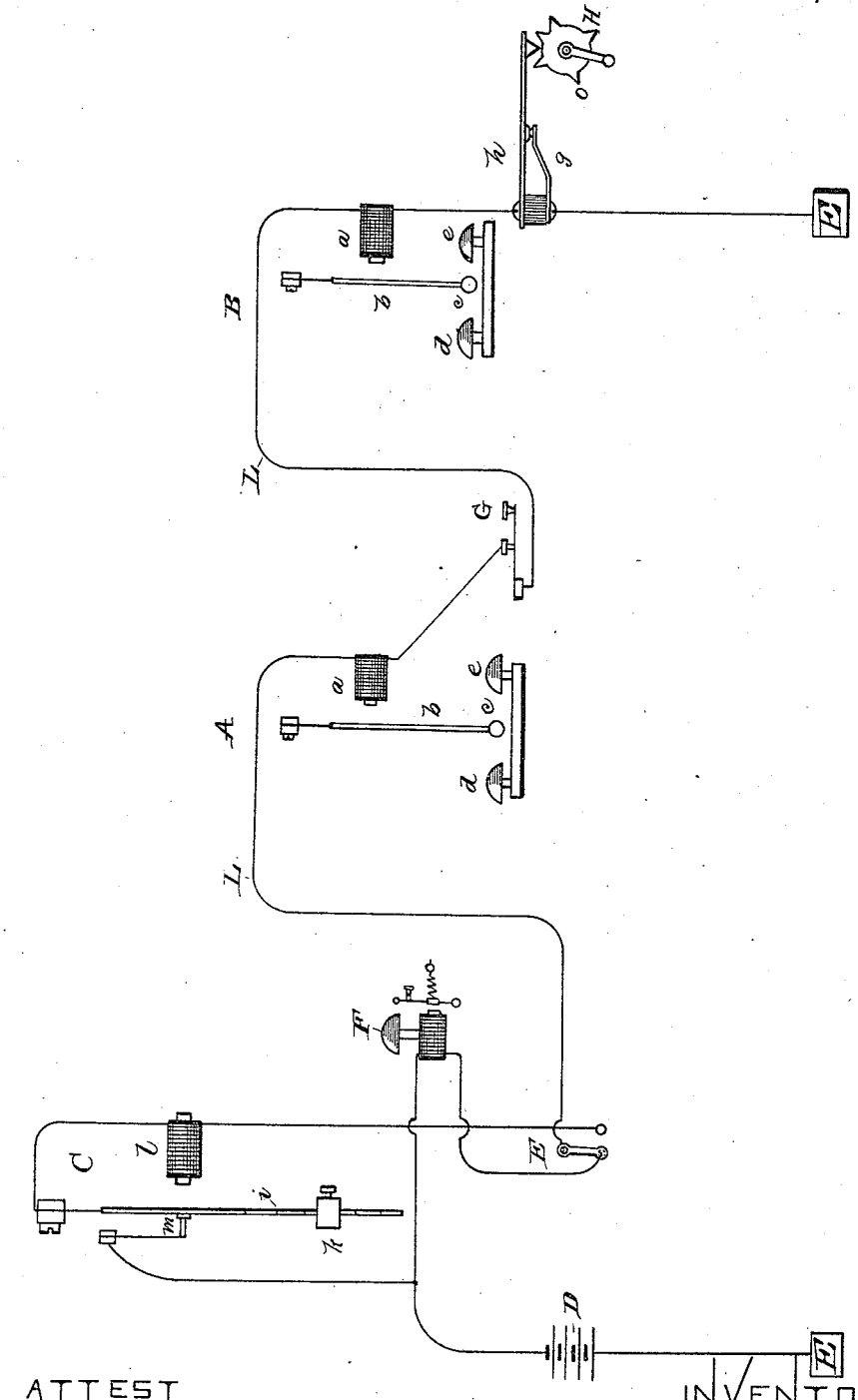
(No Model.)

T. A. EDISON.

ELECTRIC SIGNALING APPARATUS.

No. 438,304. Patented Oct. 14, 1890.



ATTEST

INVENTOR:

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UNITED STATES PATENT OFFICE.

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ELECTRIC SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 438,304, dated October 14, 1890.

Application filed December 15, 1884. Serial No. 150,343. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Electric Signaling Apparatus, (Case No. 634,) of which the following is a specification.

My invention relates to that class of individual call or signaling systems in which the signal-receiving instruments consist each of an electro-magnet located in the line in front of which is placed a vibrating pendulum or reed, all such pendulums or reeds having different rates of vibration and each being adapted when in motion to produce a signal, preferably by striking upon a bell-gong. The transmitting-instrument at the main or central office is a magnet with a pendulum-armature having an adjustable bob or weight upon it, so that its swing may be altered to correspond with that of such of the receiving-pendulums as it may be desired to effect. The transmitting-pendulum makes and breaks the line-circuit as it swings, and thus throws the line-current into pulsations or vibrations, which affect the signaling-magnets so that that pendulum whose rate of vibration is the same as that to which the transmitting-pendulum has been adjusted will be caused to affect its bell or local circuit, and the desired signal will be produced at this point, while all the others will remain unaffected.

The object of my invention is to provide simple and effective means whereby in a system such as that just described a person at any one of the receiving-points may signal the transmitting-station without causing any effect in the other signal-receivers.

The accompanying drawing is a diagram of a system embodying my invention.

A and B are the signal-receivers arranged in series in the line L. Each is composed of a magnet *a* in the line and a reed or pendulum *b*, having weight *c* and suspended in front of the magnet the proper distance away not to be affected, except by current-pulsations corresponding with or in unison or accord with its rate of vibration. The reeds or pendulums are of different lengths and the weights of different sizes, as shown, so that their rate of vibration will be different, for the purpose already explained. Bells *d e* are mounted opposite each other at the limit of swing of the reed or pendulum, so as to be struck by the ball *c* when the pendulum acquires a definite swing. At the central point from which the line runs is located the signal-transmitter C, composed of a reed or pendulum *i*, having an adjustable weight *k* and graduated to show the adjustment, and a magnet *l* opposite the reed or pendulum. The reed or pendulum *i* makes and breaks the circuit of line-battery D at the spring *m*.

The line is connected to switch E, and the signal-transmitter is arranged in a loop between the battery D and one point of the switch, a bell F being located in a loop between D and the other point of the switch, whose function will be presently explained.

The means which I provide for signaling the central or transmitting station from a receiving-point consists of a device whereby irregular pulsations may be given to the line-current. Such pulsations are employed to actuate the bell F at the central station, but can have no effect on any of the receiving-pendulums, since these are affected only by regular vibrations. When the transmitter is not in use, the switch E is placed, as shown, so that such transmitter is cut out and the bell F is in circuit in readiness for a call, and such switch is shifted to its other position when the transmitter is operated.

I have shown two different devices at the receiving-stations. At station A is placed a simple key G in the line which is operated by hand to produce the desired irregular-current pulsations; but this arrangement I do not claim herein.

In the present invention I employ a circuit-controller which by a single movement causes several makes and breaks in the circuit, said makes and breaks being of different number and rate from that required to operate the vibrating receivers.

I prefer the device shown in connection with station B. This consists of a break-wheel H, provided with a handle for turning it and provided with teeth *o*, situated at irregular intervals upon its periphery. The line-conductors are connected with springs *g h*, which are normally in contact, and spring *h* has a

tooth resting normally in the depressions of wheel H. When such wheel is turned, teeth *o* serve to break the contact between *g* and *h* at irregular intervals, and the bell F is rung by the vibration of currents thus caused. Any other suitable form of break-wheel or other circuit-breaker adapted to make and break the circuit at irregular intervals may evidently be employed.

What I claim is—

1. The combination, in an individual signaling system, of a line including a source of electricity, a transmitter, and several vibrating receivers, the rates of vibration of which are different each from the other, and a circuit-controller at each receiving-station having several making and breaking devices, of a number so arranged as to be insufficient to operate any of the vibrating receivers, whereby by a single movement of the controller a plurality of impulses may be sent over the line to operate the central-office signaling device without danger of operating the vibrating receivers, substantially as described.

2. In an individual signaling apparatus, the combination, with the vibrating transmitter and receivers arranged to respond to a definite rate of current-impulses, substantially as described, of circuit-breaking wheels at the signal-receiving points, having their circuit making and breaking points arranged at irregular intervals, whereby irregular-current pulsations are produced upon the line and a signal device at the central station affected by such irregular pulsations, substantially as set forth.

This specification signed and witnessed this 24th day of September, 1884.

THOS. A. EDISON.

Witnesses:
WM. H. MEADOWCROFT,
THOS. G. GREENE, Jr.