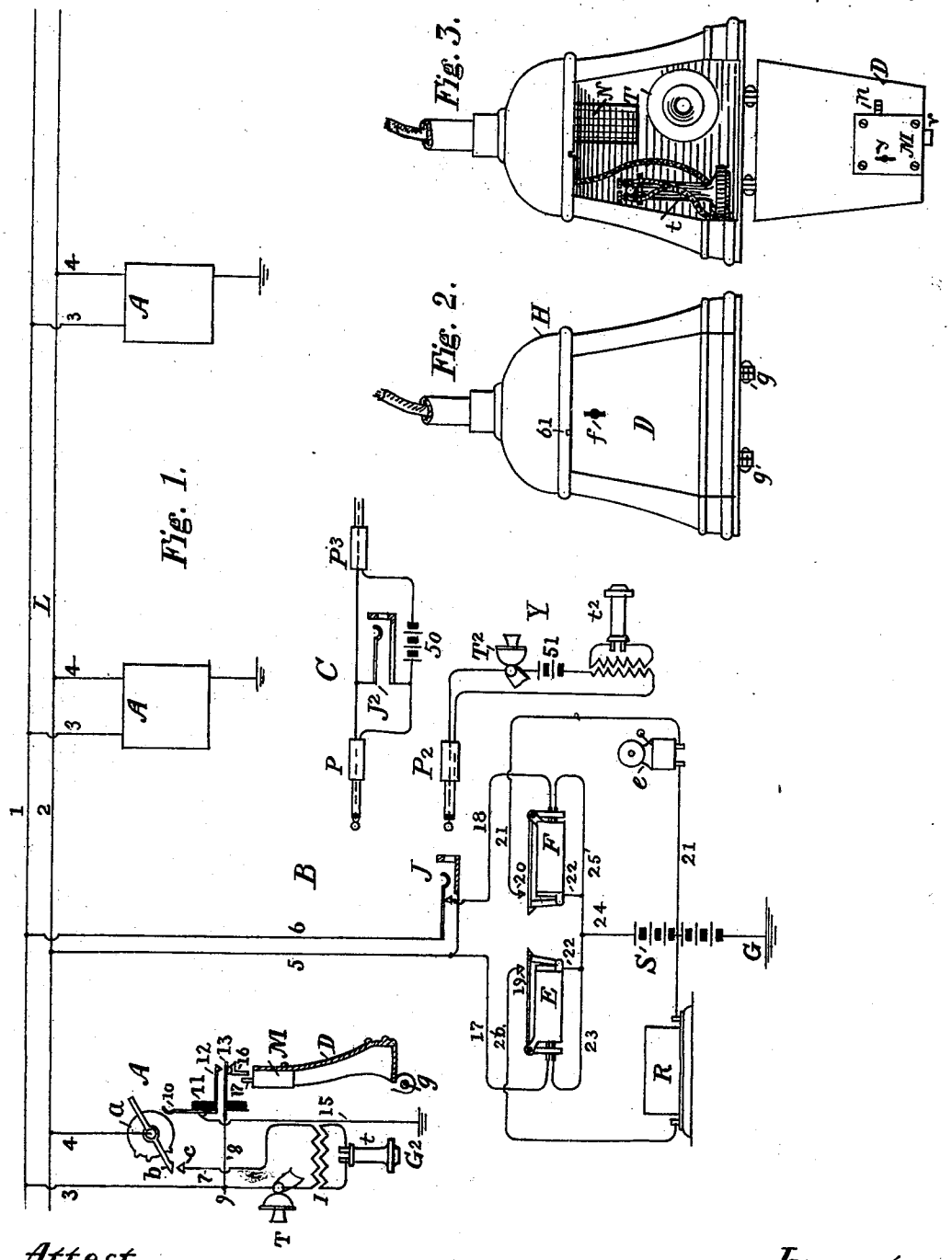
(No Model.)

2 Sheets—Sheet 1.

A. BARRETT.

SIGNALING CIRCUIT FOR FIRE AND POLICE SYSTEMS.

No. 596,134. Patented Dec. 28, 1897.



Attest.
Joseph A. Gately
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Inventor;
Albert Barrett
by his Attorney
Thomas L. Lockwood

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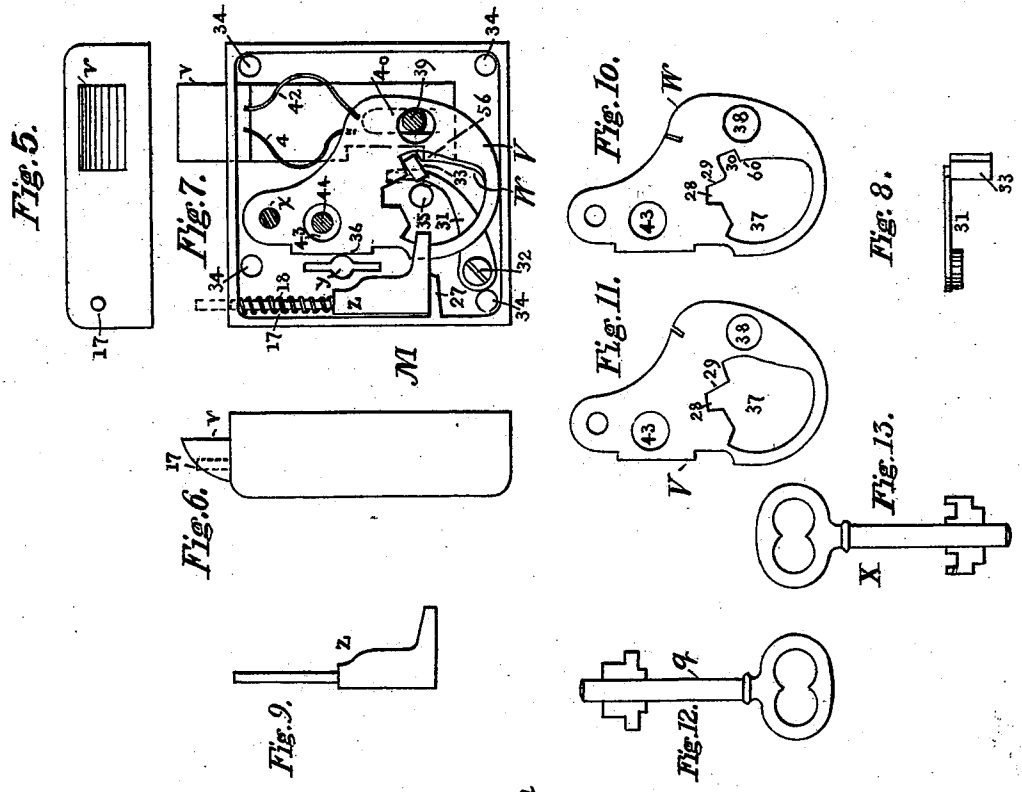

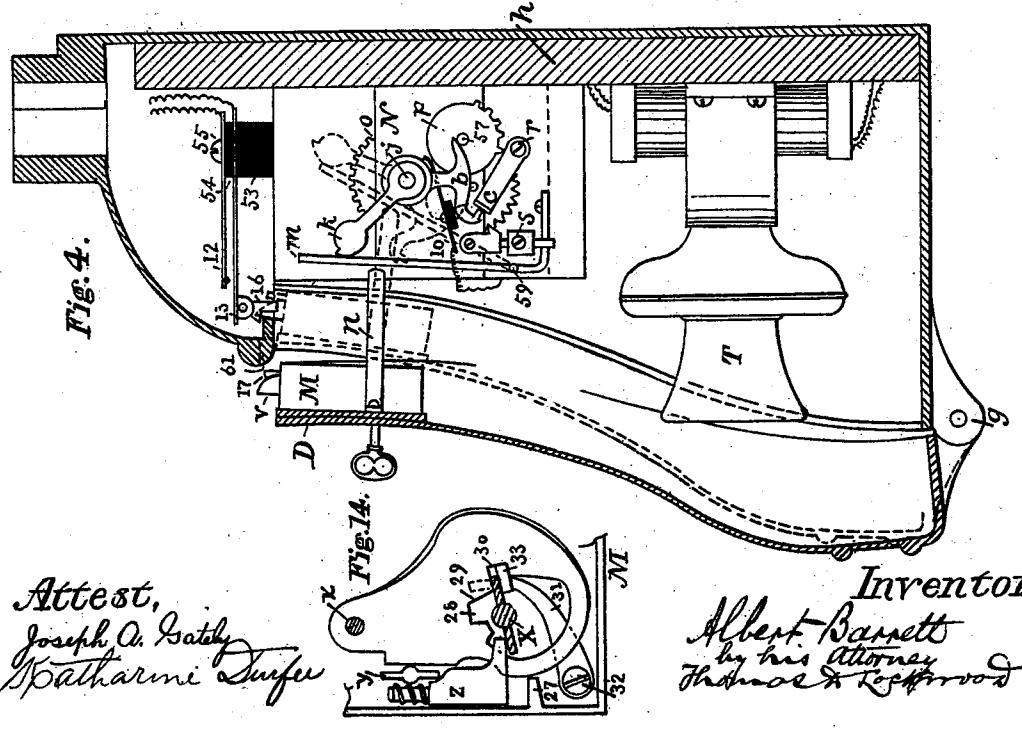

Attest,
Joseph A. Gately
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UNITED STATES PATENT OFFICE.

ALBERT BARRETT, OF KANSAS CITY, MISSOURI.

SIGNALING-CIRCUIT FOR FIRE AND POLICE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 596,134, dated December 28, 1897.

Application filed September 9, 1897. Serial No. 651,048. (No model.)

To all whom it may concern:

Be it known that I, ALBERT BARRETT, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain Improvements in Signaling-Circuits for Fire and Police Systems, of which the following is a specification.

The present invention relates to police-patrol and fire-alarm systems to be installed in towns and cities where a simple arrangement is desired.

It consists in the arrangement of a plurality of street-boxes with a common circuit which is connected with a central station, such as a police or fire-alarm headquarters or a town or city hall. The street-boxes are so constructed that three kinds of signals can be transmitted from any one of them over the circuit to separate receiving apparatus at the central station as follows: First, emergency calls are transmitted over one wire thereof; second, police calls are transmitted over the second wire, and, third, the two wires are used as a telephonic circuit. A common battery at the central station is employed to energize all of the apparatus in all of the circuits. The street-boxes are provided with iron cases which inclose a circuit-closer for the emergency-circuit, an automatically wound and released clock-train, which actuates a second circuit-closer, and also a break-wheel to send in a characteristic police signal, and telephonic instruments for the conversation-circuit. There is one outer keyhole to the box-door, to which two keys are applied to send in either an emergency or a police call. The emergency-call key is commonly called a "citizen's key," and when inserted and turned withdraws the bolt of the lock, and in opening the door a circuit over one wire is momentarily closed and a relay at the central station operates to ring a bell and cause the shutter of an annunciator to fall, and the key is trapped in the lock, after which the clock-train is operated and a circuit formed over the second wire by means of the break-wheel and the box-number recorded at the central station. When the box-door is open, the emergency-signal circuit is dissevered and the telephonic circuit is automatically closed, whereupon the citizen can give to the operator at the central station the reason for the call—whether a fire, disturbance, &c. In giving a police call the officer inserts his own key in the box, the lock-bolt is withdrawn, and the clock-train automatically closes a police-signal circuit over the second wire of the main circuit as the break-wheel is rotated, and a second relay at the central station operates to cause a shutter to fall to indicate the circuit and also causes a telegraphic register in a local circuit to register the number of the box upon a paper strip, and when the break-wheel ceases to rotate the telephonic circuit is automatically completed. The citizen's key can only be removed from the lock by the officer or some member of the fire department, a keyhole being provided on the inner face of the lock for this purpose. Switches with cords and plugs are provided at the central station, whereby the operator or attendant there may communicate with the person making a box-call, all of which I will now proceed to describe, and point out in the appended claims.

In the drawings, Figure 1 is a diagram of a main circuit, in which is shown a plurality of street-boxes and central station; Figs. 2 and 3, front views of a street-box, the latter figure showing the door open. Fig. 4 is a sectional view of a street-box enlarged, its door being partially open. Figs. 5, 6, and 7 are respectively top, edge, and side views of a door-lock detached, the latter figure showing the cover removed. Figs. 8, 9, 10, 11, and 14 are views of detached parts of the lock, and Figs. 12 and 13 represent the keys used in opening the box-door to send in a signal.

L is a metallic circuit extending between a plurality of boxes A A A, which are connected thereto by the derived branches 3 and 4, and 5 and 6 are conductors extending from the conductors of circuit L to the central station B. Any other suitable arrangement of connecting-circuits may be employed.

The conductors 5 and 6 extend first to a spring-jack J and then proceed by the wires 17 and 18, respectively, to the relays E and F and connect to ground through the battery S by wire 24. Wires 22 connect the metal frames of the relays with the wire 24. Back contact 19 of the relay E is connected by wire 18 to the register R and to the wire 24 through a portion of the battery S, and back contact

20 connects by wire 21 through bell *e* to the wire 24 to include the same or similar amount of battery S.

C is a pair of plugs connected by cords, the sleeve-cord including battery 50. Spring-jack J^2 is in a bridge between the cords.

Y is an operator's telephonic outfit, and consists of a plug P^2, whose tip and sleeve are closed by a wire loop, which includes transmitter T^2, battery 51, and the primary of an induction-coil whose secondary is in a loop with the telephone-receiver t^2.

The apparatus at each substation or street-box is inclosed in an iron casing H, adapted to be fastened to the face of a wall or in any other suitable place or position. The casing is provided with a door D, hung by hinges *g g* at its lower edge, so that it can be opened downward, as shown in Fig. 3. It has a lock M on its inner upper edge, and access is obtained to the box by a key thrust into the keyhole *f*.

To the rear wall of the box is fastened a board *h*, on the face of which is secured a clock-train N and telephone-transmitter T, and hung thereto by a suitable hook is the telephone-receiver *t*. The receiver is placed in a loop with the secondary of an induction-coil, and the transmitter is located in an open branch 7, extending from the point 9 on wire 3 to the stop *c* and is adapted to be included in the main circuit when the contact *b* closes upon *c*.

12 and 13 are spring circuit-closers secured at one end by the screw 55 to the insulating-piece 53, the springs being separated by the thin insulating-piece 54. To the under side of the outer end of spring 13 is pivoted a tilting metal piece 16.

The lock M is fastened to the inner face of the door D by bolts which pass through holes 34 in the casing thereof. The lock consists of the bolt *v*, having a notch cut in one side to provide the shoulder 56, and has a guide-hole 40, in which plays the pin 39, cast upon the inner side of the case.

V and W are tumblers which rotate on the pin *x* and have holes 38, which inclose the pin 39.

41 and 42 are steel springs, one pressing between the bolt *v* and the under tumbler V and the other between the bolt and top tumbler W, and serve to keep the striker of the bolt pressed outward and also to keep the tumbler pressed against the pin 39. Both tumblers have portions cut away, as 43 and 37. Through the former 43 passes the screw 44, which holds the lock-cover on, and the latter, 37, affords space for the turning of the keys.

31 is a movable lever pivoted at 32. Its main part passes under the tumblers, and it is provided with a square projection 33, which bears in the recess 30 of the tumbler W and upon the shoulder 56 of the bolt *v*.

z is a movable piece having a projection from its base to the right and a pin 17 extending through a hole in the top or edge of the casing and flush with its exterior surface, and has a spiral spring 18 upon it, one end of which presses upon the inner rim of the lock, while the opposite end presses against the square portion of *z* and forces it against the abutment 27, which is integral with the rim.

y is a keyhole located upon the inner face of the lock-casing.

N is a clock-train secured to the board *h*. It is provided with a mainspring of low power, which is automatically wound up when the door D is closed, and is adapted to rotate the shaft *j*, upon which is fastened the lever *k* and the circuit-closer *b*. The wheel *o* upon the shaft *j* rotates the shaft 57, which carries a break-wheel *p*, upon the periphery of which are teeth to give, in connection with the pen 10, the signal characteristic of the box. The circuit-closer *b* is adapted to make contact with the anvil *c*, which is secured by the screw *r* to the frame of N.

s is an escapement.

m is a lever pivoted at 59, and its upper part bears upon the rotating arm or lever *k*.

n is a stud secured to the inside of the door D and adapted to press against the lever *m*.

As is usual in boxes of this kind, two keys are used, one which is termed an "emergency" or "citizen's" key X, Fig. 13, and the second an "officer's" key *q*, Fig. 12.

In the operation of the box suppose that an emergency signal is to be sent in. The key X is inserted in the hole *f* and turned to the right. Its upper ward or bit enters the recess 28 of the tumblers, and when turned bears against their shoulders 29, forcing the tumblers to the right until the projection 33 of lever 31 is away from the shoulder 60 of the recess 30 in the tumbler W, at which time the bit of the key presses against projection 33, forcing it against shoulder 56 of the bolt *v*, and about this time the opposite wing or bit of the key strikes the under side of the foot of *z*, and as the key is turned farther the bolt *v* is withdrawn and *z* forced up, so that its pin 17 projects from the face of the lock edge, as shown in dotted lines. Now the door is pulled open, and as it swings out the pin 17 strikes the pivoted piece 16 and forces the spring 13 into contact with the spring 12, and as the pin 17 passes outward the piece 16, which has a tilting motion to ease the passage of the pin, resumes its normal position and separates the springs. When the door is opened, the clock-train is released and the circuit-closer *b* comes into contact with the anvil *c* and closes the telephone-circuit. A small passage 61 is made in the casing to allow the pin to pass out freely. When the springs 12 and 13 were momentarily closed, as described, a circuit was established from ground G^2 via wire 15, springs 12 and 13, wires 8, 3, 1, 6, and 18 to relay F, and by wire 25 and 24 and battery S to ground G, causing the relay-armature to be attracted to its back contact 20 and its shutter to fall.

As the arm of the armature momentarily closed with the contact 20 a local circuit was completed from battery S, wires 24 and 22, metal case of relay F, armature arm and contact 20, and wire 21, and a tap was given by the bell *e*. The tapping of the bell calls attention to the dropped shutter, whereupon the attendant inserts plug P^2 into jack J and ascertains from the person at the street-box the nature of the call, the battery 51 energizing both the central-office and the street-box transmitters. The shutter is so marked as to indicate to the operator the circuit the call is coming over. When it is desired to transmit a signal to another central station—say if station B is a police station and it is desired to transmit a fire-alarm, or if B is a fire-alarm and it is desired to transmit a police alarm—the plug P of cord *b* is inserted into jack *j* and plug P^2 into jack j^2. The plug P^3 is inserted into a jack communicating with the second station.

When the emergency-key has operated to open the door D, it is trapped—that is to say, it cannot be withdrawn—as shown in Fig. 14. After raising the pin 17 and withdrawing the bolt *v* the key is turned back, and in so doing the bit on one side passes into the recess 30 in tumbler W side by side with the projection 33, the spring forces the foot *z* upon the other bit of the key in the position shown in said figure. The box-door can be closed and locked again as the striker of the bolt *v* remains out from the lock-rim sufficiently for the purpose; but the key can only be removed by turning it again, (in case the door is shut,) opening the door, and inserting another key—say the officer's key—into keyhole *y* and pressing the tumblers away, so that the emergency-key can be rotated.

When an officer's key is inserted into keyhole 35, its upper bit strikes against the abutments 29 of the tumblers, forcing them away until it strikes the projection 33, which in turn bears against the shoulder 56 of the bolt and withdraws the same from its socket and the door is opened. The key is so cut away that it does not raise the piece *z*.

When the door is opened, whether by the citizen's or the officer's key, the stud *n* comes away from the lever *m* and the clock-train is released and causes the break-wheel *p* to rotate under the pen 10 and send impulses over the conductor 2 to the central office, a circuit being formed as the teeth of the wheel strike the pen from ground G^2, wire 15, pen 10, break-wheel, wire 4, conductors 2 and 5, and wire 17 through relay E and by wires 23 24 and battery S to ground G, causing the armature of the relay to drop its shutter and come into contact with the stop 19, whereupon a local circuit is completed from battery S, wires 24, 23, and 22, metal frame of relay, contact 19, and wire 18, and causing the register R to impress the telegraphic number of the street-box on a paper strip. The relay-shutter is numbered to indicate the circuit from which the call proceeds. The clock-train comes to a stop when the arm *b* strikes upon the anvil *c*, and this closes the telephone-circuit, as will be readily seen. When the door is closed, the stud *n* strikes the lever *m*, which forces the rotating lever *k* and the circuit-closer *b* into the position shown by the dotted lines, thus winding up the clock-train and opening the telephone-circuit.

It will be seen that when a plug P is inserted in spring-jack J and the operator's-telephone apparatus Y in circuit the emergency-relay F is cut out of circuit, and if an emergency call should come in over this particular circuit the operator's telephone is right in the circuit to receive it.

The object of the emergency-signal is to inform the operator when busy with one circuit and other calls come in on other circuits, which are emergency calls, and so to give such calls the preference, as for regular police-calls the box-signal only comes in, but for emergency calls both signals come in, the emergency first and the box-signal second.

Having now fully described the invention, I claim—

1. The combination in a common-battery signaling system, of a circuit composed of two conductors extending through a plurality of substations or street-boxes, normally open at each station, and terminating in a central station; means in each box operative upon the opening of its door for first, momentarily closing a circuit over one conductor of the main circuit and through the earth to the central station; and second, means for intermittently closing and opening a circuit over the second conductor of the main-line circuit and through the earth to the central station; and third, means for closing the said two conductors to include telephones; with signal-receivers at the central station in circuit with the first conductor consisting of visual and audible instruments, and signal-receivers in circuit with the second conductor consisting of visual and recording instruments, and means for connecting telephonic instruments between the said two conductors.

2. The combination in a fire-alarm and police-signal system of a metallic circuit extending through a plurality of street-boxes and terminating in a central station, both conductors of the said circuit being normally open in each box; each box consisting of a casing with a door hinged thereto adapted to swing outwardly, provided with a lock having a circuit-closing pin, and circuit-closing springs in the path of said pin, a clock-train adapted to be wound by the closure of said door, and to be released by the opening of the same to serially rotate a break-wheel and to operate a circuit-closer, and telephone instruments; signal-receivers at the central station in circuit with one conductor of said main circuit consisting of visible and audible instruments, and signal-receivers in circuit with the second conductor consisting of visible and recording

instruments, with means for connecting telephones between the said two conductors; whereby when a box-door is opened a circuit is closed over the first conductor and the signal-receivers included therein operated, and secondly a circuit is closed over the second conductor and the said signal-receivers located therein operated, and finally the metallic circuit is closed including the telephones in the box.

3. The combination in a common-battery signaling system of a metallic circuit extending through a plurality of substations or street-boxes and terminating in a central station, both conductors of the said circuit being normally open in each box; means at each box for first, momentarily closing a circuit over one conductor of the main circuit and through the earth to the central station, and second, means for intermittently closing and opening a circuit over the second conductor of the main circuit and through the earth to the central station, and third, means for closing the said metallic circuit to include telephones; signal-receivers at the central station in circuit with the first conductor consisting of a relay-annunciator adapted to operate a bell, and signal-receivers in circuit with the second conductor consisting of a relay-annunciator adapted to operate a register; a battery common to both conductor-circuits; with means for connecting telephonic instruments between the said two conductors consisting of a plug-socket having open terminals from each of said conductors, and a plug whose cords include telephones.

4. The combination in a common-battery fire-alarm and police system of a main metallic circuit, a plurality of street-boxes, a common battery, and a central station; each street-box consisting of a casing with an outwardly-swinging door hinged thereto provided with a lock having a circuit-closing pin, each lock being provided with citizens' keys and officers' keys, circuit-closing springs in the path of said pin, a clock-train adapted to be wound by the closure of said door, and to be released by the opening of the same to operate a circuit-closer, with telephones; separate signal-receivers at the central station in circuit with each conductor of said main circuit, and means for connecting telephone instruments between the said conductors; whereby upon the insertion of a citizen's key into said lock and the opening of the door the key is trapped and a circuit is momentarily closed over one conductor of the said circuit as the said pin passes the said springs and a signal-receiver operated at the central station, the said clock-train released, the circuit-closer operated and the telephones in the box included in a metallic circuit.

5. The combination in a common-battery fire-alarm and police system of a main metallic circuit, a plurality of street-boxes, a common battery, and a central station; each street-box consisting of a casing with an outwardly-swinging door hinged thereto provided with a lock having a circuit-closing pin, each lock being provided with citizens' keys and officers' keys, circuit-closing springs in the path of said pin, a clock-train adapted to be wound by the closure of said door and to be released by the opening of the same to serially rotate a break-wheel and operate a circuit-closer, with telephones; a separate signal-receiver at the central station in circuit with each conductor of said main circuit, and means for connecting telephones between the said conductors; whereby upon the insertion of an officer's key into said lock and the opening of the door a circuit is closed over one conductor of the said circuit by the releasement and rotation of said break-wheel and a signal-receiver operated at the central station, the circuit-closer operated and the telephones in the box included in a metallic circuit.

6. The combination in a fire-alarm and police-signal box of a casing; with a door hinged to the same adapted to swing outwardly and provided with a lock, having a concealed circuit-closing pin; circuit-closing springs in the path of said pin; a clock-train adapted to be wound by the closure of the door and to be released by the opening of the same to serially rotate a break-wheel, and to operate a circuit-closer; and telephone instruments; all connected as described, and operating as set forth.

7. The combination in a common-battery fire-alarm and police system of a main metallic circuit, a plurality of street-boxes, a common battery and a central station; each street-box consisting of a casing with an outwardly-swinging door hinged thereto provided with a lock having a circuit-closing pin, each lock being provided with citizens' keys and officers' keys, circuit-closing springs in the path of said pin, a clock-train adapted to be wound by the closure of said door and to be released by the opening of the same to serially rotate a break-wheel and to operate a circuit-closer, with telephones; separate signal-receivers at the central station in circuit with each conductor of said main circuit, and means for connecting telephone instruments between the said conductors; whereby upon the insertion of a key into said lock, and the opening of the door an emergency-signaling circuit is established over one wire of the main circuit, or a police-signaling circuit is established over the second conductor of the main circuit, at will, and a conversation-circuit is afterward established over the two conductors of the said main circuit automatically.

8. The combination in a common-battery fire-alarm and police system of a main metallic circuit, a plurality of street-boxes, a common battery, and a central station; each street-box consisting of a casing with an outwardly-swinging door hinged thereto provided with a lock having a circuit-closing pin, each lock being provided with citizens' keys

and officers' keys, circuit-closing springs in the path of said pin, a clock-train adapted to be wound by the closure of said door and to be released by the opening of the same to serially rotate a break-wheel and to operate a circuit-closer, with telephones; separate signal-receivers at the central station in circuit with each conductor of said main circuit, and means for connecting telephones between said conductors; whereby either of two independent signaling-circuits may be selectively established between any street-box and the central station and characteristic signals automatically transmitted from the box to the central station, and a conversation-circuit established over the two conductors of the said main circuit.

9. The combination in a common-battery signaling system of a metallic circuit extending through a plurality of substations or street-boxes and terminating in a central station, both conductors of the said circuit being normally open in each box; means at each box for, first, momentarily closing a circuit over one conductor of the main circuit and through the earth to the central office, and second, means for intermittently closing and opening a circuit over the second conductor of the main circuit and through the earth to the central station, and third, means for closing the said metallic circuit to include telephones; signal-receivers at the central station in circuit with the first conductor consisting of a relay-annunciator adapted to operate a bell, and signal-receivers in circuit with the second conductor consisting of a relay-annunciator adapted to operate a register; a battery common to both conductor-circuits; with means for connecting telephonic instruments between the said two conductors consisting of a plug-socket having open terminals from each of said conductors and a plug whose cords include telephones; whereby when the telephones at a box and at the central station are in the metallic circuit, the emergency signals from other boxes in the circuit are received in the central-station telephone.

10. The combination in a common-battery fire-alarm and police system of a main metallic circuit, a plurality of street-boxes, a common battery, and a central station; each street-box consisting of a casing with an outwardly-swinging door hinged thereto provided with a lock having a circuit-closing pin each lock being provided with citizens' keys and officers' keys, circuit-closing springs in the path of said pin, a clock-train adapted to be wound by the closure of said door and to be released by the opening of the same to operate a circuit-closer, with telephones; separate signal-receivers at the central station in circuit with each conductor of said main circuit, and means for connecting telephone instruments between the said conductors; whereby upon the insertion of a citizen's key into said lock and the opening of the door the key is trapped and a circuit is momentarily closed over one conductor of the said circuit as the said pin passes the said springs and a signal-receiver operated at the central station, the said clock-train released and a circuit intermittently closed over the second conductor and the box-number recorded, the circuit-closer operated and the telephones in the box included in a metallic circuit.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 24th day of August, 1897.

ALBERT BARRETT.

Witnesses:
S. C. PETTIT,
EDWARD F. WEBSTER.