

(No Model.)

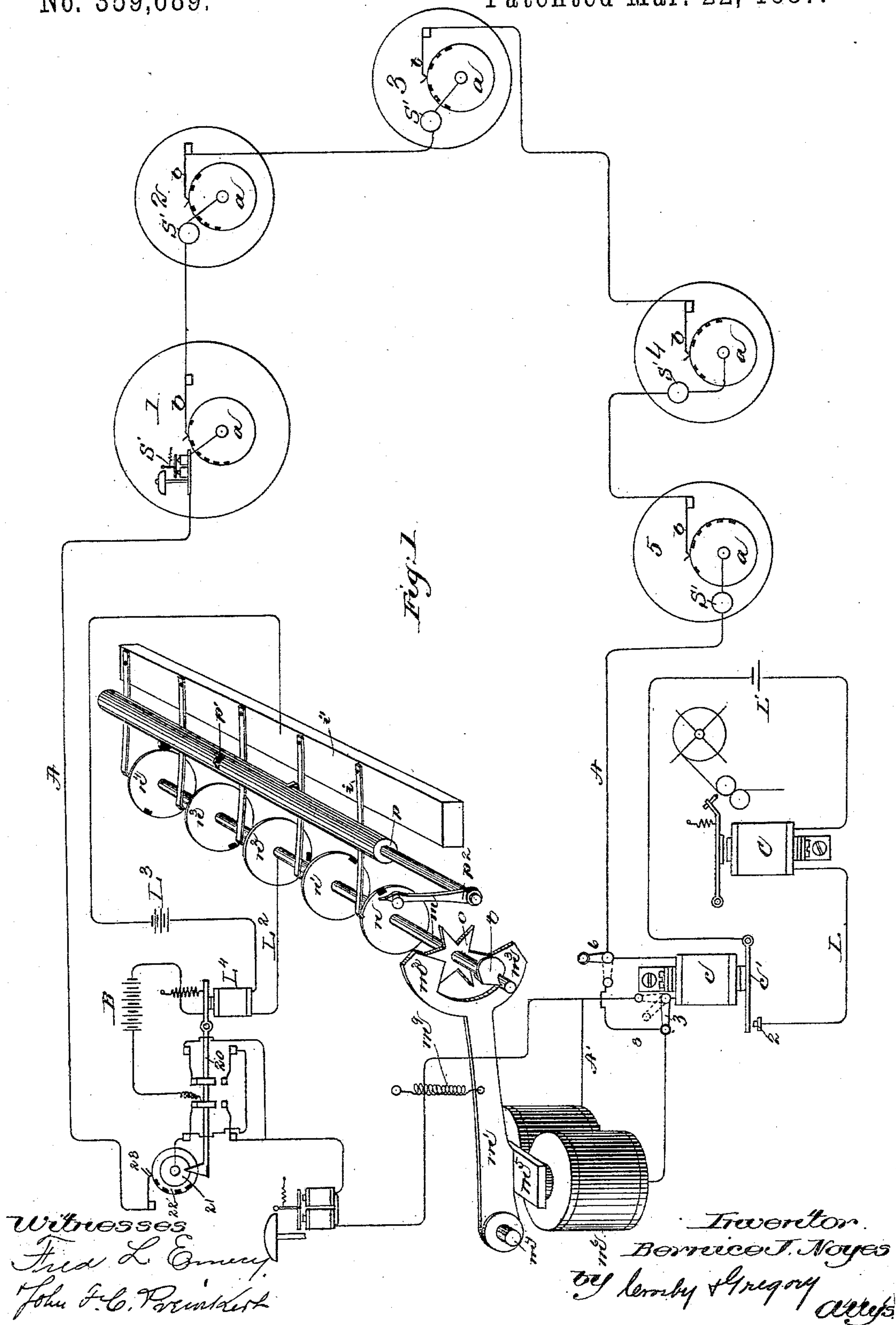
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B. J. NOYES.

INDIVIDUAL CALL FOR MUNICIPAL TELEGRAPH SYSTEMS.

No. 359,689.

Patented Mar. 22, 1887.

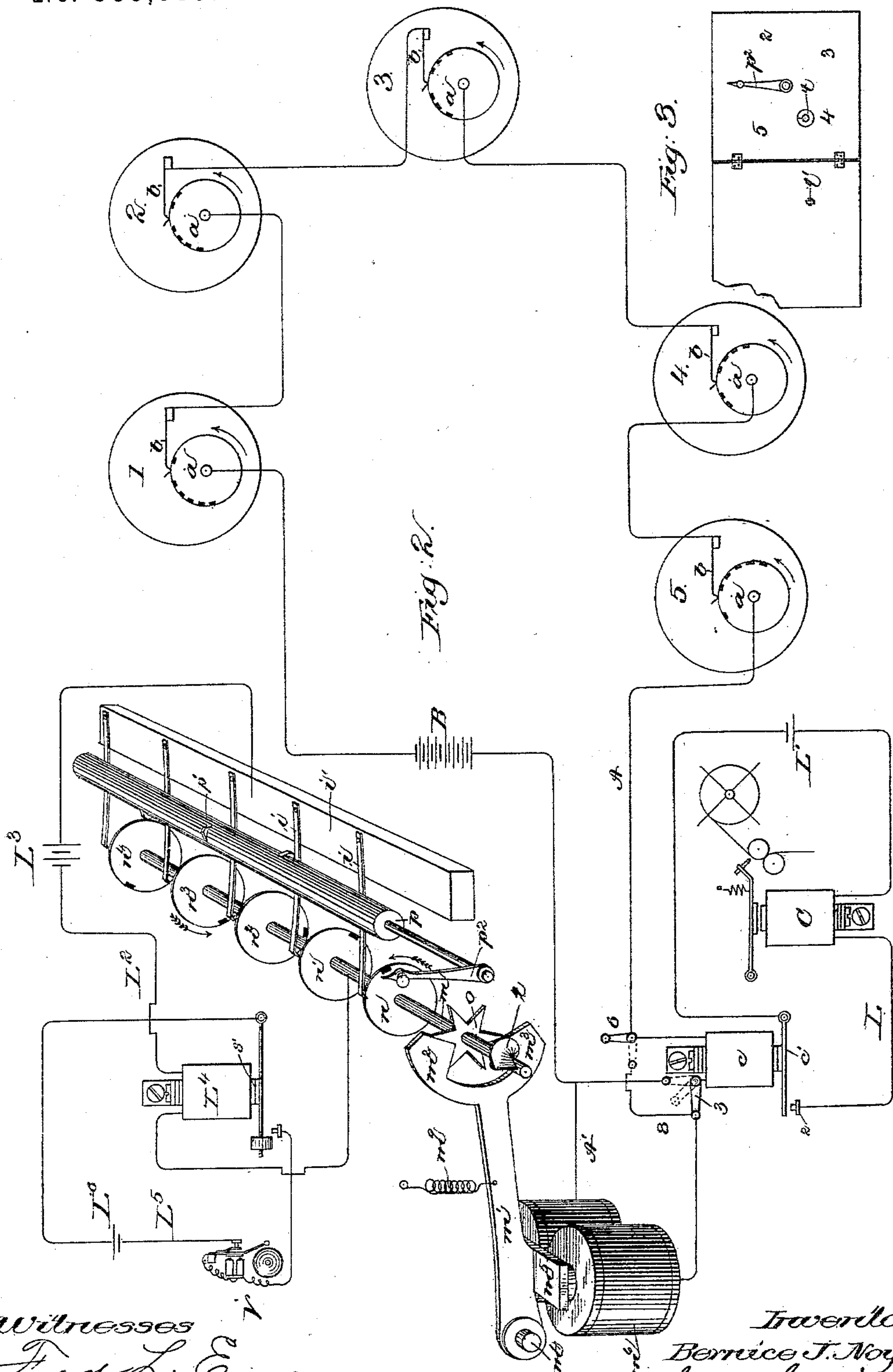


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INDIVIDUAL CALL FOR MUNICIPAL TELEGRAPH SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 359,689, dated March 22, 1887.

Application filed July 26, 1886. Serial No. 209,070. (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 Individual Calls for Municipal Telegraph Systems, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for one of its objects to provide a municipal signal apparatus of the class described in the application, No. 201,959, filed by me May 12, 1886, with suitable means whereby an audible alarm or equivalent lo-
15 cated at the central station may be caused to respond by the operation of transmitting devices located at any particular box or sub-station in the circuit, the particular box being selected by suitable selecting devices located
20 at the central station, so that the presence of an officer at any desired box may be made known to the attendant at the central station, in order that he may be called up.

The invention also has for its object to pro-
25 vide a municipal signal apparatus of the class referred to with suitable means, set in operation by each individual box or from a distant station, for effecting the operation of an audible alarm or equivalent located at the central
30 station, and also with suitable devices located at the central station for determining whether or not the alarm shall be effected, or by which particular box it shall be effected, and also with suitable mechanism located at the cen-
35 tral station for transmitting a return-signal to the boxes, said mechanism being under the control of the attendant at the central station, set in operation automatically from a particular distant station, designated by the at-
40 tendant at the central office.

In accordance with this invention, a select-
ing device located at the central station is controlled step by step by a relay, which latter is connected with a main circuit or located in
45 a suitable branch circuit, that it may be introduced into the main line by a switch, the said selecting device being preferably provided with a pointer, which may be placed in different positions to indicate which box or sub-
50 station in the circuit it is desired to be heard from.

The selecting device herein shown contains a series of break-wheels mounted upon a shaft and a series of contact-pens attached to a suitable block or bar and arranged to co-operate, 55 respectively, with the said break-wheels, and a selecting-cylinder so arranged that when moved it may cause one or another pen to come in contact with a certain break-wheel, the pointer being mounted upon the end of 60 the selecting cylinder, moving over a suitable dial to determine which pen shall be employed.

The shaft upon which the break-wheels are mounted is rotated step by step by suitable 65 devices controlled by a relay, which, preferably, is included in a branch circuit to be introduced, when desired, by a suitable switch.

Each break-wheel is provided with one break or insulated portion, but located at different 70 points upon the peripheries thereof, to thereby change the condition of the circuit in which the said selecting device is located at and for different intervals of time, according to which break-wheel is employed. 75

A relay is placed in the circuit with the selecting device, said relay being responsive to changes in the condition of circuit of long duration, but not to those changes of short duration. The said relay may operate a pole-changing 80 lever and also release a transmitter, to thereby effect the operation of an audible alarm at the central station and insure the transmission of the return-signal to the boxes; or the said relay may simply effect the operation of an 85 audible alarm at the central station only.

The transmitting devices at the sub-stations or boxes are preferably of the kind shown in the application referred to. The patrol break-wheel in each box is employed to transmit the 90 patrol or "on-duty" signal, being provided with two series of breaks in succession, but at some distance apart, one of the said series indicating the box-number and the other series including a sufficient number of breaks, which, 95 when added to the box-number, correspond with the entire number of boxes upon the circuit, although more breaks may be employed, if thought desirable or necessary.

Figure 1 shows in diagram a series of instru- 100
ments and circuits so constructed and arranged as to completely carry out this invention;

Fig. 2, a similar diagram showing suitable instruments and circuits to effect the operation of an alarm at the central station only; and Fig. 3, a face view of the box at the central station, the door thereof being open.

A multiple transmitter located at each sub-station and contained within a suitable box or case consists of a series of break-wheels mounted upon a shaft, a series of contact-pens to co-operate with said break-wheels, and a selecting-cylinder arranged to cause one or another of the said contact-pens to make contact with one of the break-wheels, all being substantially such as shown in the application above referred to; yet it is obvious that the same may be variously modified, if desired.

The break-wheel in the multiple transmitter referred to, which is designed to transmit the patrol or on-duty signal, is shown as an ordinary break-wheel having a series of breaks corresponding with the number of the box, the contact-pen normally lying in contact with the said break-wheel; and in this my present invention the said patrol break-wheel (shown as *a* at each sub-station) is provided with a series of breaks indicating the box-number; also, with a sufficient number of breaks, which, when added to the number of the box, equal the entire number of boxes included in the circuit, and, if desired, more breaks may be added, if thought necessary.

As shown in diagram Fig. 1, there being five boxes included in the circuit, each patrol break-wheel will have six breaks, divided in two groups, one of which represents the box-number and the other the remaining boxes in the circuit, it requiring one more break than there are boxes in the circuit, for reasons to be described.

The contact-pen *b* normally bears upon the periphery of the break-wheel *a*, between the group of breaks indicating the box-number and the remaining breaks, so that when the shaft upon which the said patrol break-wheel is rotated by any suitable motor (not shown) the first signal transmitted will be the box-number followed by the number corresponding with the remaining breaks, and this being understood at the central office or station the box-number may be readily distinguished.

The break-wheels *a* and their contact-pens *b* are included in the main circuit A of a battery, B.

At the central station a relay, *c*, is included in the main circuit A, the armature *c'* of which co-operates with a contact-pen, 2, to close a local circuit, L, of a battery, L', said local circuit containing any suitable receiving or recording instrument, (herein shown as an ordinary Morse register, C,) which will respond to all changes in the circuit produced by the transmitters at the several sub-stations.

When it is desired to call any particular officer, the apparatus now to be described will be employed, it consisting of a series of break-wheels, *n n' n''*, &c., mounted upon a shaft, *m*,

the number of break-wheels corresponding with the number of boxes included in the main circuit.

A toothed wheel, *o*, is also mounted upon the said shaft *m*, and a lever, *m'*, carrying two arms, *m² m³*, similar to an anchor escapement-lever, is provided, the said arms engaging the teeth of the wheel *o* to rotate it and thereby the shaft *m*. The lever *m'* is pivoted at *m⁴*, and has attached to it the armature *m⁵* of a relay, *m⁶*, included in a branch circuit, A', leading from the main circuit A, a suitable switch, 3, being employed to introduce the said relay *m⁶*, when desired, in order that both the said relay and the relay *c* may operate. The lever *m'* is normally retained in elevated position by a spring, *m⁹*.

The break-wheels *n n'*, &c., are each provided with one break located at a different point upon the peripheries thereof, and a series of contact-pens, *i*, secured to a suitable frame or bar, *i'*, are arranged to bear upon one or another of the said break-wheels, a selecting-cylinder, P', having studs *p'* at suitable points upon the surface, being employed to effect this result.

A pointer, *p²*, is mounted upon the end of the selecting-cylinder *p*, by means of which the said cylinder is rotated to cause one or another of the contact-pens *i* to engage with one or another of the break-wheels *n n'*, &c. The pointer *p²* co-operates with a suitable dial, as shown in Fig. 3, by which the correct break-wheel may be selected.

The series of break-wheels *n n'*, &c., and the contact-pens *i* are included in a local circuit, L², of a local battery, L³, and a relay, L⁴, is also included in said local circuit, the armature of the said relay L⁴ being normally attracted and in direct contact with the cores of the relay and properly adjusted, so that upon any change in the condition of the current of short duration the said armature will not respond; but upon a break or change of considerable duration the said armature will respond, such a relay being herein termed a "lagging" relay.

Referring to Fig. 1, the armature of the lagging relay L⁴ is a pole-changing lever, 20, which, when responding, reverses the poles of the battery B, and also releases a self-starting motor containing a wheel, 21, which is normally engaged by a detent carried by the pole-changing lever 20, a break-wheel, 22, and contact-pen 23 connected in the main circuit A, so that when the pole-changing lever moves impulses of opposite polarity pass over the line, causing the polarized bell S at the main station and also the polarized bell S' at the sub-stations to respond.

By referring to Fig. 2 the armature of the lagging relay L⁴, when released, closes the local circuit L³ of a local battery, L⁶, causing the audible alarm, herein shown as a vibrating bell, to respond.

One of the contact-pens, *i* is normally in

engagement with one of the break-wheels, as n , so that the local circuit L^2 is normally closed and the armature of the relay L^1 attracted. With the apparatus in this position, 5 and the pointer set to register with No. 1 upon the dial, the switch 3, being placed as indicated upon the drawings and box No. 1 should be operated, the condition of the circuit is changed or broken for a short period 10 of time, closed for a period of longer duration, after which it will be broken several times for periods of short duration. When the circuit is thus first broken, the relay c responds, and also the relay m^b , moving the lever m' and 15 thereby rotating the shaft m one step, which will bring the break of the break-wheel m into position beneath the contact-pen i , thus opening the circuit L^2 , and as it remains in this position for a long interval of time the lag- 20 ging relay L^1 will also respond and thereby release the armature.

As the circuit is afterward broken by the continuation of the break-wheel a at box No. 1, there being five boxes in the circuit shown, 25 the main circuit will be opened in all five times, thus rotating the shaft m five steps; and to complete the rotation of the shaft m one more break is necessary in order to leave the contact-pen i upon the surface of the 30 break-wheel at an intermediate point, so that with the arrangement shown six breaks are necessary, or more breaks than there are boxes.

If the pointer p^2 is set for box No. 1, as just described, and box No. 3, for instance, 35 should be operated, the main circuit will be broken three times in quick succession, thereby rotating the shaft m three steps, and breaking the local circuit L^2 momentarily, but not sufficiently long to cause the relay L^1 to release its 40 armature, and as the break-wheel a of the box 3 completes its rotation the main circuit will be opened three times more, also in quick succession, to thereby complete rotation of the shaft m . It will thus be seen, without further 45 explanation, that the pointer p^2 may be set to call any box desired, and no response effected unless the particular box desired should be operated, and that the attendant at the cen- 50 tral office may be informed when any officer arrives at a particular box, and if he so desires, the officer may also be informed at substantially the same time that he is wanted.

The end of the shaft m is provided with a centering device, T , which is acted upon by a 55 roller, T' , located upon the rear side of the door of the box containing the apparatus, so that whenever the box-door is closed the shaft m is also returned to its normal position.

When it is not desired to use the receiving- 60 instrument C for patrol-signals, a suitable switch, 6, may be turned, connected to the branch wire 8, leading from the branch wire A' , to thus shunt out the relay c .

I claim—

65 1. In an electric circuit, one or more sub-stations, each containing circuit-changing de-

vices, and a main station containing an indi- 70 vidual selecting-instrument, said selecting-instrument consisting of a series of circuit-changing devices mounted upon a shaft, rota- 75 tion of which is effected by the operation of the circuit-changing devices at the sub-station, a selecting-cylinder arranged to bring one or another of the circuit-changing devices at the main station into position to operate when 80 the shaft is rotated, and means, substantially as described, controlled by the operating circuit-changing device at the main station to effect the operation of an audible alarm, sub- 85 stantially as set forth.

2. In an electric circuit, one or more sub- stations, each containing a circuit-changing 90 device, and a main station containing an individual selecting-instrument the operation of which is effected by the circuit-changing de- 85 vice at the sub station, and an audible alarm controlled by said individual selecting-instrument, and means, substantially as de- 90 scribed, controlled by the operator at the main station, for changing the individual selecting- 95 instrument, so that the circuit-changing devices located at a particular sub-station may effect the operation of the selecting-instrument and cause the audible alarm to respond, while the remaining circuit-changing devices located 95 at the sub-station operate the individual selecting-instrument only and effect no audible response, as set forth.

3. In an electric circuit, one or more sub- stations, each containing a circuit-changing 100 device, and a main station containing an individual selecting-instrument the operation of which is effected by the circuit-changing device at the sub-station, said individual se- 105 lecting-instrument being constructed and arranged to be set by the operator at the main station, so that when operated by any particu- 100 lar one of the circuit-changing devices an audible alarm will respond, but when oper- 110 ated by any of the remaining circuit-changing devices the audible alarm remains silent, sub- stantially as described.

4. In an electric circuit, the combination, 115 substantially as described, of one or more sub-stations, each containing circuit-changing de- 115 vices, and a main station containing an individual selecting-instrument, which latter consists of a series of simultaneously-moving circuit-changing devices the operation of 120 which is effected by the circuit-changing de- 120 vices at the sub-stations, and means, substantially as described, controlled by one of the circuit-changing devices only at the main sta- 125 tion for effecting the operation of an indicating-signal, the selection of the circuit-chang- 125 ing devices at the said station being under the control of the attendant.

5. In an electric circuit, the combination, 130 substantially as described, of one or more sub-stations, each containing a circuit-changing 130 device, and a main station containing several circuit-changing devices corresponding in

number with the number of sub-stations, the operation of the said circuit-changing device at the main station being effected by the circuit-changing device at the sub-stations, and
5 an individual selecting-instrument, under the control of the attendant at the main station, for selecting which circuit-changing device at the main station shall be operated.

6. In an electric circuit, the combination,
10 substantially as described, of one or more sub-stations, each containing a circuit-changing device, and a main station containing means, substantially as described, controlled by the circuit-changing device at the sub-station for
15 effecting the operation of an indicating-signal, and an individual selecting-instrument, under the control of the attendant at the main station, for determining which sub-station shall operate the said means so that a predeter-
20 mined box or sub-station only will be heard from.

7. In an electric circuit, the combination,

substantially as described, of one or more sub-stations, each containing a circuit-changing device, and a main station containing means,
25 substantially as described, controlled by the circuit-changing device at the sub-station for effecting the operation of an indicating-signal, and an individual selecting-instrument, under the control of the attendant at the main sta-
30 tion, for determining which sub-station shall operate the said means so that a predetermined box or sub-station only will be heard from, and mechanism, substantially as described, for transmitting a return-signal to the
35 box or sub-station when the said predetermined box has been operated.

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,
F. L. EMERY.