(No Model.) 3 Sheets—Sheet 1.

J. J. COUGHLIN.

ELECTRIC POLICE CALL ALARM BOX.

No. 362,477. Patented May 3, 1887.

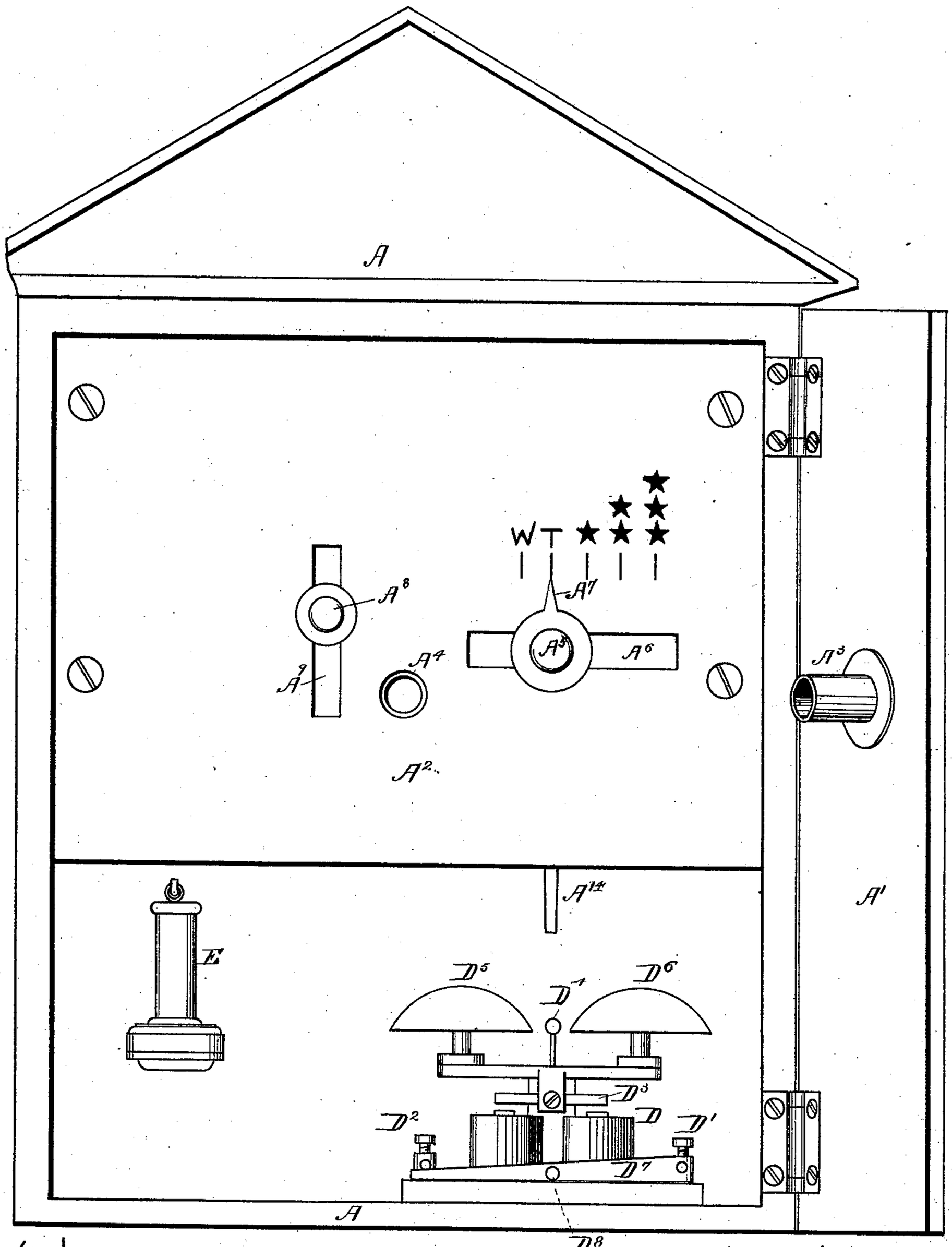

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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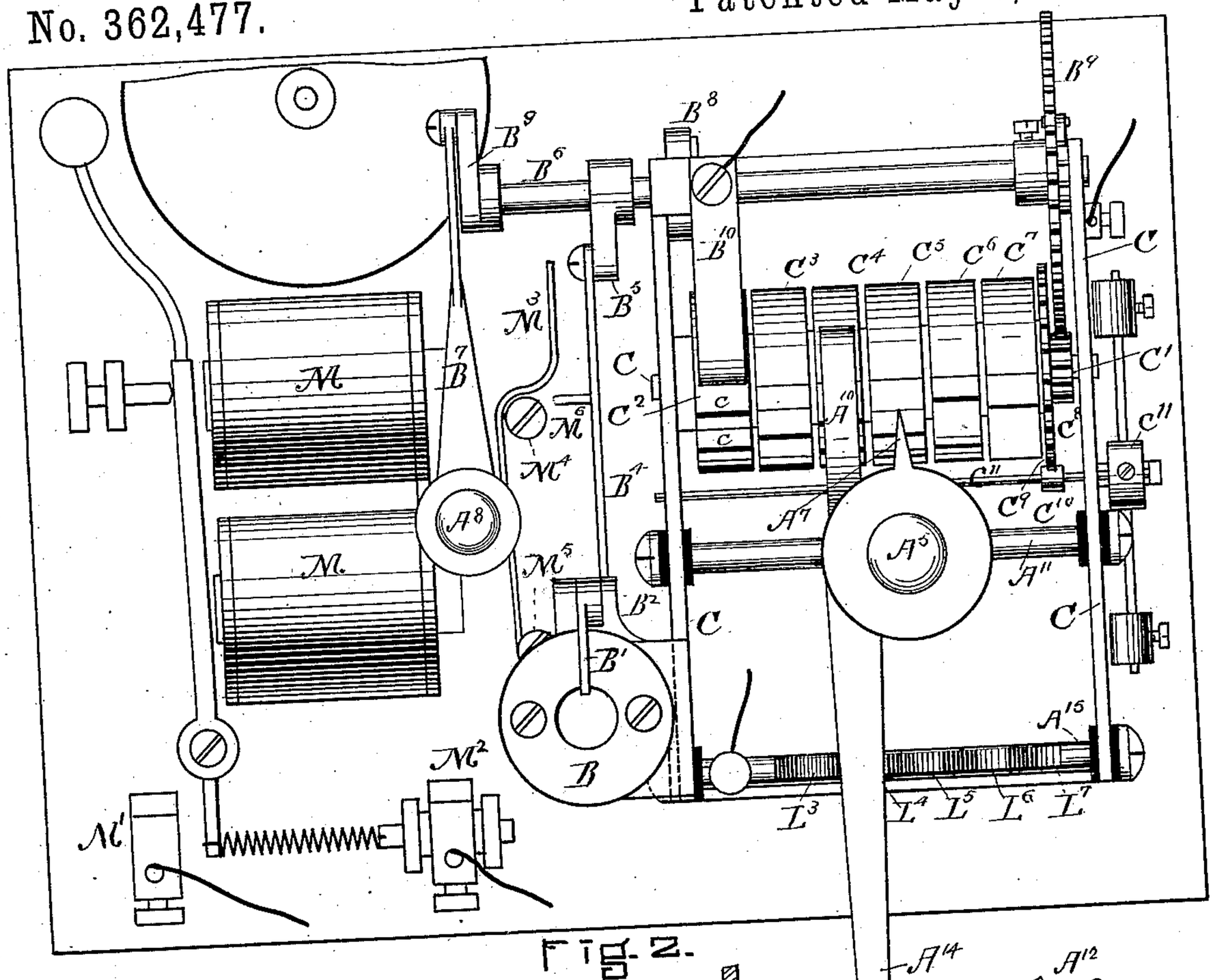

FIG. 2.

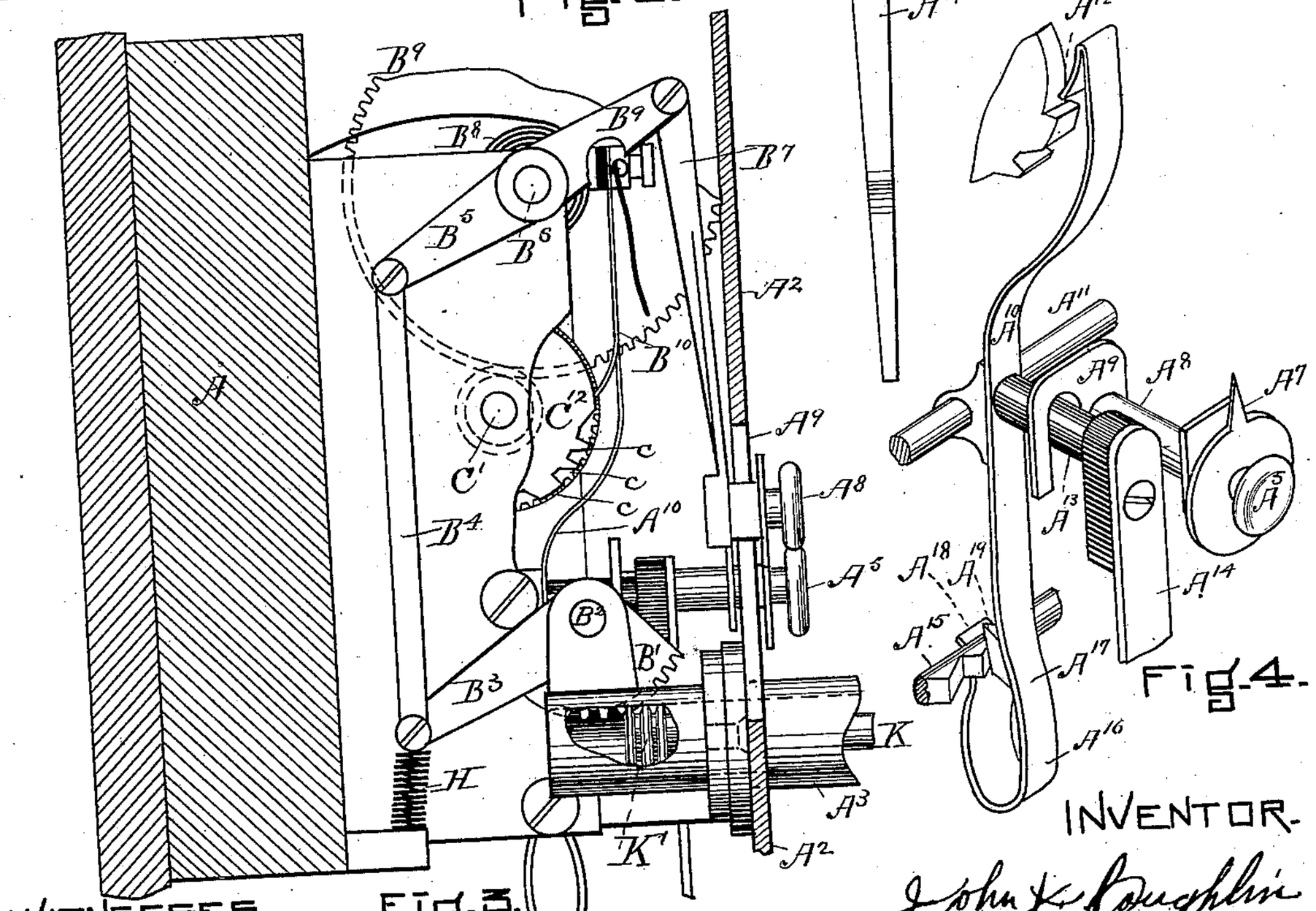

FIG. 3.

FIG. 4.

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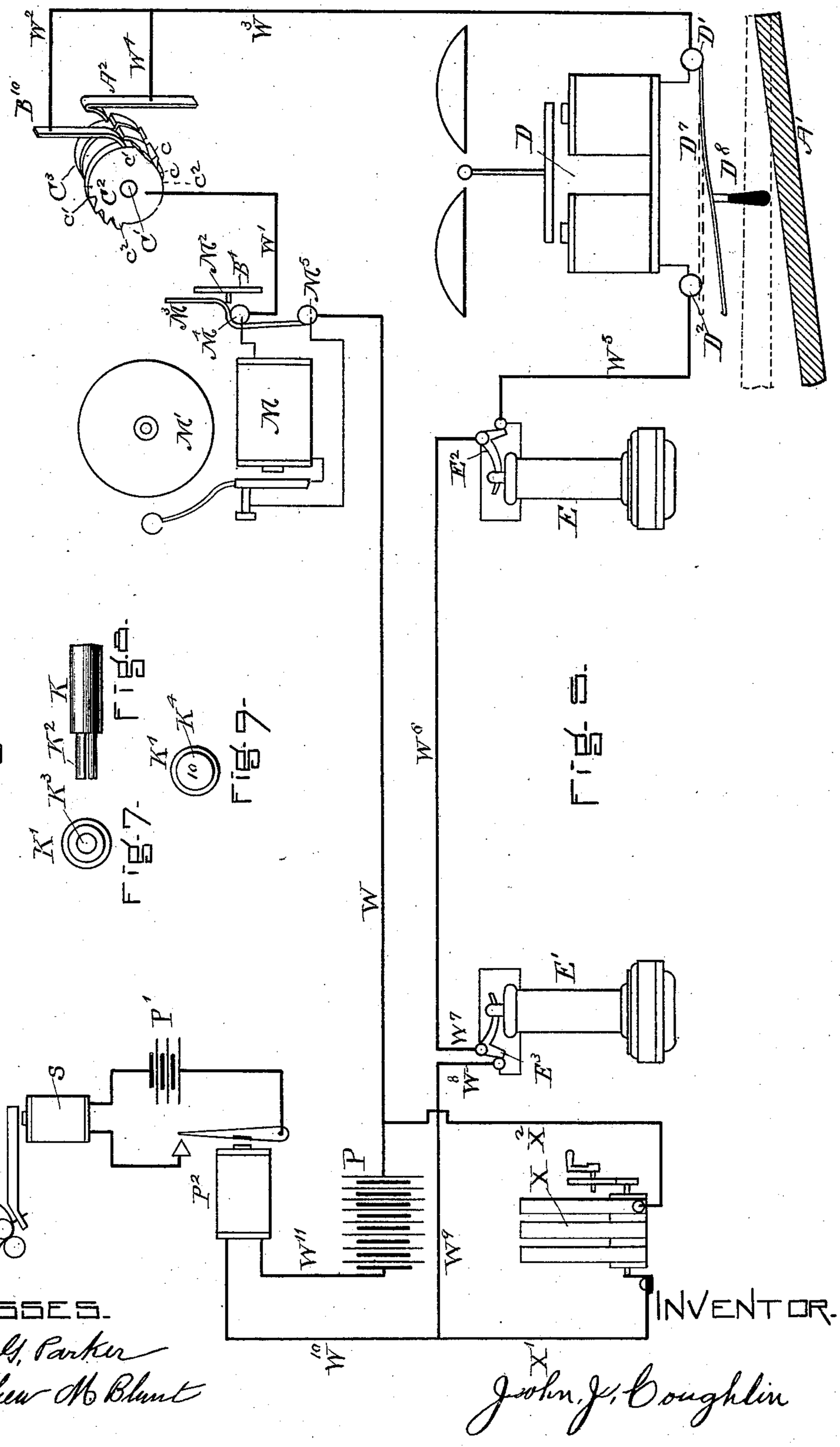

Fig. 6.

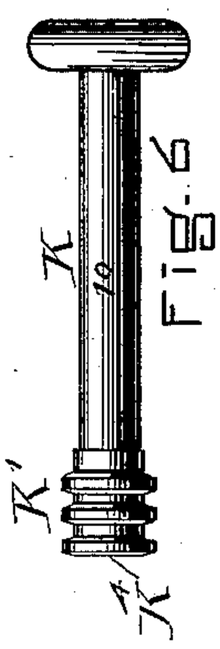

Fig. 7.

Fig. 7.

Fig. 8.

Fig. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN J. COUGHLIN, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF THREE-FOURTHS TO DENNIS J. HERN AND JAMES M. PRENDERGAST, BOTH OF SAME PLACE, AND SAMUEL OAKMAN, OF MELROSE, MASS.

ELECTRIC POLICE-CALL ALARM-BOX.

SPECIFICATION forming part of Letters Patent No. 362,477, dated May 3, 1887.

Application filed December 23, 1886. Serial No. 222,427. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. COUGHLIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Electric Police-Call Alarm-Boxes, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to so construct an electric police-call alarm-box that a call-key (which shall identify its user by leaving a numbered portion of itself within the box when withdrawn) may be intrusted to the citizen, it not being a key that will open the box, and to so arrange the interior and the parts connecting with the police-office that an officer is at once notified to call at the box at which the call-key has been used, and there is enabled to communicate with the central office by a system of electric symbols, telegraphic letters, or telephonically, or both. I attain these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a front view of a police alarm-box, the door being represented as open. Fig. 2 is an elevation showing the interior mechanism of the box, the dial-plate A^2 of Fig. 1 being removed for the purpose of showing the mechanism behind it. Fig. 3 is a cross vertical section showing in detail a part of the mechanism behind the plate of A^2, Fig. 1. Fig. 4 is a view in perspective showing details. Fig. 5 is a diagram drawn for the purpose of showing the working of my invention. Fig. 6 shows a key in plan, and Figs. 7, 8, and 9 show details of this key.

In the drawings, Fig. 1, A represents the box; A′, the door, shown to be open; A^3, a key-hole tube, and A^2 a face-plate or dial for the interior of the box, located as shown in Figs. 1 and 3. This dial A^2 has upon it first an opening, A^4, for allowing an entrance for the key. This opening A^4 coincides with the key-tube A^3 on the door when the door is closed. It also has a vertical opening, A^9, for admitting of the movement of the knob and stem A^8, (see Figs. 1 and 3,) and also a horizontal opening, A^6, to admit of the movement of the knob and stem A^5, Figs. 1, 2, and 3.

The knob A^5, Fig. 1, has a pointer, A^7, which the officer may cause to coincide with any of the marks on the dial A^2, indicated, respectively, by W T, (one star,) (two stars,) (three stars,) or by any other suitable symbols. Attached to the back part of the box is a frame, C. Within this frame C, I have a series, in this case, of six circuit-wheels. The first of these circuit-wheels, C^2, connects with the pen B^{10}, as shown in Figs. 2 and 3. This wheel C^2 has electrically-contacting points $c - - - - - - - c$, which serve to connect the circuit and give the alarm to the police-office. The number of these circuit-connecting points and their arrangement indicate to the office the number of the box from which the call comes.

That part of the disk C^2 that is not occupied by the number-giving points $c - - - - c$ is occupied by a circuit-breaking arc of sufficient length to admit the circuit-closing points of the other five circuit-wheels—namely, C^3, C^4, C^5, C^6, and C^7, Fig. 2—to act, as will be hereinafter explained.

When the box-number call is made by a citizen, it shall be completed before any one of the circuit-wheels $C^3 - - - - - - C^7$ can be put in use by the policeman who opens the door of the box.

The above-described circuit-closing wheels are all attached to a single shaft, C′. This shaft has upon it a pinion, C^8, Fig. 2, which engages with the gear-wheel B^9 on the shaft B^6, said shaft B^6 having motion imparted to it by a coil-spring, B^8, Figs. 2 and 3. The rapidity of motion imparted by the spring B^8, through the shaft B^6 B^9 and pinion C^8, is governed by the escapement-wheel C^9, pallet C^{10}, and balance C^{11}.

The spring B^8, which, as has been explained, gives motion to the circuit-closing wheels $C^2 - - - - - C^7$, is wound up and limited in its motion by two distinct devices. The first one—that is, the one to be first operated by the key of the citizen—I will now explain.

The crank-arm B^5, Figs. 2 and 3, is attached to the shaft B^6, and connected by a link, B^4, Figs. 2 and 3, to a lever-arm, B^3, Fig. 3, to the segment-gear B′, Figs. 2 and 3. This segment-gear B′ can be moved by the key K, which has upon it a circular rack, K′, as shown in Figs. 3, 6, 7, and 9, so that the mere act of pushing the key K into the key-hole A^3 A^4 of the box,

as shown in Fig. 3, will cause the movement of the segment-gear B′, and thus throw up the arm B^3, and acting through it, the link B^4, crank-arm B^5, and journal B^6 will wind up the spring B^8, as desired.

In Fig. 3 I have shown at H a spring, which acts in the same direction upon its connecting parts as the spring B^8 does, so that, if desirable, one of these springs may be omitted and the operation of the machine remain the same.

The second means of winding up the spring B^8—that is, the means used by the policeman after he has opened the box—is this: B^6, Figs. 2 and 3, is a crank-arm attached to the journal B^6, and connected by a link, B^7, to the knob and stem A^8, Figs. 2 and 3. Then by pulling down this knob A^8 a partial rotation is given to the journal B^6, and thus the spring B^8 is wound and the secondary spring H is brought into tension.

The sliding knob A^5, Figs. 1, 2, 3, and 4, is for the especial use of the policeman after he has unlocked and opened the door, and its construction and use may be explained as follows, (see Fig. 4:) The knob A^5 is connected by a stem, A^8, to a yoke-plate, A^9. This yoke-plate A^9 embraces the start A^{13}, which is connected at one end to a rocker-shaft, A^{11}, Figs. 4 and 2, and at the other end by an insulation-piece to a spring-lever, A^{14}. This spring-lever is so bent at its lower end that when the door A′, Fig. 1, is closed it will be pushed inwardly, thus causing the shaft A^{11} to rock in such a manner as to throw out the pen or lever A^{10} in such a manner that its point A^{12}, Fig. 4, will not come in electrical contact with any of the circuit-closing points of any of the circuit-wheels C^3 – – – – – C^7.

A^{17}, Fig. 4, is a lever extending downward from the rocker-shaft A^{11}, and terminating in a **U**-shaped piece, A^{16} A^{18}, the inner upper end of which, A^{18}, rests against the rear side of a notched rod, A^{15}, in such a manner as to draw with a spring action the **V**-shaped piece A^{19} forcibly against the notched rod A^{15}. This pen-lever A^{12} A^{10} A^{17} is so constructed in relation to the **V**-shaped piece A^{19} and the rod A^{15} that when not otherwise acted upon it will be out of contact with the points of the circuit-wheels when the **V**-shaped piece A^{19} is at the depression-points of the notches L^3 – – – – – L^7 and in contact when the **V**-shaped piece A^{19} is at the elevated parts of the notches. The above-described action of the pen-lever A^{10} A^{17}, in connection with the notched rod A^{15}, is prevented by the overpowering force of the lever A^{14} when the door A′ is closed—that is, the pressure of the door against the lower end of the lever A^{14} will cause the shaft A^{11} to rock sufficiently (independent of the springing action of A^{17}) to throw out the pen A^{10} A^{12} from contact with any of the points of the circuit-wheels.

In Fig. 2, M M represent an ordinary call-bell, of which M′ M^2 are the binding-posts, and M^3 M^4 M^5 a cut-out device. M^6 is a start on the link B^4, which, as the link B^4 rises or lowers in the upper portion of its path, comes in contact with the cut-out lever M^5 and forces it out of function, which will be more fully explained in the description of the system of connecting or wiring.

The device D D^3 D^5 D^4 D^6 represents an ordinary polarized magneto call-bell, and, although connected by the same lines that connect the other parts of my invention, is operated by an electro-magneto instrument in the office by the officer in charge. This last-described bell is cut out by the device shown in Fig. 5, in which the two binding-posts D′ D^2 are provided with a cut-out switch, D^7. This switch D^7 is not in contact with the post D^2, except when the door A′ is closed, as indicated by dotted lines at A′, Fig. 5, in which case the door presses against the start D^8 and forces the switch D^7 against the post D^2, thus cutting out the bell D and restoring circuit to the other part of the machine.

The key, K, to be used by the citizen in making the call does not serve to open the door, but to start the circuit-wheels C^2 – – – – – C^7. By winding up the spring it gives them motion, as has already been set forth. This key is illustrated in Figs. 6, 7, 8, 9, and consists of a shank or handle-piece and a detachable piece, K′. The detachable piece K′ is made, as shown, in the form of an annular ratchet, the pitch of the teeth of which corresponds with the pitch of the teeth of the segment-gear B′, Fig. 3, so that this key will always act as a ratchet for starting the instrument. The part K′ fits loosely upon an extension, K^2, of the shank K. (See Fig. 8.) This extension K^2, being smaller than the shank of the key, forms a shoulder against which the part K′ may rest while the key is being pushed in and doing its work of winding up the mechanism; but when the shank of the key is pulled out of the box the part K′ drops out into the interior of the box, and is there left until the box is opened by the officer. The extreme end K^4 of the key has stamped or engraved upon it a number—10, for instance—which corresponds with a similar number on the shank of the key, and as record is kept of the name of the person to whom these keys are delivered it is perfectly easy to ascertain the name of the person who gave the citizen's call. The piece K′ is returned to the citizen by the officer who unlocks the box.

E and E′ represent two telephone-instruments—one in the box and the other, E′, in the office.

I will now describe the method of using my invention. The door of the box being closed, as indicated by dotted lines in Fig. 5, causes the lever B^7 to make a direct circuit between the post D^2 and D′ of the polarized armature-bell D, thus cutting it out of the circuit. Now the citizen, by using his key K, winds up the mechanism and sets the circuit-wheels C^2 – – – – – C^7 in motion. This same action causes the lever B^4 to rise and the start M^6 (after the lever B^4 has made about two-thirds of its motion upward) to come in contact with the cut-out le-

ver M^3, and, throwing it away from the post M^4, puts the vibrating bell M′ into circuit and causes it to ring. This vibrating bell will ring until the lever B^4 has descended about one-third of its path, at which point the lever M^3 will spring back and connect the post M^4 M^5, thus cutting out the bell and stopping it from ringing.

In some cases it may be desirable to omit the ringing of the bell M′, in which case the start M^6 can be removed from the lever B^4. As has already been described, the descent of the lever B^4 is coincident with the rotation of the circuit-wheels C^2 – – – – – C^7, and as these wheels revolve their electric contacting-points make and break the circuit and operate the office-instrument, which may consist of the relay alone, or of a Morse registering-instrument, or of other devices.

I will now describe the action of the first circuit-wheel. This circuit-wheel is (as all of the other circuit-wheels) connected to the main battery P by the circuit, (see Fig. 5,) wire W M^5 M^4 W′, shaft of the circuit-wheel, C′, pen B^{10}, wire W^2, wire W^3, post D′ D^2, wire W^5, telephone device E^2, wire W^6, wire W^7, telephone device E^3, wire W^8, wire W^9, wire W^{10}, relay P^2, wire W^{11}, and battery P. Now, as the circuit-wheel C^2 revolves, its elevations c – – – – – – c, meeting with the pen B^{10}, make and break the above-described circuit and give the desired alarm to the office, indicating the number of the box from which the alarm comes. That part of the arc of the wheel extending from c^2 to c^2 is not in contact with the pen, thus giving a long dash on the registering-instrument in the office, indicating that the number of the box has been given. That part of the arc of the wheel between the points c' and c' is in contact with the point of the pen B^{10}, so that the circuit is not broken through the pen B^{10} and wire W^2, and may make and break by the elevations on any of the circuit-wheels C^3 – – – – – – C^7. All of these wheels C^3 – – – – – C^7 are adapted to make contact with the pen A^2, thus restoring the circuit through W^4. Upon these circuit-wheels circuit-closing elevations are arranged to return to the office any signal that the officer who has opened the door may desire to send. This he does by pulling down the knob A^8, thus winding up the spring B^8, and by moving the knob A^5 so that its pointer A^7 shall agree with the symbols on the plate A^2, as has already been described.

When the officer at the office wishes to communicate by telephone to the officer at the box, he makes a magneto call through the machine X and wires X^2 and the main-line wires, already described, to the polarized armature-bell D, thus ringing it and notifying the officer to communicate with him by telephone.

I make no claim in this application to the combination of the magneto-call machine X with the wires X′ X^2, that serve to connect the poles of the machine with the main line, as I propose to embody that device in an apparatus which is to be the subject of a future application.

I have described a metallic circuit alone, although a ground-circuit may be used, if desired.

I claim—

1. In a call-box-device key, the combination of the shank and handle K with an annular ratcheted detachable piece, K′, operating together substantially as described, and for the purpose set forth.

2. In a call-box device, the combination of the key K, having a detachable ratchet-head, with the segment-ratchet B′, arm B^3, lever B^4, crank B^5, shaft B^6, and spring B^8, all operating together substantially as described, and for the purpose set forth.

3. In a call-box, the combination of the door A′, spring A^{14}, start A^{13}, and rock-shaft A^{11}, with spring-pen device A^{10} A^{12} A^{16} A^{17} A^{18} A^{19} and the notched rod A^{15}, all operating together substantially as described, and for the purpose set forth.

4. In a call-box, the combination of the dial-plate A^3, knob A^5, pointer A^7, post A^8, and yoke A^9 with the sliding spring-pen A^{10} and A^{12} and circuit-wheels C^3 C^4 C^5 C^6 C^7, all operating together substantially as described, and for the purpose set forth.

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Witnesses:
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MATTHEW M. BLUNT.