

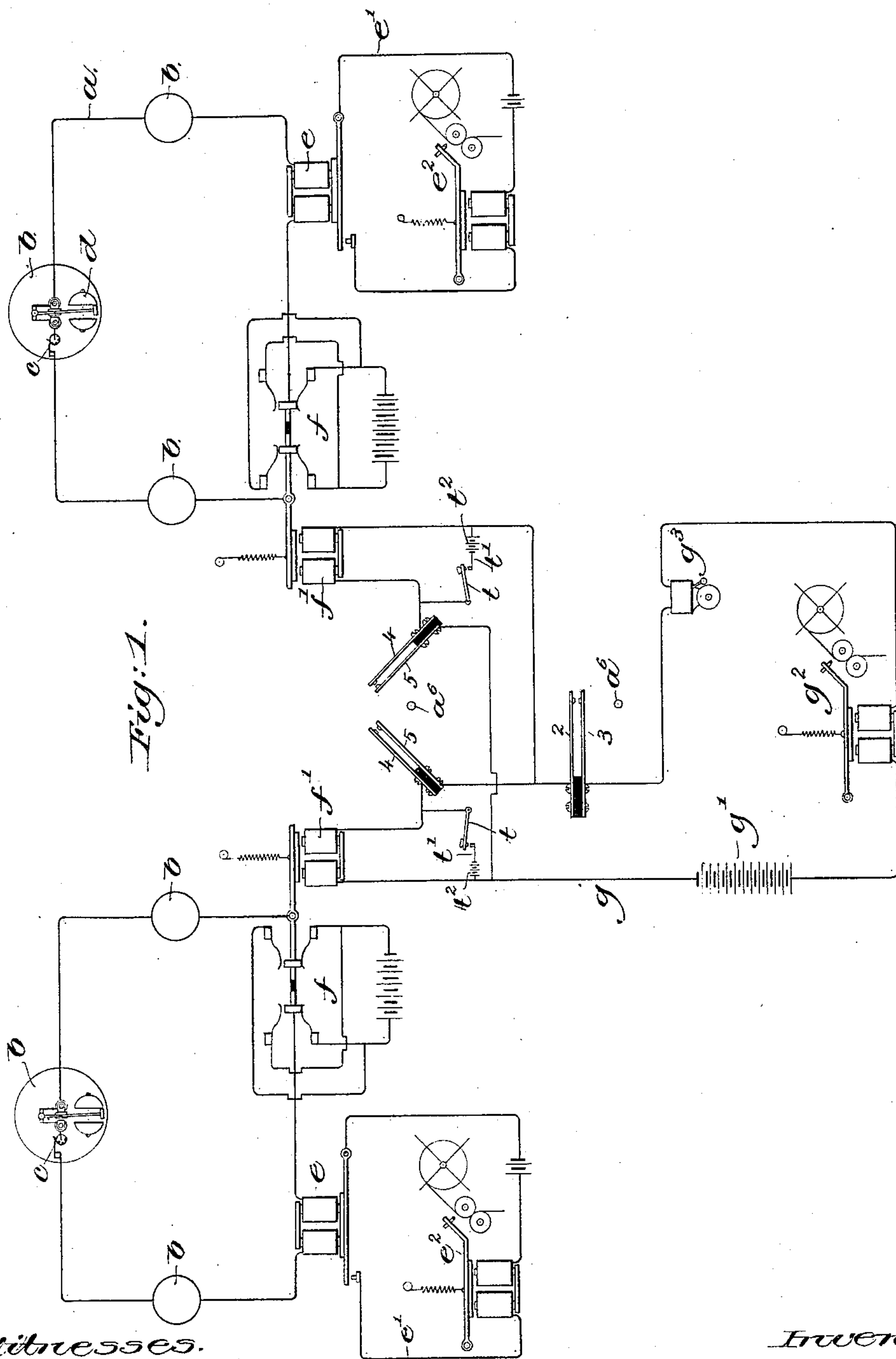
(No Model.)

2 Sheets—Sheet 1.

B. J. NOYES.
ELECTRIC SIGNALING APPARATUS.

No. 466,053.

Patented Dec. 29, 1891.



Witnesses.

Fred S. Grumbel
Edward F. Allen

Inventor.

Bernice J. Noyes,
by Leroy S. Longory
Attys

(No Model.)

2 Sheets—Sheet 2.

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Fig: 2.

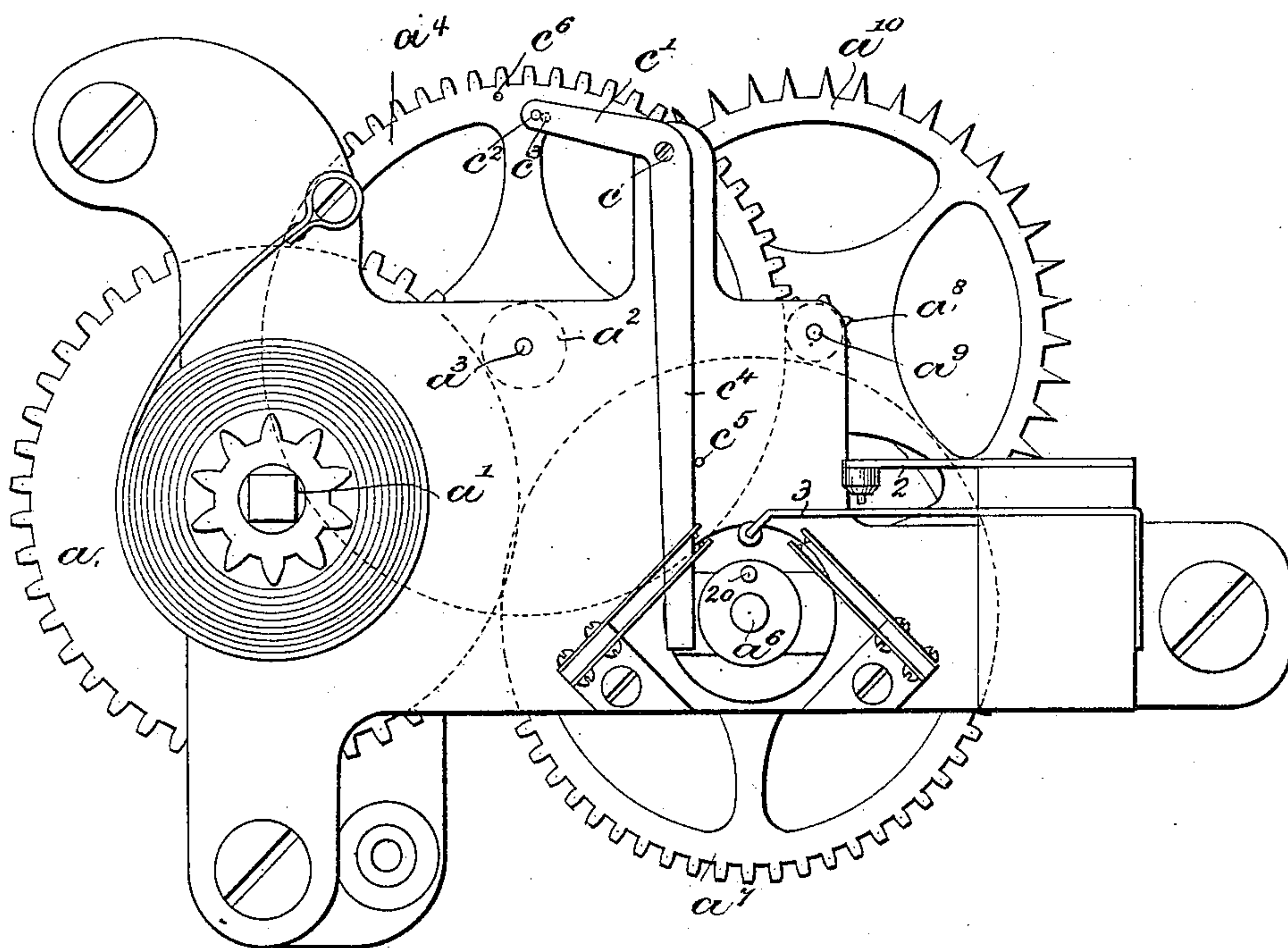


Fig: 3.

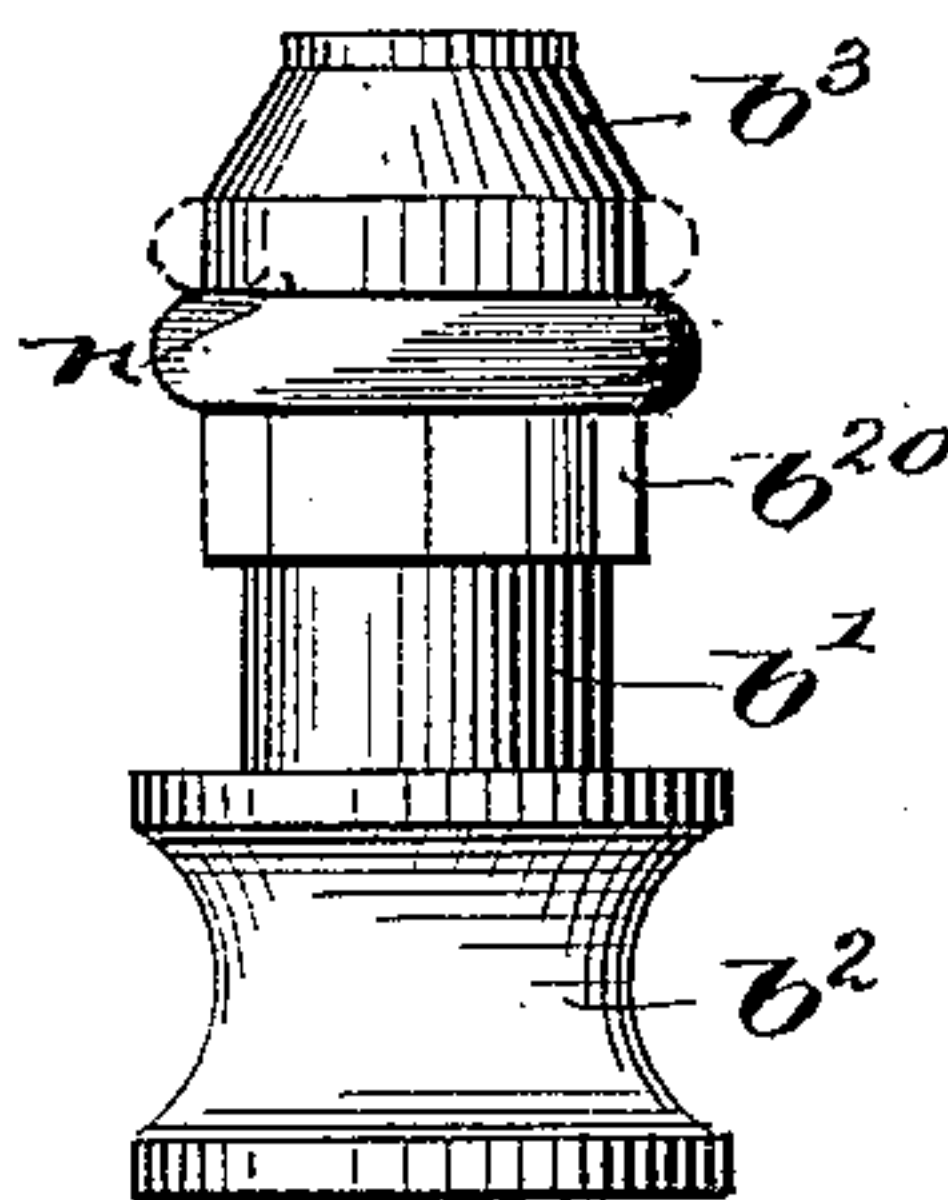
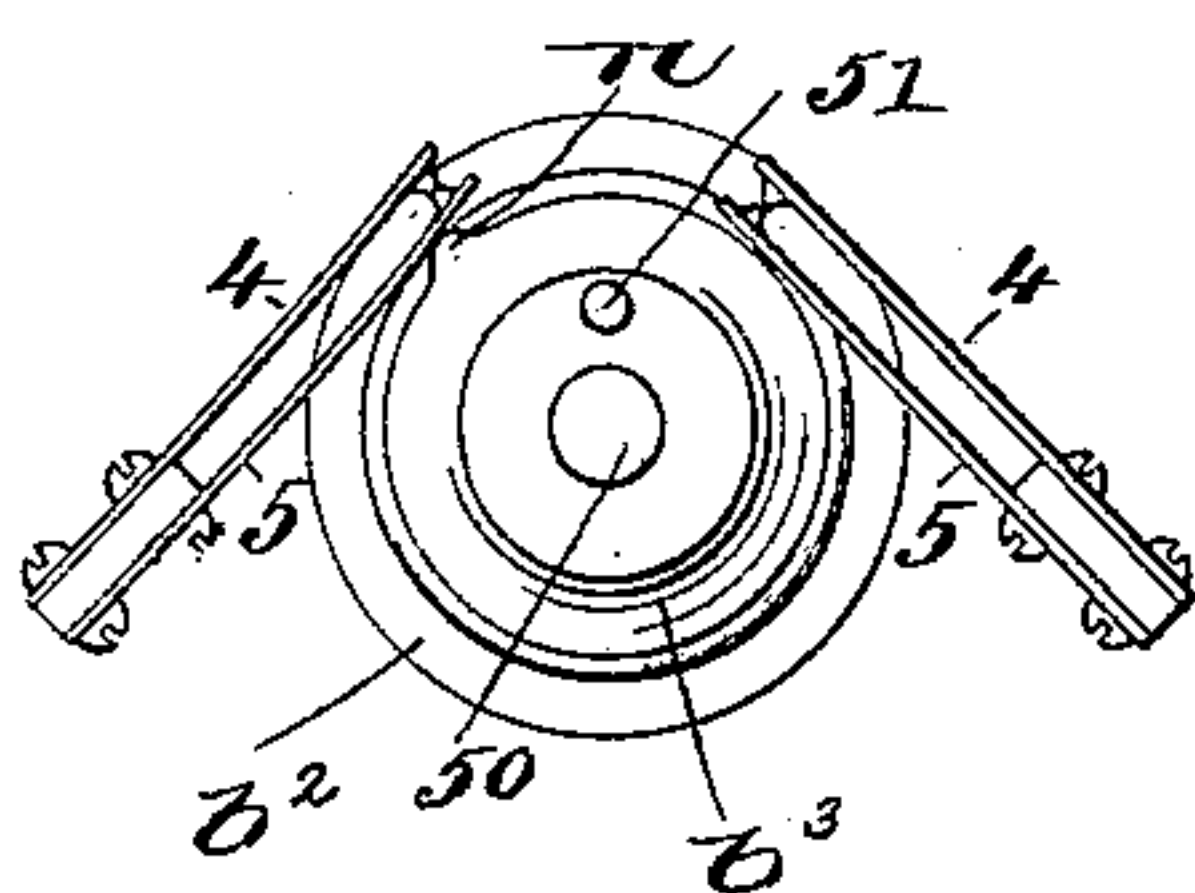


Fig: 4.



witnesses.

*Fred S. Greenleaf
Edward H. Allen*

Inventor.

*Bernice J. Noyes,
by Crosby & Gregory
Attys.*

UNITED STATES PATENT OFFICE.

BERNICE J. NOYES, OF BOSTON, MASSACHUSETTS.

ELECTRIC SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 466,053, dated December 29, 1891.

Application filed November 4, 1890. Serial No. 370,295. (No model.)

To all whom it may concern:

Be it known that I, BERNICE J. NOYES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Electric Signaling Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 In police and other intercommunication systems it is now common to arrange signal-boxes on circuits leading to the central office, such boxes being adapted to transmit one or more signals, and in many of such cases each signal-box is provided with an answer-back bell which is operated by an attendant at the central office. It is usual for the attendant at the central office on the reception of the signal to operate the answer-back circuit-changing device to cause the answer-back bell to give one or more taps.

In police-signal systems one of the important signals which is transmitted is the wagon-signal, and as the wagon-house is oftentimes a long distance from the central station this signal is repeated to said wagon-house by a multiple signal-transmitting apparatus of some kind operating an independent circuit. When an officer sends in a wagon-signal, it is very desirable for him to know that it has been received and also that it has been repeated, and, furthermore, that the correct number has been received and repeated to thereby inspire courage should the officer be holding an unruly prisoner and, also, to save time in case the attendant should make a mistake in repeating the signal and the wrong number should be received at the wagon-house, the wagon in such instance going to the wrong box.

45 This invention has for its object to place the answer-back circuit-changing device or devices under the control of the wagon-transmitter, so that at the time the wagon-signal is transmitted from the central office to the wagon-house the same number, which is the box-number, will be tapped on the answer-back bell in the signal-box.

In carrying out this invention I have pro-

vided an electro-magnet for operating the answer-back circuit-changing device and have included said electro-magnet in an independent circuit. I have also provided a switch for the actuating electro-magnet of the answer-back circuit-changing device, which is operated, preferably, automatically by the multiple signal-transmitting apparatus employed to transmit the wagon-signals.

Figure 1 shows in diagram a signaling system especially adapted for police-signaling apparatus, showing two main signaling-circuits, a single wagon-circuit, and operating devices embodying this invention; Fig. 2, a front elevation of one form of multiple signal-transmitting apparatus which may be employed in connection with this invention, and Figs. 3 and 4 details of the multiple signal-transmitting apparatus to be referred to.

The main signaling-circuit *a* contains signaling-boxes *b*, each of which contains a signal-transmitting apparatus, as *c*, and an answer-back bell *d*. Preferably at the central station a receiving-relay *e* is employed, the armature of which controls a local circuit *e'*, containing a register *e''*, which receives the signals transmitted from the boxes; but in lieu of this form of receiving apparatus any other suitable form may be employed.

The answer-back bells in the signal-boxes are herein represented as polarized bells, and at a point in the circuit *a*—as at the central office, for instance—an answer-back circuit-changing device is included, it being herein represented as a pole-changer *f*, the operating member of which is controlled by an electro-magnet *f'*.

At the central office a multiple signal-transmitting apparatus, such as represented in Figs. 2 to 4, or any well-known equivalent therefor, may be employed, which operates an independent wagon-circuit *g*, containing a battery *g'*, a register *g''*, and a bell *g'''*, or any other suitable receiving apparatus.

Referring to Fig. 1, the circuit-closing device 2 3 represents the multiple signal-transmitter. The independent wagon-circuit *g* also includes an electro-magnet *f'* of the answer-back circuit-changing device. When a signal

is received from one of the boxes *b* at the central station, an attendant repeats this signal by the multiple signal-transmitting apparatus 2 3 to the wagon-house, and as the signal 5 which he transmits is the box-number the magnet *f'* will report the same, the register *g*², bell *g*³, and the answer-back circuit-changing device being thus operated by the electro-magnet *f'*, the box-number will be tapped on 10 the answer-back bell *d* in the box. By this means the officer will know that his signal has been received and that it has been correctly repeated.

In police-signal systems as commonly constructed several signaling-circuits radiate 15 from a signal-box or station-house, and but one wagon-circuit is employed, and hence to make the parts automatic in their action I have provided each signaling-circuit with a 20 separate answer-back circuit-changing device and have provided an electro-magnet, as *f'*, for each answer-back circuit-changing device, and have included the magnets in the wagon-circuit *g* in multiple arc, and have hence pro- 25 vided a switch, such as 4 5, for each branch wire, one or another of which switches will be closed to include in the wagon-circuit, and thereby render responsive one or another of the electro-magnets *f'*.

30 The multiple signal-transmitter herein shown is substantially the same as shown in my application, Serial No. 365,707, filed September 22, 1890, yet so far as the essential features of my present invention are con- 35 cerned any other suitable form may be employed. This particular form of multiple signal-transmitter comprises a toothed wheel *a*, arranged on a winding-shaft *a'* and in mesh with a pinion *a*², (see dotted lines,) secured to 40 a shaft *a*³, to which shaft is secured a toothed wheel *a*⁴, engaging a pinion secured to a shaft *a*⁶, to which a toothed wheel *a*⁷ is secured, which engages a pinion *a*⁸, secured to a shaft *a*⁹, carrying an escape-wheel *a*¹⁰, adapted to co- 45 operate with any suitable pallet. A signaling-key consisting of the stationary contact-pen 2 and the movable contact-pen 3 occupies a suitable location to co-operate with a signal-wheel *b*²⁰, (see Figs. 3 and 4,) which is 50 herein shown as secured to a shank *b'*, to which a knob *b*² is secured and by which it may be moved at will. The signal-wheel has formed on it or secured to it a tapering hub *b*³. The signal-wheel *b* is removable at will 55 from its shaft *a*⁶ in order that another wheel having a different predetermined signal thereon may be substituted. A let-off is provided for the train consisting of a bell-crank lever pivoted at *c*²⁰ to the frame-work, one arm 60 of which, as *c'*, has on it a pin *c*², which engages a pin *c*³ on the wheel *a*⁴, and the other arm, as *c*⁴, of which normally bears against a pin *c*⁵ on the frame. The arm *c*⁴ is of suitable length to lie in the path of movement of 65 the tapering hub *b*³ when in its normal posi-

tion against the pin *c*⁵, so as to be moved by said hub when the signal-wheel is placed on the shaft *a*⁶. As the let-off *c'* *c*⁴ is moved by the tapering hub *b*³, this pin *c*² releases the pin *c*³ and thereby the train. The signal-wheel 70 *b*²⁰ will be revolved by means of the shaft *a*⁶ until the pin *c*⁶ on the wheel *a*⁴, arranged in a different distance from the axis of rotation of said wheel, engages and strikes the pin *c*² on the arm *c'*, which at this time will be in 75 the dotted-line position shown. The train will thus be stopped, and the signal-wheel being removed the let-off will resume the normal full-line position shown, and the train will again start and run until the pin *c*³ engages 80 the pin *c*², when the train is again stopped. The hub of the signal-wheel *b*²⁰ has on it an annular projection *n*, which, when placed on the shaft *a*⁶, is adapted to engage and close 85 the circuit-changing switch 4 5, which is included in the branch wire with the electro-magnet *f'*. The annular projection *n* will be arranged on the hubs at different distances from their ends, as shown in Fig. 3, wherein 90 the projection *n*, full lines, represents the location of the projection when used in connection with one circuit, and dotted lines represents the location for the other circuit, and the switches 4 5 will be located one in ad- 95 vance of the other to co-operate, respectively, with the projections of the different hubs.

In the diagram herein shown are two main signaling-circuits, and hence two magnets, as *f'*, and two switches, and the signal-wheels, in addition to having a socket, as 50, to receive 100 the shaft *a*⁶, also have a socket, as 51, to receive the pin 20, so that when the signal-wheel is placed thereon it will always occupy the same relative position to the signaling- 105 key, and the projections *n* on the hubs of all the signal-wheels corresponding to the box in one of the main signaling-circuits, having the projections *n* arranged thereon at substan- 110 tially the same point and at a different relative position to the projections placed on the signal-wheels corresponding to the signal-box of the other main signaling-circuit. By these means there can be no mistake as to the 115 wagon-signal being repeated back to the box over the correct main signaling-circuit.

A signaling-key *t* is provided, which, when closed on its contact, includes a branch wire *t'*, containing a battery *t*², so that the magnet *f'* can be operated manually, if desired. 120

I claim—

1. Several signal-boxes, each containing an answer-back bell, an answer-back circuit-changing device for said answer-back bells, an electro-magnet which controls the operation of said answer-back circuit-changing 125 device, an independent circuit for said electro-magnet, a receiving-instrument controlled by said independent circuit, a multiple signal-transmitting apparatus controlling the operation of said independent circuit, and a switch 130

controlled by a movable member of said multiple signal-transmitting apparatus for introducing the actuating electro-magnet for the answer-back circuit-changing device, substantially as described.

2. A multiple signal-transmitting apparatus comprising a train, a let-off, a removable signal-wheel, and means controlled by the signal-wheel for moving the let-off, and a switch

controlled and operated by said removable signal-wheel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BERNICE J. NOYES.

Witnesses:

GEO. W. GREGORY,
EMMA J. BENNETT.