(No Model.) 2 Sheets—Sheet 1.

T. A. EDISON.

ELECTRICAL SIGNALING APPARATUS.

No. 340,708. Patented Apr. 27, 1886.

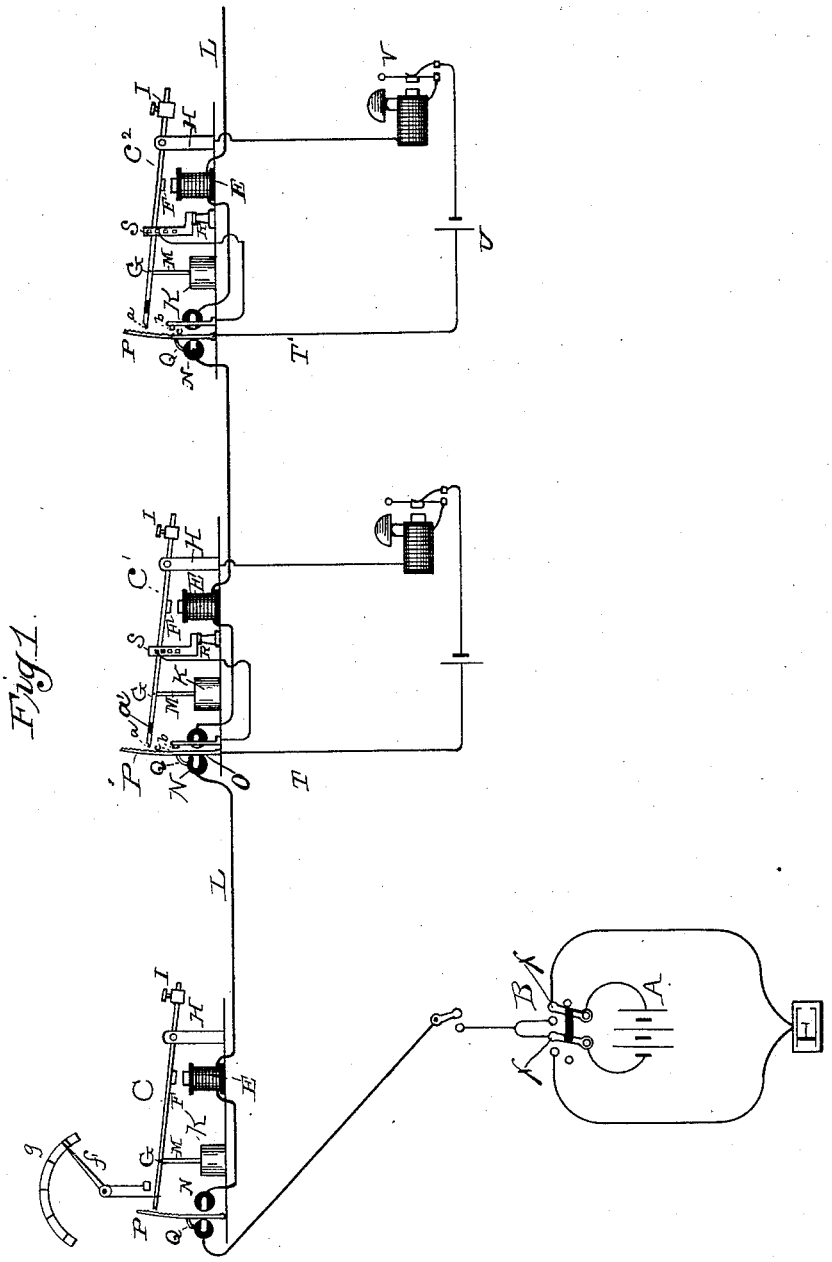

Fig 1.

ATTEST

E. C. Rowland
A. W. Riddle.

INVENTOR:

Thomas A. Edison
By Dyer & Seely
Atty

(No Model.) 2 Sheets—Sheet 2.

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ELECTRICAL SIGNALING APPARATUS.

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Fig. 2.

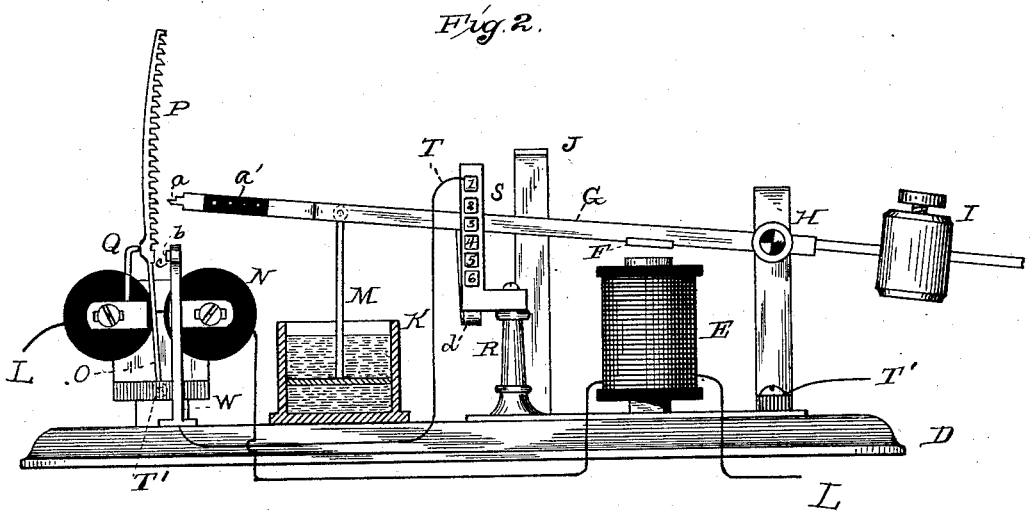
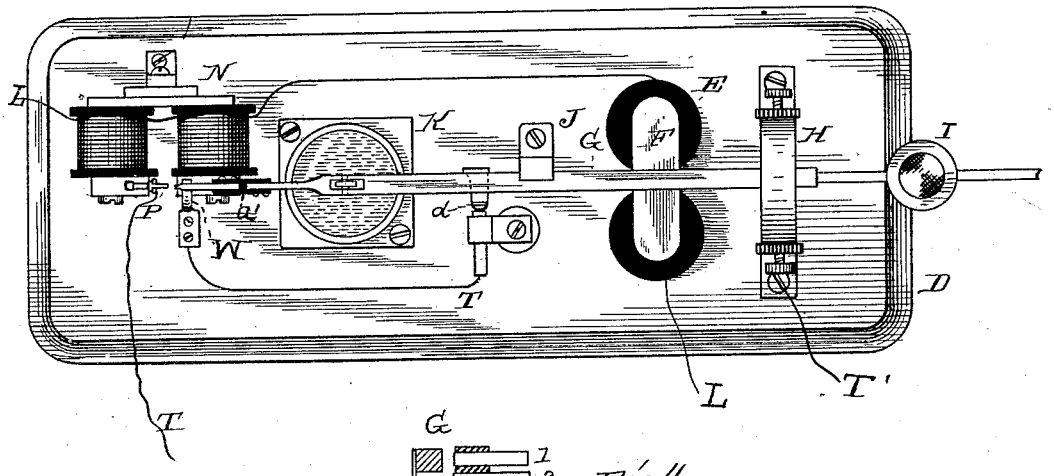


Fig. 3.



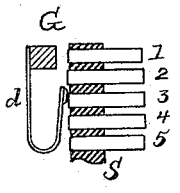


Fig. 4.

ATTEST:
E. C. Rowland
T. G. Greene Jr.

INVENTOR:
Thomas A. Edison
By Dyer & Seely
Attys

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

ELECTRICAL SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 340,708, dated April 27, 1886.

Application filed January 12, 1885. Serial No. 152,622. (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 Electrical Signaling Apparatus, (Case No. 641,) of which the following is a specification.

My invention relates to electrical signaling apparatus by means of which signals of any character may be communicated from a central office or other place to any one of a number of receiving or indicating instruments on the same line without affecting any of the other instruments, and particularly my invention relates to that form of apparatus set forth in my application No. 640, (Serial No. 152,621,) in which several main-line instruments are employed, each controlling a local circuit and each consisting of two parts separately controlled by the current from the signaling-station, one of which brings the local-circuit contacts into position for closing circuit, after which the other acts to close the circuit.

In my present invention the means for first bringing the local contacts into position are mechanical means, set in operation by the main-line current, giving all the local-circuit controllers the same movement, while the second part of the apparatus acts to stop the movement of all said circuit-controllers and close the right local signaling-circuit at the proper determined point of such movement.

My invention is illustrated in the accompanying drawings, in which Figure 1 is a diagram of a signaling system embodying said invention; Fig. 2, an elevation of one of the main-line instruments; Fig. 3, a top view of the same, and Fig. 4 a view of the local-circuit contacts.

A is the line-battery at the signaling-station. L is the line, and B is a circuit breaker and reverser therein.

C C′ C² are the main-line signaling-instruments. Instrument C is at the signaling-station, and by means of it the operator can determine the condition of the other instruments. Each of these instruments is mounted upon a suitable base, D, and consists of an electromagnet, E, whose armature F carries an arm, G, pivoted at H, and balanced by a weight, I. J is a stop for said arm, and K is a dash-pot, and M a plunger for retarding the movement of the arm.

N is a polarized relay, between whose poles plays the pivoted arm O, whose upper part is a toothed bar, P. Q is a back stop for said arm.

At the end of arm G is a tooth, *a*, which engages with the teeth of P when arm O is attracted in that direction. An interposed insulating-section, *a′*, removes the end of the arm G from the circuit.

A standard, R, supports an insulating strip or block, S, which carries a series of contacts, 1 2 3, &c., there being as many of these numbered contacts as there are instruments on the line. These contacts pass through the strip S.

Metal post W carries a contact, *b*, situated opposite the contact-surface *c* of arm O.

Arm G carries a contact-spring, *d*, which moves up and down the series of contacts 1 2, &c.

The local circuit, which includes local battery U and electric bell V, or other suitable audible or visual indicator, is as follows when closed: from contact 1 (or in another instrument from that contact of the series with which the circuit is connected, as already explained) by wire T to post W, contacts *b c*, arm O, wire T′, through the bell and battery to standard H, arm G, and spring *d*, bearing on the contacts. Normally, however, this circuit is open at 1 *d* and at *b c*, the weight I bringing the spring *d* above all the numbered contacts.

The operation of these devices is as follows: When the arms of the switch B are on the points *f f*, the line is open and the signaling-instruments in the line are in the normal condition just described. Moving the switch into the position illustrated closes the line and energizes all the magnets E, which attract their armatures and cause them to move down, carrying the arms G to their lowest point. The polarized relays N are so arrranged that with the current in this direction the arms P are held back against the stops Q. The line is then opened by bringing the reverser-arms to their middle contacts. The magnets E are demagnetized and the weights I move the arms G slowly back, the movement being retarded by the dash-pots. The instrument C at the signaling-station performs the same movement

as the others, and being provided with a scale, *g*, and pointer *f*, the movements are shown enlarged upon such scale, and thus the position of all the armature-levers G is constantly indicated to the operator. When the armature-levers reach such a point that each contact-spring is on the contact corresponding in number to the signaling-instrument which it is desired to affect, the operator throws over his reversing-switch to the other side and reverses the line-current, thus reversing the attraction of the polarized relay, which throws the arm O over and closes circuit at *b c*, and the tooth *a* engages with the teeth of bar B, and holds the local circuit closed at 1 *d* and *b c* until the signal is completed by the bell V, or such other signaling or indicating device as may be substituted therefor. Then, by again reversing the switch, the polarized relay draws the bar P away from the arm and unlocks it, and by breaking the line the arms are all restored to their original positions.

To affect any other instrument, the moving contact-arms are stopped at the proper point to close its local circuit.

Another way in which the instruments may be operated is to close the line through the magnets, and as the arms move down operate the polarized relay, and so stop and lock them at the proper predetermined point to operate the signal, after which, the circuit being broken, the arms are brought back again above the series of contacts.

What I claim is—

1. In electrical signaling apparatus, two or more line-instruments, each comprising a moving contact and a stationary contact of a local signaling-circuit, all said stationary contacts being situated differently relative to the moving contacts, and mechanical means controlled from the signaling-station for setting said moving contacts in motion, in combination with means at the signaling-station for stopping the movement of said contacts at any determined point to close the desired local circuit, substantially as set forth.

2. In electrical signaling apparatus, two or more instruments, each controlling a local circuit and each comprising an electro-magnet in the main line, a contact-arm moved by said magnet and connected with the local circuit, means for retarding the movement of said arms, a stationary local-circuit contact, all said stationary contacts being situated differently relative to said moving contact-arms, and a polarized relay in the line for stopping the movement of said contact-arms at any determined point to close the desired local circuit, in combination with a line-circuit breaker and reverser at the signaling-station, substantially as set forth.

3. In an electrical signaling apparatus, two or more signaling-instruments, each comprising a local-circuit contact having, when set in motion, a continuous retarded movement, electro-magnetically controlled means affected by the line-current for setting the same in motion, a stationary local-circuit contact, all said stationary contacts being situated differently relative to said moving contacts, and an electro-magnetic device in the line for stopping the movement of said moving contact and closing the local circuit when the desired stationary contact is reached, in combination with means at the signaling-station for affecting first the devices setting the contacts in motion and then the devices stopping the same, substantially as set forth.

This specification signed and witnessed this 19th day of December, 1884.

THOS. A. EDISON.

Witnesses:

WM. H. MEADOWCROFT,

T. G. GREENE, Jr.