

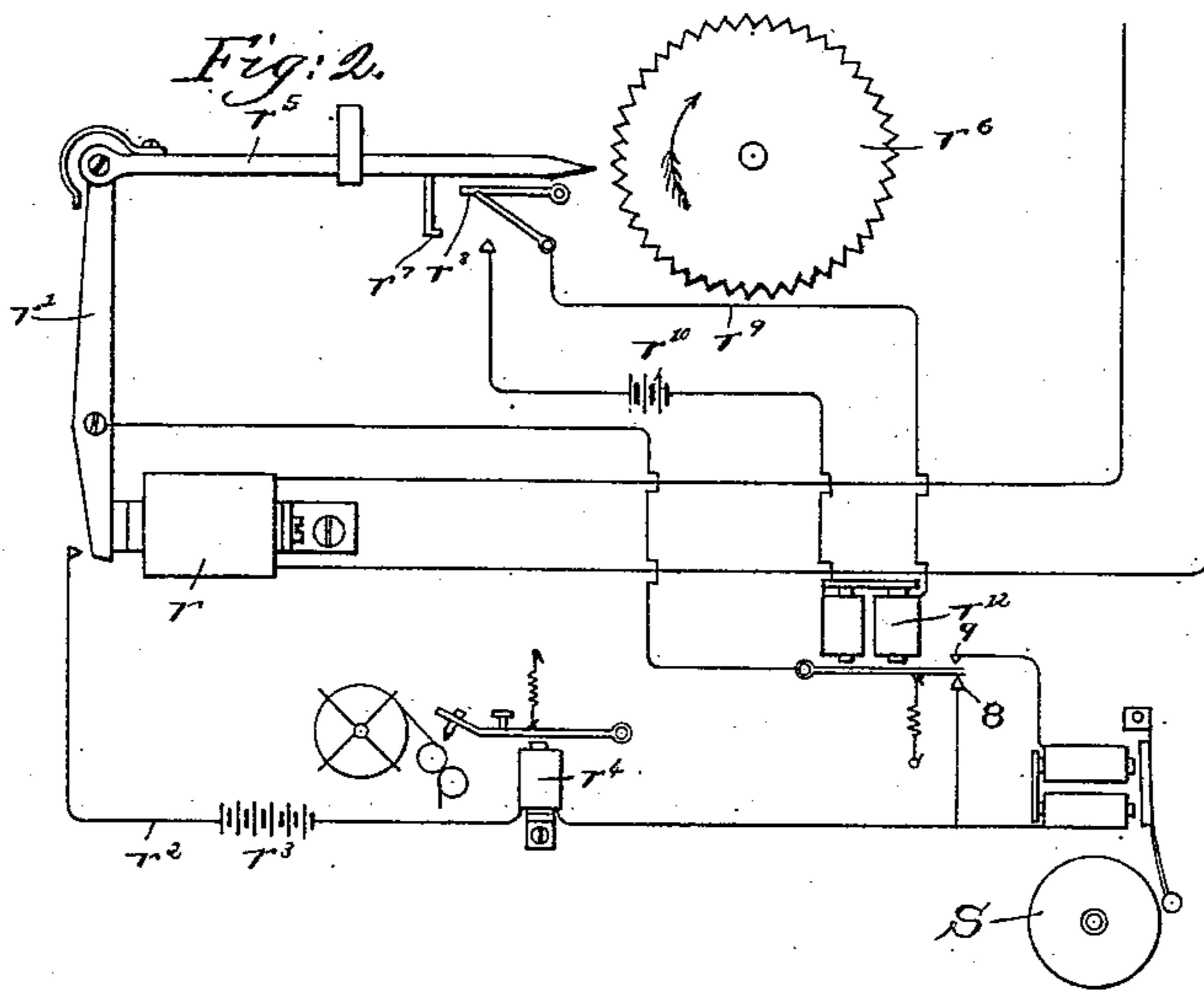
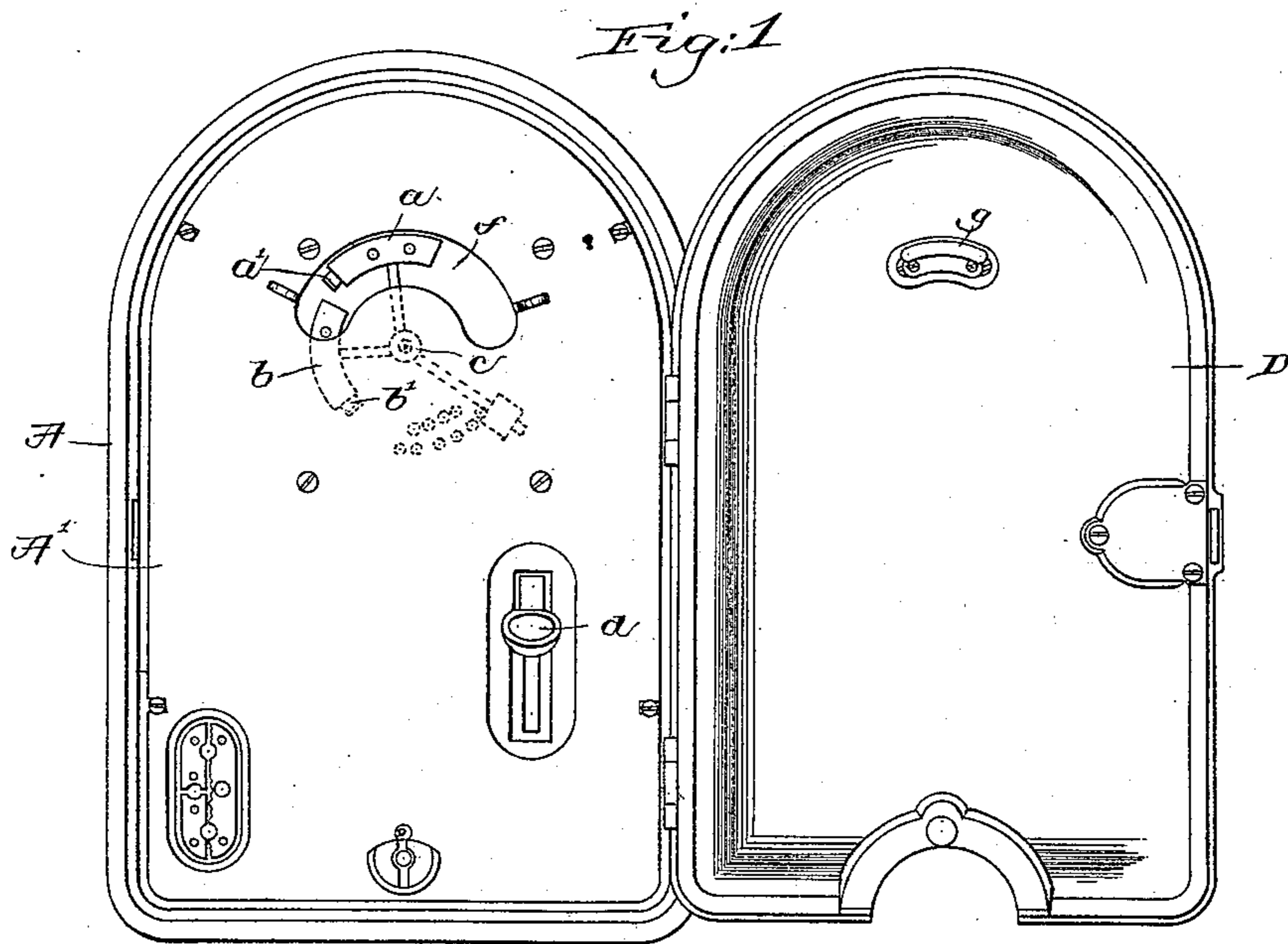
(No Model.)

3 Sheets—Sheet 1.

B. J. NOYES.  
POLICE SIGNALING APPARATUS.

No. 447,059.

Patented Feb. 24, 1891.



Witnesses.  
Howard F. Eaton.  
Edgar A. Goddard

Inventor.  
Bernice J. Noyes.  
by Lewis & Gregory  
Attys.

(No Model.)

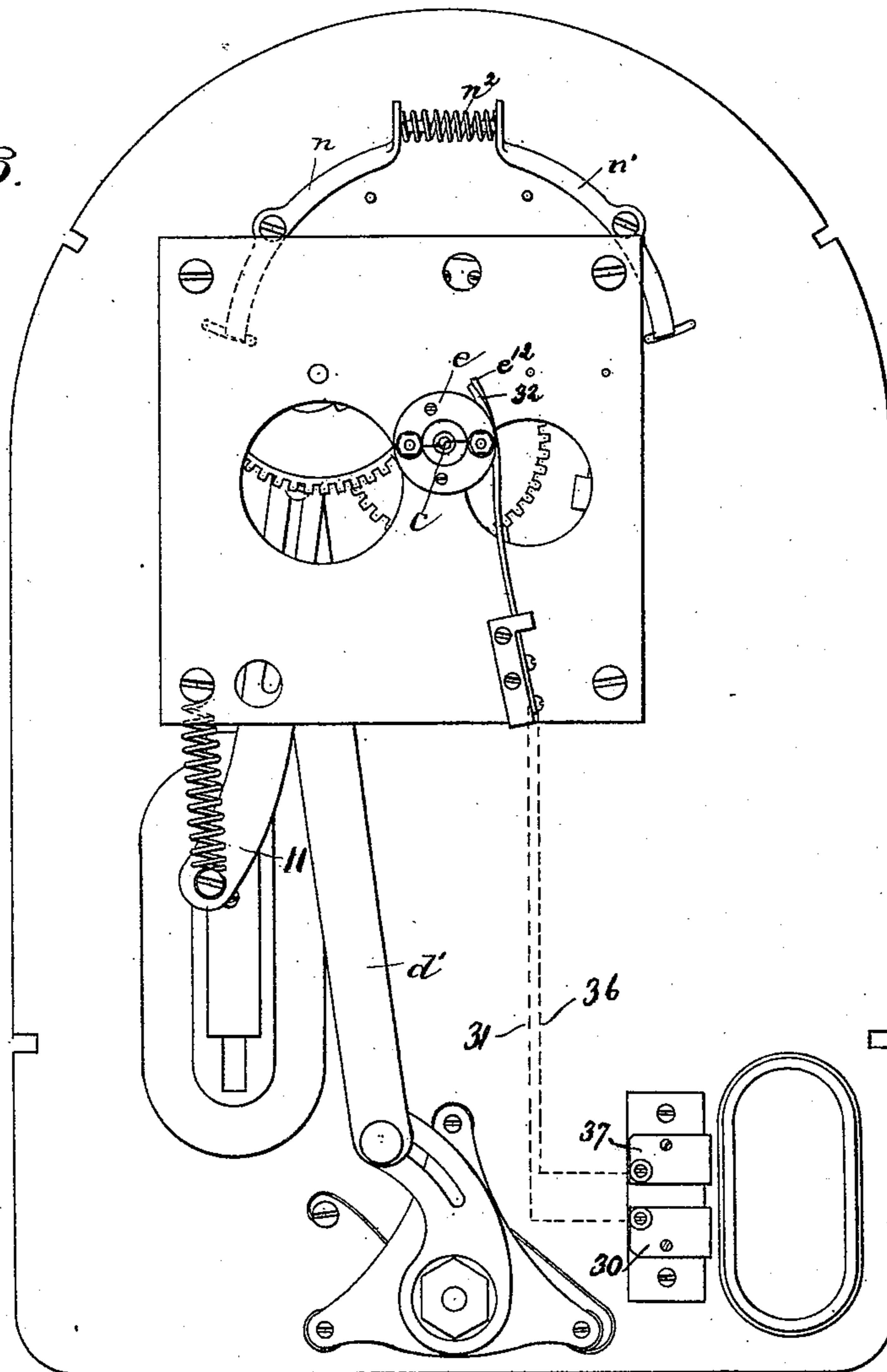
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B. J. NOYES.  
POLICE SIGNALING APPARATUS.

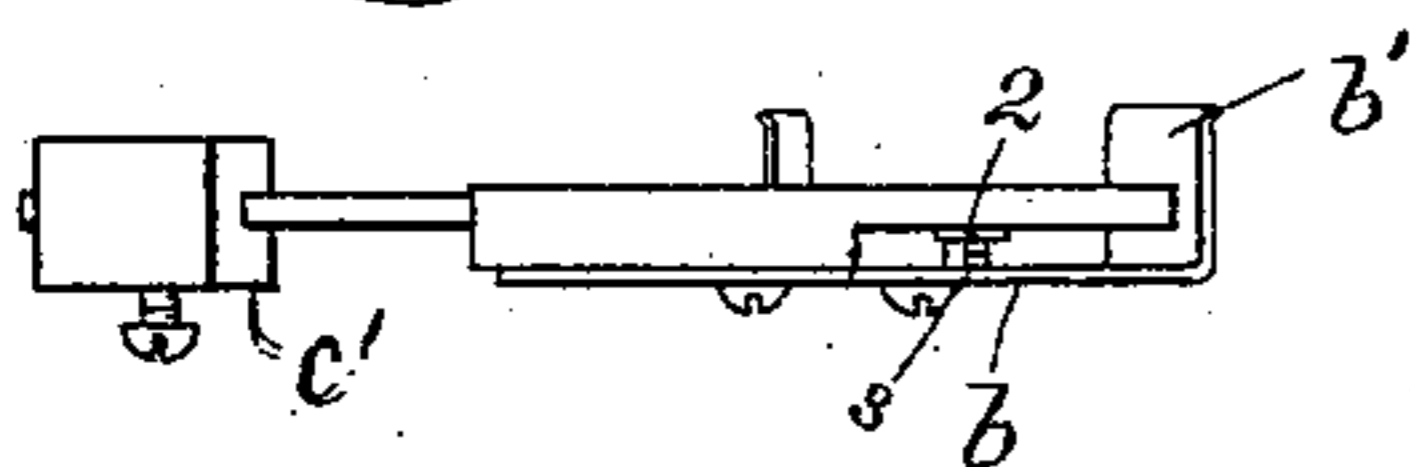
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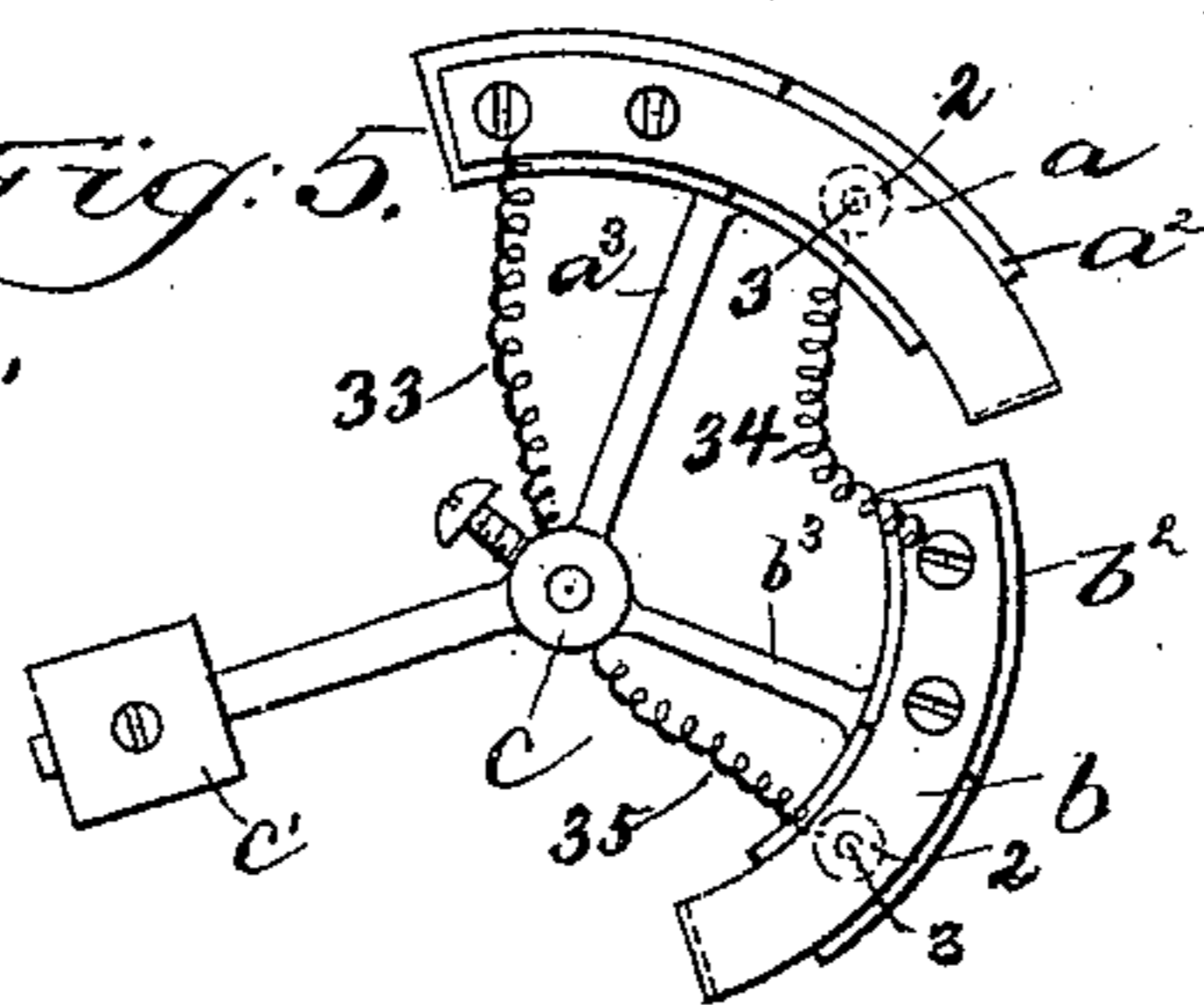
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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*Inventor:*  
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*att'y's.*

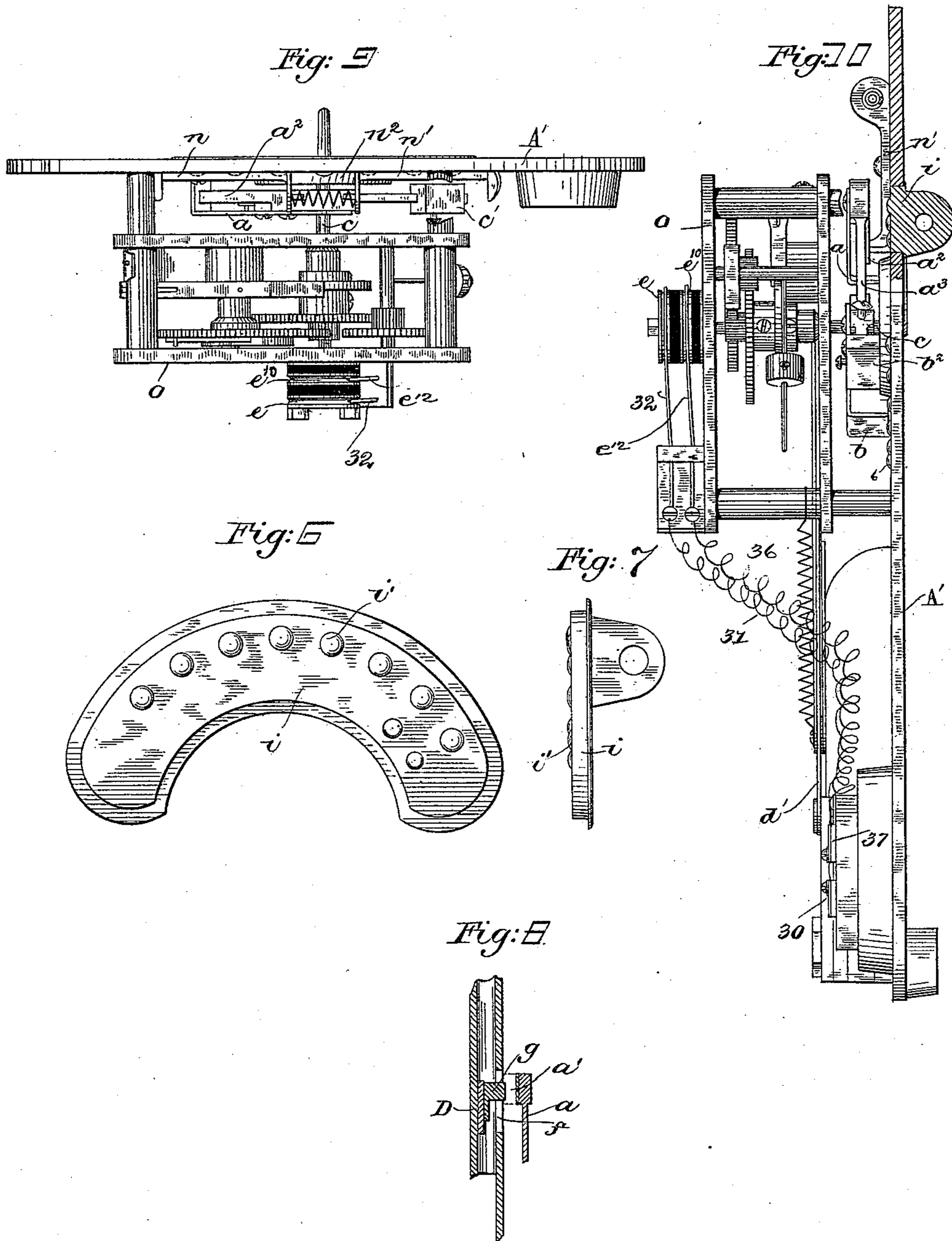
(No Model.)

3 Sheets—Sheet 3.

B. J. NOYES.  
POLICE SIGNALING APPARATUS.

No. 447,059.

Patented Feb. 24, 1891.



*Witnesses:*

John Imrie  
John L. Edwards.

*Inventor.*

*Bernice T. Noyes.*

By his Atts.

By his Atts. Crosby & Gregory.

# UNITED STATES PATENT OFFICE.

BERNICE J. NOYES, OF BOSTON, MASSACHUSETTS.

## POLICE SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 447,059, dated February 24, 1891.

Application filed July 28, 1887. Serial No. 245,499. (No model.)

*To all whom it may concern:*

Be it known that I, BERNICE J. NOYES, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Police 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.

This invention has for its object to construct a signal-box especially adapted for police-signaling purposes which may be cheaply made and capable of transmitting certain fixed or determinate signals—as a box-number, for instance—and certain special signals—as a wagon-call, for instance—and certain variable signals, as numbers by which the officers are known.

In the present embodiment of my invention one or more circuit-changing devices or pens are adapted to be rotated in the arc of a circle by means of a suitable motor, movement of which is effected by an actuating-pull, and a permanent signal-controlling device, consisting of a series of studs or projections, lies in the path of movement of the circuit-changing devices or pens to co-operate therewith in effecting the changes in the circuit.

The box is herein shown as adapted to transmit the box-number, either alone or in conjunction with a special signal or with a variable signal—as the officer's number, for instance. The permanent controlling device which co-operates with the circuit-changing devices in sending the box-number is preferably located upon the rear side of the face-plate of the box, and the face-plate is provided with an opening in the arc of a circle described by the rotating circuit-changing devices or pens, into which opening the special signal-controlling device is placed. The special signal-controlling device consists of certain projections on the rear side of the door of the box, so that when the door is closed the controlling device will enter the opening sufficiently to co-operate with the rotating circuit-changing devices, the box at such time being operated by an outside key. When the box-door is open, any variable circuit-controlling device may be placed in the opening in the face-plate to co-operate with the said circuit-changing devices and effect the transmission of said

variable signal in conjunction with the box-number.

The variable signal-controlling device is herein shown as a curved plate having upon one side of it a series of studs or projections, and it is designed that such controlling devices shall be used to effect the transmission of a number by which the officer is known, it being, as herein represented, his individual number.

Should the box be employed in cities having but a few officers, I will employ but one row or series of studs or projections upon the plate; but if there are quite a number of officers I will employ two concentric rows or series of studs or projections, and hence will employ two rotating circuit-changing devices placed some distance apart and at different distances from the center about which they revolve, so that first one of the circuit-changing devices will co-operate with one of the series of studs or projections, followed by the other, which will co-operate with the other series of studs or projections, and so, also, if many boxes are desired—say more than ten or less than one hundred—the studs or projections permanently attached to the rear side of the face-plate will be arranged in a manner similar to that just described in connection with the variable signal-controlling device. At the receiving-station I employ a register which receives all the signals transmitted, and I also employ a bell which is adapted to respond only to a special signal, and as a simple means of effecting the distinction I have employed the dot-and-dash signals, such as shown and described in United States Patent No. 359,688, granted to me March 22, 1889.

Figure 1 represents in front elevation a signal-box embodying this invention, the door of the box being open; Fig. 2, a diagram of the receiving apparatus at the receiving-station; Fig. 3, a rear side view of the face-plate of the box removed; Figs. 4 to 7, inclusive, enlarged details of the circuit controlling and changing devices to be described. Fig. 8 is a sectional detail of a portion of the box-door and face-plate, the former being closed. Fig. 9 is a top view, and Fig. 10 a side view, of the signaling-train shown in Fig. 3.

The transmitting apparatus inclosed within the box A (see Fig. 1) is supported on the rear

side of the face-plate A', (see Fig. 10,) fitted into the box or case A. The transmitting apparatus consists of one or more circuit-changing devices, two, as *a b*, being herein shown. These circuit-changing devices are substantially alike, each consisting of a signaling-key having an upwardly-turned end, as *a' b'*, and having circuit-closing contacts 2 3, like unto an ordinary telegraphing-key, although in lieu of this particular form of signaling-key circuit-closing contact-pens, as shown in Fig. 7, may be employed. These keys *a b* are secured, respectively, to blocks *a<sup>2</sup> b<sup>2</sup>*, fixed to the extremities of arms *a<sup>3</sup> b<sup>3</sup>*, radiating from a shaft *c*, such arms being herein shown, for purposes to be hereinafter described, as radiating at an angle of substantially ninety degrees. A counterbalancing-weight *c'* is fixed to another arm radiating from the shaft *c* at a point between the arms *a<sup>3</sup> b<sup>3</sup>* to counterbalance the weight of the signal-keys *a b*. This shaft *c* has its bearings in the face-plate A' and the back plate O, which is secured to the rear side of the face-plate A' by suitable posts.

The shaft *c* is driven by a motor mechanism of any ordinary construction now commonly employed in signal-boxes, such motors being wound up by depressing a suitable pull, as *d*, or other winding-arm and operating when said pull is released or during its return movement. Such form of motor being old, a detailed description of the same is deemed unnecessary.

The circuit of the box, as represented in Figs. 3 and 10, is as follows: Starting at the plate 30, it extends by wire 31 to a contact-pen 32, bearing on the wheel *e*, secured to the shaft *c*, thence along the shaft and by wire 33 to the signaling-key *a*, circuit-closing contacts 2 3, wire 34, to the signaling-key *b*, circuit-closing contacts 2 3, wire 35, along the shaft to the wheel *e<sup>10</sup>*, also on said shaft, but insulated from the wheel *e*, contact-pen *e<sup>12</sup>*, bearing thereon, and thence by wire 36 to the plate 37. Thus it will be seen that the circuit in the box is normally closed.

A controlling device is herein shown, which co-operates with one of the circuit-changing devices or signaling-keys to effect the transmission of a fixed or determinate signal—as the box-number, for instance—such controlling device consisting of a series of studs or projections 6, (see Fig. 10 and dotted lines, Fig. 1,) projecting inwardly from the rear side of the face-plate A' of the box and arranged in the arc of a circle about the shaft *c* as a center and at such distance therefrom as to lie in the path of movement of one of the signaling-keys—as *a*, for instance; but, if desired, I may employ two concentric rows of studs or projections, one of which will co-operate with the signal-key *a* and the other of which will co-operate with the signal-key *b*, it being understood and shown that the signal-key *b* is arranged on an arm which is shorter than the arm on which the signal-key *a* is arranged, and thereby describing an arc

of a circle of lesser diameter. As this plate A' is always fixed in position at each and every time the shaft *c* is revolved, the signaling-keys will pass over the studs or projections 6, the inturned ends *a' b'* striking said projections and moving the keys to open the circuit-closing contacts. These studs 6 occupy but a small portion of the circle described by said signaling-keys. By placing the two series of rows concentric and arranging the signaling-keys on arms rotating in different arcs one of the signaling-keys—as *a*, for instance—will pass over one row of studs, and thereafter the other signaling-key, as *b*, will pass over the other row of studs, and said studs protrude sufficiently to lift the circuit-closing pens to separate the circuit-closing contacts 2 3 successively as the shaft revolves, thereby sending a continuous signal. At another portion of the circle described by the signaling-key an opening is formed in the face-plate A' of the box, into which opening a special-circuit-controlling device may be placed, it finding access to and co-operating with one of the signaling-keys—as *a*, for instance. This special-circuit-controlling device herein constitutes a special-signal or wagon call, and consists of a short curved bar or block, as *g*, (see Figs. 1 and 8,) fixed to the inside of the door D of the box, so that when the door is closed the said bar *g* will enter within the opening *f*, so as to be struck by one of the signaling-keys—as *a*, for instance—although said bar *g* may be arranged to co-operate with the signaling-key *b*, or two bars may be employed, if desired, arranged concentrically like unto the rows of studs, and co-operating successively with the signaling-keys.

With the box-door closed the motor mechanism will be operated by means of an outside key, which turns a crank-arm and pulls down the bar *d'*, and when the box is so operated the signaling-key *a* will first pass over the bar *g* and open the circuit during a long interval of time. It will then pass over one of the series or rows of studs or projections, and thereafter the signaling-key *b* will pass over the other series or row of studs, thus following the dash with a box-number.

By opening the box-door, and thereby removing the bar *g* and operating the pull, the box-number only may be transmitted, unless other means, now to be described, are placed in the opening *f* to co-operate with the signaling key or keys. When the box-door is opened, the opening *f* may receive another form of circuit-controlling device, which is herein designed for each officer to carry with him, said circuit-controlling device consisting of a plate *i*, (see Figs. 6, 7, and 10,) having on it a series of studs or projections *i'*, indicating his individual number, and this plate *i* is so shaped as to fit the opening *f* and to bring the studs or projections upon its rear side into proper position to be struck by the signaling-keys as they revolve. These plates

*i* are detachable from the mechanism, in order that they may be carried about, put in operative position, and removed by the officer. The studs or projections *i'*, which are to indicate the officer's number, constitute the characteristic contact devices which are carried by the detachable plate *i*.

Suitable locking devices are provided for the plate *i*, herein shown as two spring-controlled jaws *n n'*, pivoted to the rear side of the face-plate *A'* and acted upon by the spring *n<sup>2</sup>*, the ends of said jaws passing out through the small openings in the face-plate *A'* to engage and hold the plate *i* when placed in position in the opening.

When the officer opens the box to transmit his patrol-signal, he places his individual key *i* in the opening *f* and then operates the pull and the signal will be transmitted, as heretofore described, it being understood that this plate at such time takes the place of the controlling device *g*.

At the receiving-station a receiving-relay *r* is included in the main line, the armature *r'* of which controls a local circuit *r<sup>2</sup>*, containing a local battery *r<sup>3</sup>* and a register *r<sup>4</sup>*. The armature *r'* also carries a pivoted lever *r<sup>5</sup>*, which, when the armature is retracted, enters between the teeth of a rotating wheel *r<sup>6</sup>*, and is thereby lifted. The armature *r<sup>5</sup>* has at its underside a hook *r<sup>7</sup>*, which engages and trips the drop *r<sup>8</sup>*, which closes the local circuit *r<sup>9</sup>*, including the battery *r<sup>10</sup>* and the relay *r<sup>12</sup>*, the armature of which relay is included in the local circuit *r<sup>2</sup>*, normally bearing against the contact-point 8, but when attracted striking the contact-point 9, thereby cutting the branch wire into the circuit with the register. The bell *S* or other suitable alarm apparatus is included in the branch wire. By this arrangement the signals, including the dash, will include the bell in the receiving-circuit, and, as herein shown, the dash coming first and the box-number following, the bell will be included and the number tapped out audibly. It is obvious, however, that in connection with the transmitting apparatus herein shown any other suitable receiving apparatus may be employed instead of the particular arrangement and construction herein shown—as, for instance, the register alone may be employed, which will be included directly in the main line, if desired.

I claim—

1. In a signal-box, one or more rotating circuit-changing devices, combined with a number of detachable plates, each carrying characteristic contact devices and constituting circuit-controlling devices which co-operate with the circuit-changing devices to effect the transmission of a variable signal, substantially as described.

2. In a signal-box, one or more rotatable signaling-keys, combined with a permanent series of studs or projections lying in the path of movement of the said keys and with a number of detachable plates, each carrying characteristic contact devices and constituting

controlling devices adapted to co-operate with one or all of said keys, substantially as described.

3. In a signal-box, a shaft carrying two circuit-pens at different distances from its axis, combined with a permanent controller and a number of detachable plates, each having two concentrically-arranged signaling-surfaces thereon, with which the circuit-pens co-operate, substantially as described.

4. In a signal-box, two circuit-changing devices fixed to a shaft at a different distance from its axis, combined with a permanent controlling device and with a removable plate having two concentrically-arranged signal-controlling surfaces thereon, with which the circuit-changing devices co-operate, substantially as described.

5. In a signal-box, one or more movable circuit-pens, combined with a permanent controller to co-operate therewith and effect the transmission of the box-number and with a removable controller fixed to the door of the box, the latter controller operating with the circuit-pens when the box-door is closed to effect the transmission of a different signal, substantially as described.

6. In a signal-box having a face-plate with an opening, one or more circuit-changing devices fixed to a rotatable shaft to rotate back of the face-plate, combined with a removable plate *i* to enter the opening in the face-plate when the box-door is opened and carrying characteristic contact devices which co-operate with the circuit-changing devices, and a signal-controlling device, as the stud *g*, on the box-door, registering with the opening in a face-plate and entering the said opening when the box-door is closed to also co-operate with said circuit-changing devices, substantially as described.

7. The combination, substantially as described, of a signal-box constructed and arranged to transmit different signals by changes in the current of different duration with a register at a main station and an electric circuit connecting them, a bell included in a branch wire with the register, and a switch, controlled by impulses of long duration, for including the said bell in the circuit with the register to audibly respond to a portion only of the signal—as the box-number, for instance—substantially as described.

8. The combination, substantially as described, with one or more signal-boxes and a register at a receiving-station and an electric circuit connecting them, of a bell included in a branch wire with the register, a switch for including the said bell in the circuit with the register, and an electro-magnet for removing it, the circuit of said electro-magnet being controlled by the receiving-magnet in the main circuit, substantially as described.

9. A signal-box containing a permanent signal-transmitting device, combined with a variable-signal-transmitting device, a co-operative part of which is removable and inter-

changeable with other boxes, and a like co-  
operative part of which is attached to and  
connected with the door and removed only to  
permit the insertion of said interchangeable  
5 co-operative part, substantially as described.

10. In a signal-box, a single circuit-changer  
comprising two contact members and a per-  
manent or invariable controller consisting of  
contact devices to indicate the box-number,  
10 combined with the number of detachable

controllers, each carrying characteristic con-  
tact devices, 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:

G. W. GREGORY,  
FRED L. EMERY.