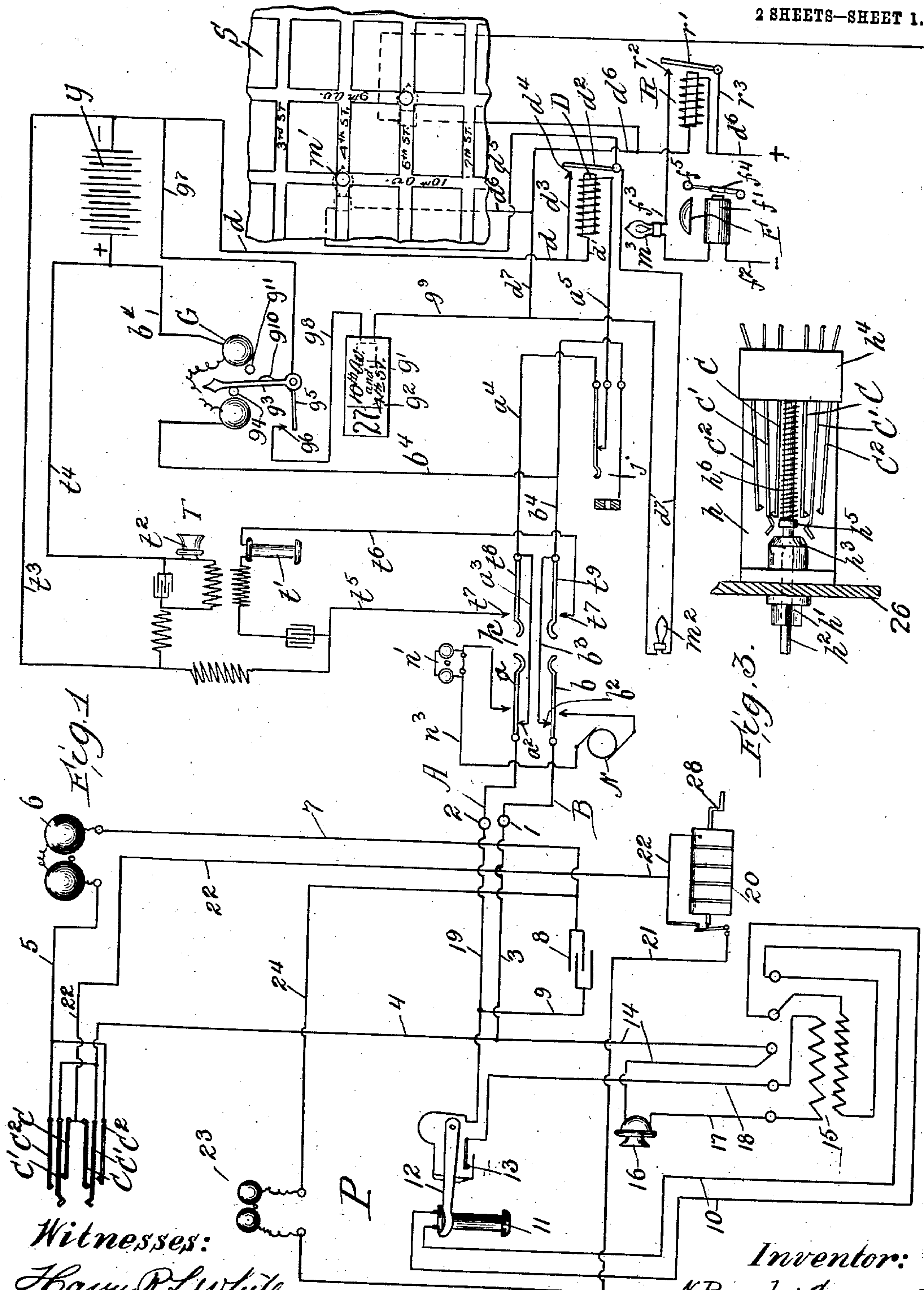


N. B. CREGIER.  
SIGNALING SYSTEM.  
APPLICATION FILED MAR. 16, 1904.

915,075.

Patented Mar. 16, 1909.

2 SHEETS—SHEET 1.



Witnesses:  
Harry R. White.  
Ray White.

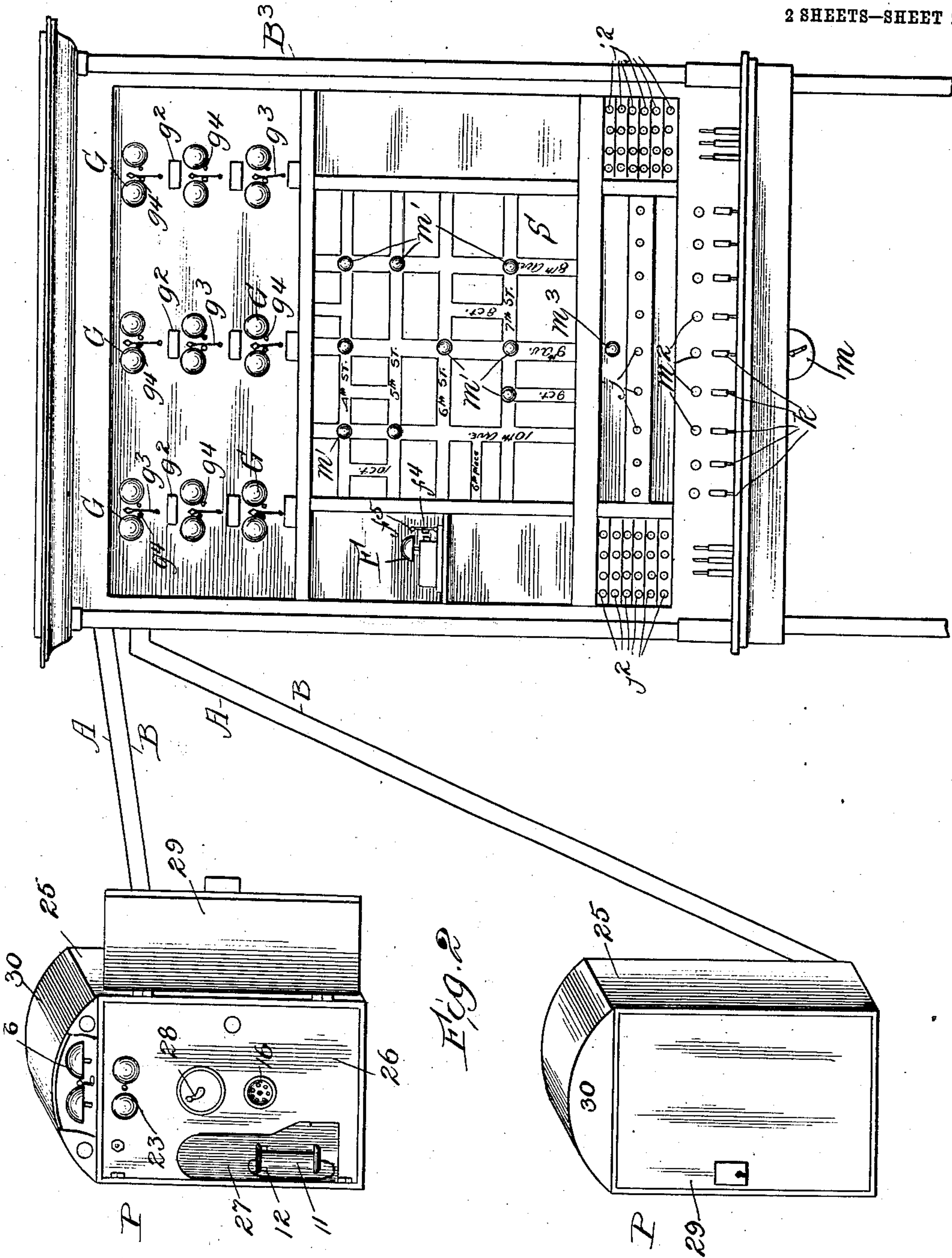
Inventor:  
N. Banks Cregier,  
By Colburn McRoberts  
Att'ys.

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N. Banks Gregier.

By Colman McRoberts Atty's



# UNITED STATES PATENT OFFICE.

NATHANIEL BANKS CREGIER, OF CHICAGO, ILLINOIS.

## SIGNALING SYSTEM.

No. 915,075.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed March 16, 1904. Serial No. 198,695.

*To all whom it may concern:*

Be it known that I, NATHANIEL BANKS CREGIER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Signaling Systems, of which the following is a specification.

This invention relates to an electrical signaling system and particularly to a police signal system used for transmitting signals between police patrol boxes and headquarters or a central station; and it has for its object, generally, to provide a central energy police telephone signal system designed to render the operation of signaling more speedy and perfect of control and to avoid certain objections and disadvantages in the systems heretofore employed.

With the systems generally employed, it is possible for a patrolman who is late in reaching the patrol box in the territory patrolled by him and from which he should report to headquarters, or who for other reasons is not at his assigned post of duty, to report to headquarters, without fear of his negligence being detected, from any other patrol box within the district served by the same circuit. This is due to the fact that the boxes in such systems are in series with each other, and that no adequate means have been provided for detecting errors in false reporting to which such systems are open. To avoid this false reporting and compel every patrolman to report only from the box in his own territory, I place the signaling apparatus of each patrol box in an individual circuit, and in such circuit at the central station I provide a signaling device of a suitable character which will indicate to the operator, either by reference to the number of the box or other means, the location of such box. The operator having been given the name of the officer reporting, is thereby enabled to determine immediately, from his knowledge of the patrolman's name and the beat patrolled by him, whether he is on duty in his proper territory.

A further and important object of the invention is to provide means independent of the talking apparatus and over the same line for indicating to the operator at the central station that the patrol-wagon is desired, and the exact location of the box to which the patrol is to be sent. Broadly, such means may comprise suitable signaling

devices located at the central station and capable of being actuated only from the patrol box on the same circuit, and having associated therewith indicia for informing the operator of the location of the box sending in the call and to which the patrol wagon is to be directed.

Another object of the invention is to provide a novel circuit arrangement particularly adapted to police telephone signaling systems and capable of accomplishing certain new results in the transmission of signals between the patrol box substation included in such circuit and the central station.

Another object of the invention is to dispense with the usual drops and plugs and manually operated switches ordinarily employed with police telephone signaling systems and to render the action of the signaling devices at the central station practically automatic in all particulars.

Other features of the invention and further objects and advantages thereof, other than those already mentioned, will be hereinafter pointed out in the accompanying description. The invention consists of the combination of parts and circuit arrangement now to be described, particularly designated in the claims and illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view of the circuit, illustrating the apparatus at the central station and a patrol box and the connections therefor; Fig. 2 is a front elevation of a central station switchboard fitted up with the signal apparatus and details employed with my invention, and showing in connection therewith two patrol box substations, one of which has the outer door open to disclose the arrangement of the telephone outfit, while the other box is shown with the outer door closed; and Fig. 3 is a detail of the switch at the patrol box and which is designed to be controlled by the outer door of the box to alternately connect and disconnect the call bell and answer back signal to and from the line.

The central station is provided with an operator's telephone set T, ringing generator N, pilot light  $m^3$ , alarm F, and battery  $y$ , which are common to all the circuits, the pilot light and alarm being actuated whenever a signal is sent in from any patrol box of the system, and while in Fig. 1, in order to conduce to clearness, I have shown the



system with circuits and connections complete for only one patrol box station, it is to be understood that the number may be increased indefinitely and that the wiring and connections of all circuits are the same.

Each patrol box P is provided with a telephone set, which may be of the usual or any suitable character, but which preferably comprises the apparatus and circuit arrangement shown in Fig. 1. The line B leading from the central station terminates at a binding post 1, from which leads a wire 3 connecting with line 14 leading to transmitter 16, and from the latter a connection 17 leads to the primary winding of the induction coil 15. From the latter a connection 18 passes to the contact 13 of the switch-hook 12. Line 19 leads from the latter and is connected to the binding post 2 to which the line wire A is connected. The receiver 11 may be connected in the usual manner by wires 10 to the secondary winding of the induction coil 15.

The lines A and B lead to the central office and means are there provided for cutting in and out the operator's telephone set or his calling generator to connect the same with or disconnect them from the line, which means may consist of the usual ringing and listening keys. Such keys, designated  $k$ , are mounted on the table or ledge of the switchboard  $B^3$  in the usual manner, as shown in Fig. 2, and which, as they are of ordinary character, it has not been deemed necessary to show in Fig. 1. The lines A and B are normally in circuit with a relay designed, when energized, to close a local circuit to actuate a signal to notify the operator of the location of the box from which the signal emanates. In making connections from the substation to the central station the line A is connected to the spring  $a$  of the ringing and listening key associated with the circuit and from the spring  $a$  a connection  $a^3$  leads from a contact  $a^2$  with which the spring  $a$  is normally in engagement. From  $a^3$ , wires  $a^4$  and  $a^5$  lead to relay D. From the winding of this relay a line  $d$  connects with one side of the battery Y. The line B is in electrical connection with the other spring  $b$  of the ringing side of the listening key which is normally in engagement with a contact  $b^2$ , from which leads a wire  $b^3$  connected to wire  $b^4$  leading to the other side of the battery.

The operator's telephone set T which is common to all of the circuits in the system, comprises the usual receiver  $t'$ , transmitter  $t^9$ , connected by wires  $t^3$ ,  $t^4$ , with the battery Y, and connections  $t^5$ ,  $t^6$ , provided with contact points  $t^7$  with which the springs  $t^8$ ,  $t^9$ , at the listening side of the key  $k$  engage when the operator's key is thrown to the position to bridge in his telephone set with the line.

The circuit being normally open at the substation, when the receiver 11 is removed from the hook the hook-switch 12 moves against the contact 13 thereby closing the circuit. This allows current from the battery Y for talking purposes to flow over line  $b^4$ , wire  $b^3$ , contact  $b^2$ , line B, terminal 1, wire 3, wire 14, through the transmitter 16, wire 17, primary winding of the induction coil 15, wire 18, contact 13, wire 19, to terminal 2, and by line A to contact  $a^2$ , wires  $a^3$ ,  $a^4$ ,  $a^5$ , and through relay D to line  $d$ , thence to the opposite side of the battery Y. The closing of the circuit energizes relay D which closes a local circuit at the central station to operate a visual signal so located and arranged as to indicate to the operator at a glance the location of the box from which the receiver is removed from the hook. In carrying out this feature of my invention I provide at some convenient position, as at S, on the front face of the receiving board so as to be readily seen by the operator a diagram, plate or map or other suitable medium whereby the operator may be informed when the receiver of any patrol box set is removed from its hook, of the exact location of such box and know when he learns the name of the officer reporting whether or not such officer is reporting from the proper box. Specifically such medium comprises a map or plan of the locality served by the system, and such map, which is arranged in the order of the streets of the territory covered thereby, may be provided with the names of the streets, and at each point corresponding with the location of a patrol box is placed a signaling device which when actuated will indicate to the operator at a glance the location of the box associated therewith. Such signal in the present instance takes the form of an incandescent lamp  $m'$ , the front of the board being provided with an opening to show the illumination of the lamp. When now the relay D is energized by closing the circuit at the patrol box, the armature  $d^2$  of the relay D is attracted, closing the local circuit in which the lamp  $m'$  is included and the current from one side of the battery passes through the line  $d$ , line  $d^3$ , tapped from the line  $d$ , armature  $d^3$  which is moved against the anvil  $d^4$  of line  $d^3$ , line  $d^5$  connected to the armature  $d^2$ , to the lamp  $m'$ , then by wire  $d^6$  to the other side of the battery, thereby illuminating the lamp  $m'$ . When the patrolman's receiver is hung up the relay D is of course deenergized and the local circuit being opened the lamp  $m'$  is extinguished.

In order to indicate to the operator at a glance the particular ringing and listening key associated with any circuit a visual or other suitable signaling device is provided and located in such position as to denote the ringing and listening key to be manipulated to throw the operator's set on to the line



when a patrolman calls up. To this end each ringing and listening key, as shown in Fig. 2, has associated therewith a lamp  $m^2$  which is so positioned as to show by its illumination the key of the circuit controlling the lamp. This lamp  $m^2$  may be arranged in multiple with the lamp  $m'$  and also controlled by the energization of the relay D to illuminate the said lamp  $m^2$ . For this purpose connection is made by a wire  $d^7$  in electrical extension of the armature  $d^2$  and including the lamp  $m^2$ , such wire connecting at its other end with the wire  $d^6$ . It will be understood from this that when the relay D is energized in the manner heretofore described, current is thrown through both the lamp  $m'$  and the lamp  $m^2$  of that particular circuit, the former lamp indicating from its location on the map the location of the box calling up the operator, and the latter the particular listening key associated with such line. I may also provide an audible alarm to attract the attention of the operator, and this alarm, which may consist of the bell F, is located at some convenient position on the receiving board, as shown in Fig. 2, and is actuated by an electromagnet  $f'$  in a local circuit controlled by a relay R common to all the circuits of the system. This relay R is in series with the lamps  $m'$ , connection in the present instance being made in the line  $d^6$  leading from the said lamps to the battery. When the relay R is energized the armature  $r'$  thereof is attracted against the contact  $r^2$ , and current then flows by wire  $r^3$ , connected to the wire  $d^6$ , from one side of the battery through armature  $r'$ , wire  $f^3$ , through the electromagnet  $f'$ , and by wire  $f^2$ , to the other side of the battery. This energizes the magnet  $f'$  and attracting its armature  $f^4$ , which is provided with a clapper  $f^5$ , gives the bell F a single tap. The pilot lamp  $m^3$  may be included in the line  $f^3$ , in series with the electromagnet  $f'$ , and provides a visual signal, and this pilot light is preferably located on the receiving board in such position as to be under the eyes of the operator and serves to attract his attention to the map lamps  $m'$ , for this pilot light being common to all the circuits it remains lighted so long as any of the map lamps  $m'$  continue to burn. This prevents the operator from overlooking any call from a patrol box.

The lamp  $m^2$  indicates to the operator the key to be manipulated to cut in his telephone set in order to communicate with the officer calling up, and he then throws his key to talking position or so as to move the springs  $t^8$  and  $t^9$  against the anvils  $t^7$ . This operation does not affect the line to the lamps owing to the permanent connections of the wires  $a^3$ ,  $b^3$ , past the springs  $t^8$ ,  $t^9$ , and such lamps continue to burn. The operator is of course assumed to know the names of the patrolmen and the territory patrolled by them, and as

soon as he receives the name of the officer reporting he has only to refer to the lamp  $m'$  corresponding with the box from which the report is received to inform himself whether or not the patrolman is at his proper station. 70

By means of the intercommunicating telephone sets the operator and patrolman are enabled to report or send necessary instructions to and from headquarters. When the patrolman hangs up his receiver on its hook the relay D is deenergized, its armature dropping back and thereby opening the local circuit and extinguishing the lamps  $m'$ ,  $m^2$ . Relay R is also deenergized to open the local circuits controlled thereby and thus deenergizes the magnet  $f'$  so that it releases its armature to reset the bell mechanisms and also extinguishes the pilot lamp  $m^3$ . 75 80

The patrol substation boxes may be of any suitable character or construction, but they preferably comprise a rectangular box provided with two doors hinged at opposite sides of the box so as to open in opposite directions. The chamber closed by the inner door 26 is designed to contain most of the apparatus located at the substation, only such parts as are necessary in the ordinary use of the system being placed in front of the door 26, such for instance as the receiver 11, which is supported by the hook 12 and is located in a recess or depression 27 on the front of the door 26, the mouth piece of the transmitter 16, and certain other parts to be hereinafter mentioned. 85 90 95

Located at each patrol box is a generator 20, the handle 28 for operating which extends in front of the door 26, so as to be manipulated when the outer door 29 is open. This generator 20 may be of the alternating type, and is designed to be cut into and out of the main line of the circuit by means of a switch mounted on the box and operated by the outer door 29. This switch comprises a pair of contacts C, C, tied together and connected by a wire 22 with one side of the generator 20, and with which a pair of switch springs C', C', are designed to be moved into engagement when the outer door 29 of the box is open. The springs C', C', are also tied together and a wire 4 leads from them to the main circuit, being shown connected to the wire 3. From the opposite side of the generator 20 a wire 21 leads through a ringer 23, and a line 24 extends from the latter to a condenser 8 which is connected by wire 9 to the wire 19 terminating at the terminal 2. The switch operated by the door of the box is also provided with a pair of contacts C<sup>2</sup>, C<sup>2</sup>, also connected together and from the same a wire 5 leads to a recall bell 6, a connection from the latter leading to line 24 connected to the condenser. The bell 6 is designed to be mounted in an exposed position, and preferably upon the top of the patrol box, a hood 30 being provided to protect the same. 100 105 110 115 120 125 130



The switch at the patrol box, shown on a larger scale in Fig. 3, comprises a bracket  $h$  fixed to the inner side of the door 26 by a nut  $h'$  threaded upon an apertured lug projecting from the bracket and extending through an opening in the door 26. Passing through an aperture in the lug is a plunger  $h^2$  having a beveled portion  $h^3$  which is adapted to engage the ends of the switch springs  $C'$ ,  $C'$ , and move them out of contact with the contacts  $C$ ,  $C$ , and into contact with the contacts  $C^2$ ,  $C^2$ . The contacts and switch springs are mounted on an insulating block  $h^4$ , secured on the bracket  $h$ , and reacting between the block and shoulder  $h^5$  on the plunger is a coiled spring  $h^6$ . When the door is opened the plunger is thrust outwardly by the spring  $h^6$  releasing the switch springs  $C'$ ,  $C'$ , and permitting them by their own elasticity to move against the contacts  $C$ ,  $C$ , thereby disconnecting the branch circuit including the recall bell 6 from the line and connecting the branch circuit containing the generator 20 and the ringer 23 with the main circuit. When the door 29 is closed the plunger  $h^2$  is forced inwardly separating the switch springs  $C'$ ,  $C'$ , and moving them against the contacts  $C^2$ ,  $C^2$ , thereby opening the circuit through the generator 20 and closing the circuit through the ringer 6. This is the normal condition of the circuit.

The generator 20, located in each box 25, is designed to be used for signaling for the patrol wagon. The telephone might be used for this purpose but it frequently happens that the officer has in his custody an unruly prisoner so that he is not able to devote his attention to communicating his wants to the central office while he is able to operate the magneto without trouble. A special signal is provided at the central office which is actuated when the generator is manipulated. Located at convenient positions on the board are ringers  $G$ , one being associated with each patrol box circuit, and such ringer is designed to control means for actuating a visual signal to notify the operator that the patrol wagon is desired at the point to which it is to be sent. This ringer may be of any character capable of actuation upon the manipulation of the generator 20, but is preferably of the polarized type, and in the present embodiment of the invention is inserted in the wire  $b^4$ . The ringer  $G$  controls a local circuit in which is included a lamp  $g'$  before which is placed a transparency  $g^2$  bearing any suitable matter indicating the location of the box. Such matter may be the street location of the box or its number or, as shown, both. In the construction illustrated to close the local circuit in which the lamp  $g'$  is included I provide a pivoted finger  $g^3$  which is normally supported in inoperative position by the tapper  $g^4$  of the ringer or a finger projecting therefrom. When the pa-

trolman operates his generator current passes over line 21, through the bell 23, wire 24, to one side of the condenser 8, over wire 9, wire 19, line A, connection  $a^3$ , line  $a^4$ , line  $a^5$ , relay D, line  $d$ , battery Y, line  $b^4$  through the polarized ringer  $G$ , connection  $b^3$ , line B, line 3, line 4, contacts  $C'$ ,  $C'$ , and  $C$ ,  $C$ , wire 22 to the return side of the generator, thereby actuating the ringer  $G$ . With the first movement of the tapper  $g^4$  the finger  $g^3$  is kicked off and, through the medium of a contact  $g^5$ , closes the circuit through an anvil  $g^6$ . The current from one side of the battery then flows through line  $g^7$ , contact  $g^5$ , line  $g^8$ , lamp  $g'$ , line  $g^9$ , thence to the other side of the battery, as by a connection with the line  $d^7$ . This action lights the lamp  $g'$  and displays the transparency of the particular circuit operated to inform the operator to what box the patrol wagon is to be sent. At the same time relay R is energized, lighting pilot light  $m^3$  and actuating the bell F.

The signal having been given for the wagon, the operator at central finds out whether the wagon is in or not and communicates with the officer by connecting in with the line his generator N to ring the bell 23 to notify the officer that the wagon will be sent or that it is not in. It will be understood that at this time the outer door 29 is open and that therefore the ringer 23 is connected to the main line. The lamp  $g'$  remains lighted until the operator, after the bell  $G$  has ceased ringing, moves the finger  $g^3$  back against the clapper  $g^4$ , this action breaking the contact at  $g^6$  and extinguishing the lamp. The finger  $g^3$  may have a lug  $g^{10}$  to enable the operator to readily restore the finger and a stop  $g^{11}$  is preferably provided for limiting the movement of the finger when thrown off by the tapper  $g^4$ .

The polarity of the ringers  $G$  is such that their normal or bias adjustment is not disturbed by the current flowing through them from the battery, and they are only actuated by the current generated by the generator 20 in the patrol box.

The recall bell 6 located in each box is designed to attract the attention of the patrolman in the territory in which the box is located, should it be necessary to communicate with him for any purpose between the hours of reporting, for example, to instruct him to report at a particular place, as in case of a riot or conflagration or for other reason. This bell is operated by the generator N, having the usual ringing indicator  $n'$ , in the same manner as in operating the ringer 23. When the operator desires to actuate this bell to attract the attention of an officer within audible distance of the box, a ringing current is thrown on the line by the operator at central, this ringing current coming over line B, line 3, line 4, switch springs  $C'$ ,  $C'$ , contacts  $C^2$ ,  $C^2$ , which are closed when the



door 29 is shut or in its normal position, over wire 5, through the recall bell 6, wire 7, through condenser 8, over wire 9 and wire 19 to terminal 2, and back over line A to central.

5 This ringing current rings the bell 6 which is preferably made in compound form and is provided with bells of such size as to be readily audible for a considerable distance. When an officer responds to such call he  
10 opens the outer door of the box, which allows plunger  $h^2$  to be forced outwardly, permitting the switch springs  $C'$ ,  $C'$ , to close against contacts C, C, and when the receiver is removed from the switch hook 12 he is enabled  
15 to talk with central over the circuit heretofore described.

A jack  $j$  may be inserted in each circuit at the central station so that by the use of the usual cord circuits and plugs a patrolman  
20 may be put in direct communication with any of his superior officers or with the public system terminating at jacks  $j^2$  on the board. Such jack  $j$  may be of any suitable character and is looped in series with the lines  $a^4$ ,  $a^5$ , as  
25 shown in Fig. 1.

While I have described with particularity the connections and wiring of the system I wish it understood that the details in this respect are not essential and that various  
30 modifications may be made without departing from the spirit of my invention. The switch controlled by the door at the substation is shown and described with a pair each of the contacts and springs, each pair being  
35 tied together. This arrangement provides a stronger and more reliable construction, but it will be understood that instead of a pair only one of each of the contacts and springs is essential and that with this change the  
40 operations and results would be just the same.

Having described my invention, what I claim as new and desire to secure by Letters Patent is—

45 1. In combination, a telephone system including a central station and a plurality of substations with individual circuit connections, a diagram at the central station of the territory in which the substations are located,  
50 and a visual signal for each substation on the diagram in the corresponding location of each substation, and means at each substation to actuate such signal.

2. In a signaling system, a central station  
55 and a plurality of substations, a diagram at the central station of the territory surrounding the substations, visual signals at the central station for each substation, one of said signals being associated on the diagram with  
60 the location of the respective substation for indicating on the diagram the exact location from which a signal is sent, and means at each substation to actuate its associated signals at the central station.

65 3. In a signaling system, a central station

switch-board, a plurality of telephone substations, a map on the switch-board of the territory surrounding the substations, a visual signal on the map at a point corresponding with the location of each substation,  
70 a second signal at the central station associated with each substation, a normally open circuit between each substation and its associated signals, said signals being automatically actuated when calls are made at the  
75 substation.

4. In a signaling system, a central station switch-board, a plurality of patrol substations, a map on the switchboard of the territory surrounding the substations, individual  
80 telephonic circuits between the substations and the central station, a lamp on the map at a point corresponding with the location of each substation for indicating on the map the exact location of each call, means to supply current to said lamps upon the removal  
85 of the telephone receiver at the associated substation, and an operator's key-indicating signal on the switchboard for each lamp and actuated simultaneously with the latter.  
90

5. In a signaling system, a central station switch-board, a plurality of patrol substations, an individual telephone circuit between the central office and each substation and normally open at the latter, a relay in  
95 each circuit, a map on the switchboard of the territory surrounding the substations, lamps on the map at points corresponding with the locations of the substations, a normally open local circuit in which each lamp is included  
100 and which is closed by the relay when the telephone receiver at any substation is removed from its hook, and a second normally open local circuit at the switchboard containing a bell and adapted to be closed by the  
105 closing of the line-circuits.

6. In a signaling system, a central station switch-board, a plurality of telephone substations on individual circuits, a relay in each circuit, a substation indicating signal, a series of operators' keys associated with the  
110 circuits, an indicating signal for each key controlled by the relay of its associated circuit, a relay common to all the circuits, and a signal controlled by the latter relay.  
115

7. In a signaling system, a plurality of telephonic lines extending from substations to a central switchboard, signals at the switchboard associated with the lines, a series of ringing and listening keys on the switch-  
120 board, each key being in an associated line, a signal at each key, and connections to operate a key-signal when its line transmits a call-signal.

8. In a signaling system, the combination  
125 with a central station and a plurality of substations, of an individual circuit connection between the central station and each substation normally open at the latter, a battery common to all the circuit connections,  
130



a relay in each circuit which is actuated by the closing of the circuit at the substation, a diagram at the central station of the territory surrounding the substations, signal devices on the diagram at points corresponding with the locations of the substations, a local circuit connected with the battery in which each signal device is included and which is closed upon the energization of the relay, an operator's connecting apparatus at the central station associated with each circuit, and a lamp indicating the location of such apparatus and which is illuminated upon the actuation of the relay.

9. In a signaling system, the combination with a central station and a plurality of patrol substations, of individual metallic circuit connections between the central office and each substation and normally open at the latter, a battery common to all the circuit connections, a relay in each circuit and which is actuated when such circuit is closed at the substation, a map at the central station of the territory surrounding the substations, incandescent lamps on the map at the points corresponding with the locations of the substations, a local circuit connected with the battery and in which each lamp is included and which is closed upon the energization of the relay, an operator's ringing and listening key associated with each circuit, and a lamp indicating the location of such key, such lamp deriving current from the common battery and being illuminated upon the actuation of the relay.

10. In a signaling system, the combination with a central station and a plurality of patrol substations, of individual metallic circuit connections between the central office and the substations and normally open at the latter, a source of current common to all the circuit connections, a relay in each circuit and which is actuated when such circuit is closed at the substation, a map at the central station of the territory surrounding the substations, incandescent lamps on the map at the points corresponding with the location of the substations, a local circuit connected with the battery and in which each lamp is included and which is closed upon the energization of the relay, an operator's ringing and listening key associated with each circuit, a lamp indicating the location of such key, such lamp deriving current from the common battery and being illuminated upon the actuation of the relay, a second relay controlled by the first relay, and a normally open local circuit including an alarm and a pilot light closed upon the actuation of the second relay.

11. In a signaling system, the combination with a central station and a plurality of patrol boxes provided with telephone sets, of metallic circuits connecting the telephone

sets with the central station, a source of energy common to all the circuits, a door to each box, a call bell normally connected with the circuit, a ringer normally disconnected from the circuit, a contact in the line of the call bell circuit, a contact in the circuit of the ringer, a switch spring, a plunger pressing the switch spring against the contact in the call bell line when the door is closed, and a spring for withdrawing the plunger to permit the switch spring to engage the contact of the ringer circuit when the door is opened, and means at the central station for actuating the ringer and bell.

12. In a signaling system, the combination with a central station and a plurality of patrol box substations, of metallic circuits connecting the central station and the substations and provided with telephone sets at the substations and normally open at the switch-hook, a source of energy common to all the circuits, a normally closed branch circuit at each substation, a bell in such circuit, a second branch circuit provided with a ringer, a switch spring for opening and closing the branch circuits in alternation, a plunger mounted on the box and engaged by the door when closed to close the call bell branch circuit, and a spring for thrusting the plunger outwardly to break the call bell branch circuit and close the ringer branch circuit when the door is opened.

13. In combination with a central energy telephone system comprising a central station and a plurality of substations with individual circuit connections, a current generator at each substation, a signal at central for each line and operated by the removal of the associated receiver, and a signal at central in a normally open local circuit deriving current from the central source of energy and closed upon the actuation of the associated substation generator.

14. In a telephone signaling system, the combination with a central station and a plurality of substations, of normally open circuits connecting the central station with the substations and provided at the latter with alternating current generators, a source of current common to all the circuits for talking purposes, a visual signal at the central station associated with each substation circuit, a local circuit in which such visual signal is included and deriving current from the said common source, and means at the central station actuated when a substation alternating current generator is operated to close the local circuit to operate the visual signal of such substation.

15. In a signaling system, in combination, a central energy telephone system comprising a central station and a plurality of substations with individual circuit connections and a current generator common to all the



circuits, a polarized ringer in each circuit connection at the central station, an alternating current generator in such circuit at the substation for actuating the ringer, a normally open local circuit at the central station connected with the common generator and including a lamp, and a circuit closer actuated by the polarized ringer for closing the local circuit.

16. In a signaling system, in combination, a central station and a plurality of substations, circuits connecting the central station and the substations and provided with alternating current generators at the latter, a source of current common to all the circuits, a visual signal associated with each circuit and included in a local circuit at the central station connected with the common source of current, an audible signal in the main circuit and which is operated by the alternating current generator at the substation, and means controlled by the audible signal for closing the local circuit.

17. In a signaling system, in combination, a central station and a plurality of substations, circuits connecting the central station and the substations and each of which is provided with an alternating current generator, a source of current common to all the circuits, a lamp at the central station associated with each circuit and provided with a transparency indicating the location of the substation, a local circuit in which such lamp is included, a ringer in the main circuit and responding only upon the actuation of the alternating current generator at the substation, and a pivoted contact normally supported by the tapper of the ringer and which upon the actuation of the ringer is moved to close the local circuit.

18. In a police telephone signaling system, in combination, a central station and a plurality of substations, circuits connecting the central station and the substations and normally open at the substations, telephone sets in the circuits at the substations, a normally closed branch circuit at the substation provided with a call bell, a second normally open branch circuit at the substation provided with a ringer, means for connecting and disconnecting the branch circuits to and from the main circuit in alternation, a relay in the circuit at the central station and which is actuated upon the closing of the circuit at the substation, a signal at the central station indicating the location of the substation and included in a normally open local circuit, an operator's telephone set at the central station, keys for connecting the telephone set with the circuit, a lamp associated with each key and included in a local circuit which is closed upon the energization of the relay, and a battery common to all the main and local circuits.

19. In a police telephone signaling system, in combination, a central station and a plurality of substations, circuits connecting the central station and the substations and normally open at the latter, telephone sets in the circuits at the substations, a branch circuit at each substation, a call bell in such branch circuit, a second branch circuit at each substation, an alternating current generator and a ringer in the second branch circuit, a switch at each substation for connecting and disconnecting the branch circuits to and from the main circuit in alternation, a battery at the central station common to all the circuits, a map at the central station of the territory in which the substations are located, a lamp on the map at a point corresponding to the location of each substation, a local circuit in which such lamp is included, a relay in the main circuit for opening and closing the local circuit, an operator's telephone set at the central station, keys for connecting and disconnecting the operator's telephone set with the line circuits, a lamp associated with each line circuit and indicating the key associated with such circuit, a local circuit including an alarm and a pilot light, a second relay controlled by the first relay for closing the alarm circuit, and a current generator at the central station for actuating the bell and ringer at the substations.

20. In a police telephone signaling system, in combination, a central station and a plurality of substations, circuits connecting the central station and the substations and normally open at the latter, telephone sets in the circuits at the substations, a branch circuit at each substation, a call bell in such branch circuit, a second branch circuit at each substation, an alternating current generator and a ringer in the second branch circuit, a switch at each substation for connecting and disconnecting the branch circuits to and from the main circuit in alternation, a battery at the central station common to all the circuits, a map at the central station of the territory in which the substations are located, a lamp on the map at a point corresponding to the location of each substation, a local circuit in which such lamp is included, a relay in the main circuit for opening and closing the local circuit, an operator's telephone set at the central station, keys for connecting and disconnecting the operator's telephone set with the line circuits, a lamp associated with each line circuit and indicating the key associated with such circuit, a local circuit including an alarm and a pilot light, a second relay controlled by the first relay for closing the alarm circuit, a current generator at the central station for actuating the bell and ringer at the substations, a transparency at the central station associated with each line circuit and indicating



the location of the substation with which such transparency is associated, a lamp for illuminating the transparency and included in a normally open local circuit, an audible  
5 signal at the substation included in the line circuit and actuated only upon the operation of the current generator at the substation on such circuit and a contact actuated upon the

operation of the audible signal for closing the transparency lamp local circuit. 16

In testimony whereof I affix my signature in presence of two witnesses.

N. BANKS CREGIER.

Witnesses:

ARTHUR B. SEIBOLD,

J. McROBERTS.