

(No Model.)

2 Sheets—Sheet 1.

B. J. NOYES.

MUNICIPAL SIGNAL APPARATUS.

No. 359,686.

Patented Mar. 22, 1887.

Fig: 1.

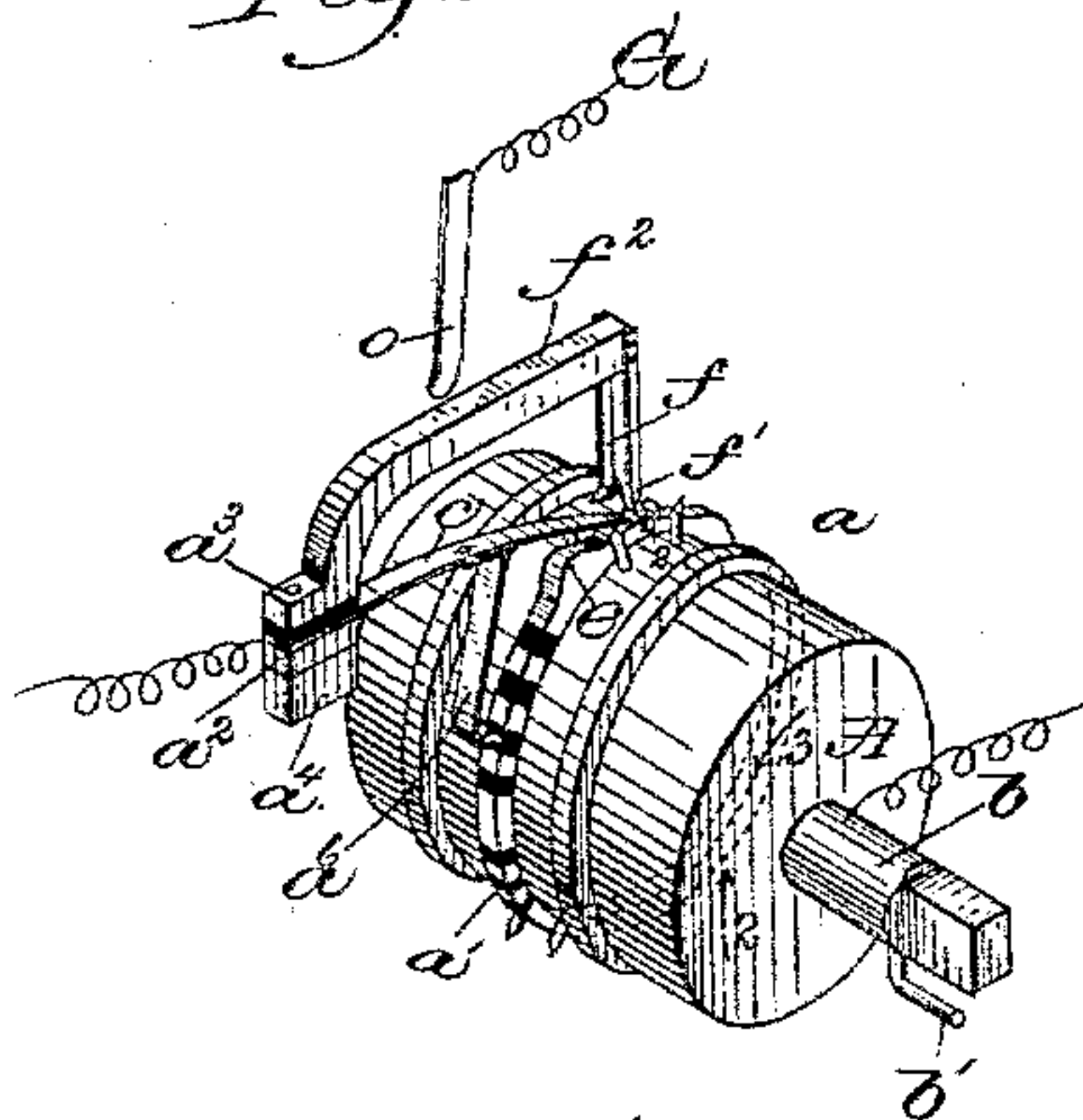


Fig: 2.

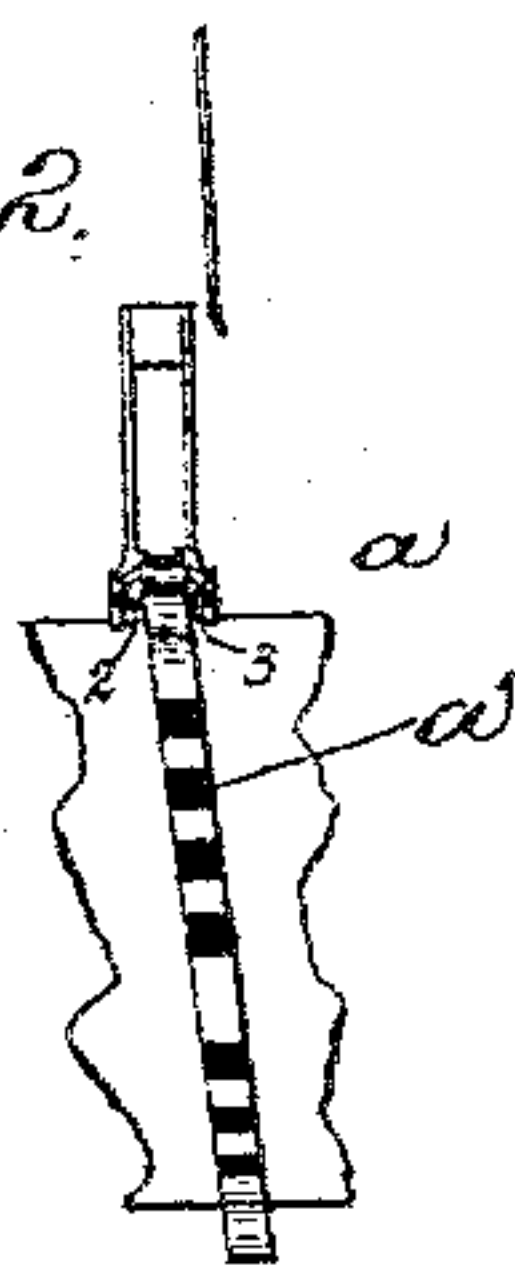


Fig: 4.

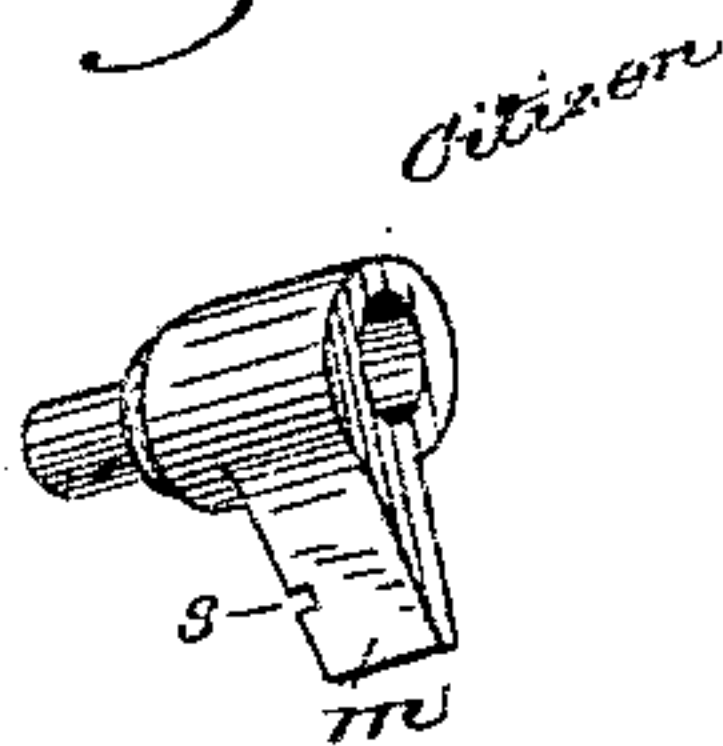


Fig: 5.

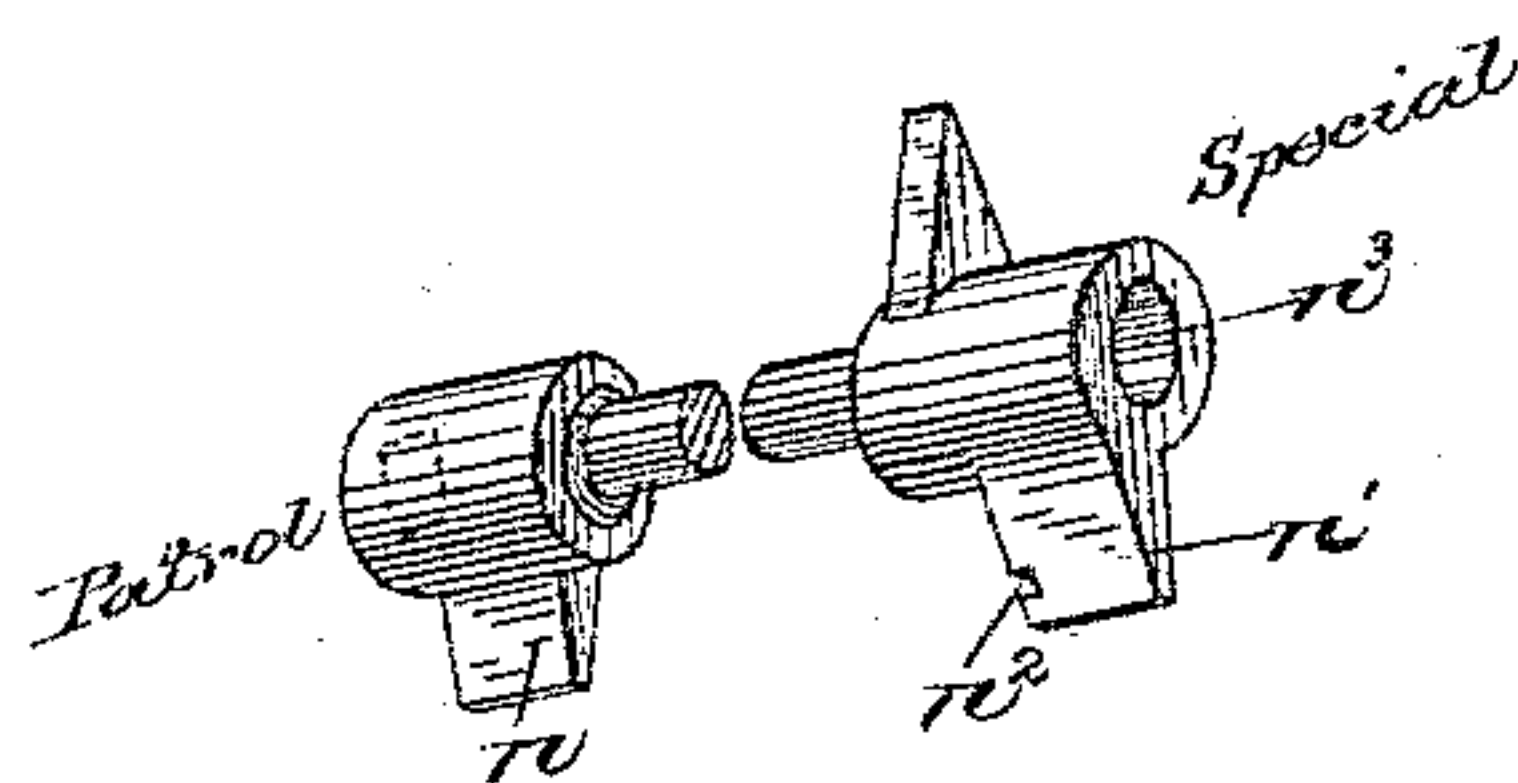
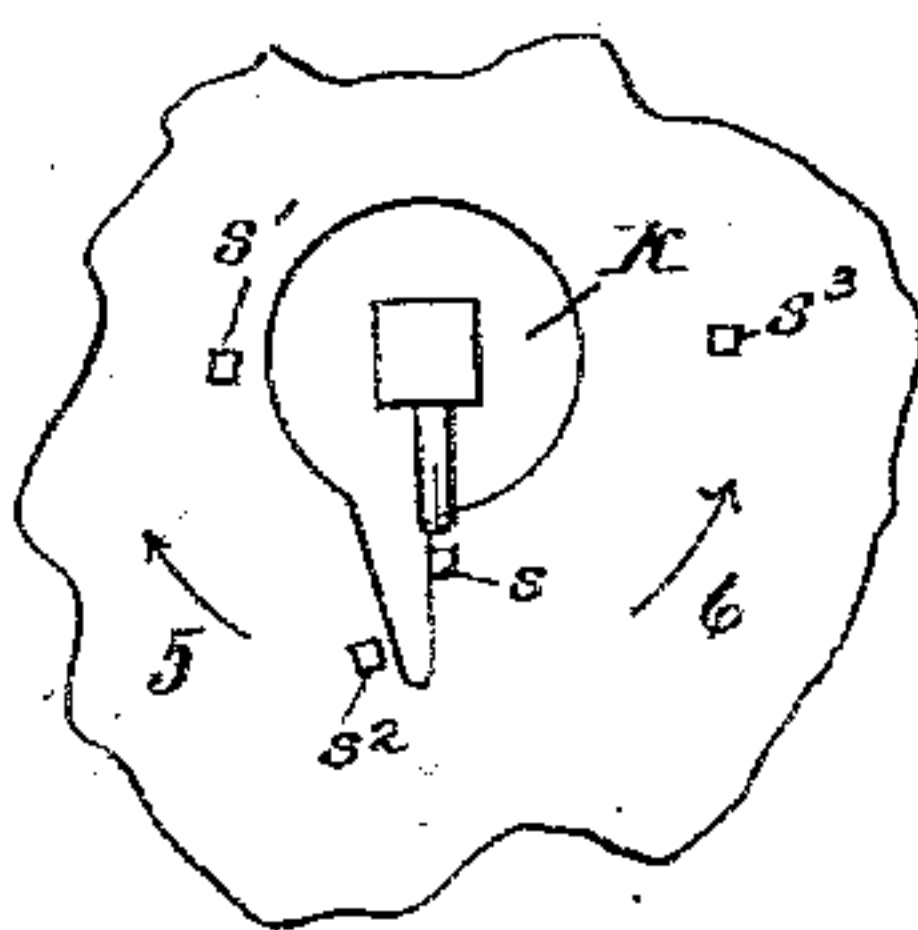


Fig: 3.



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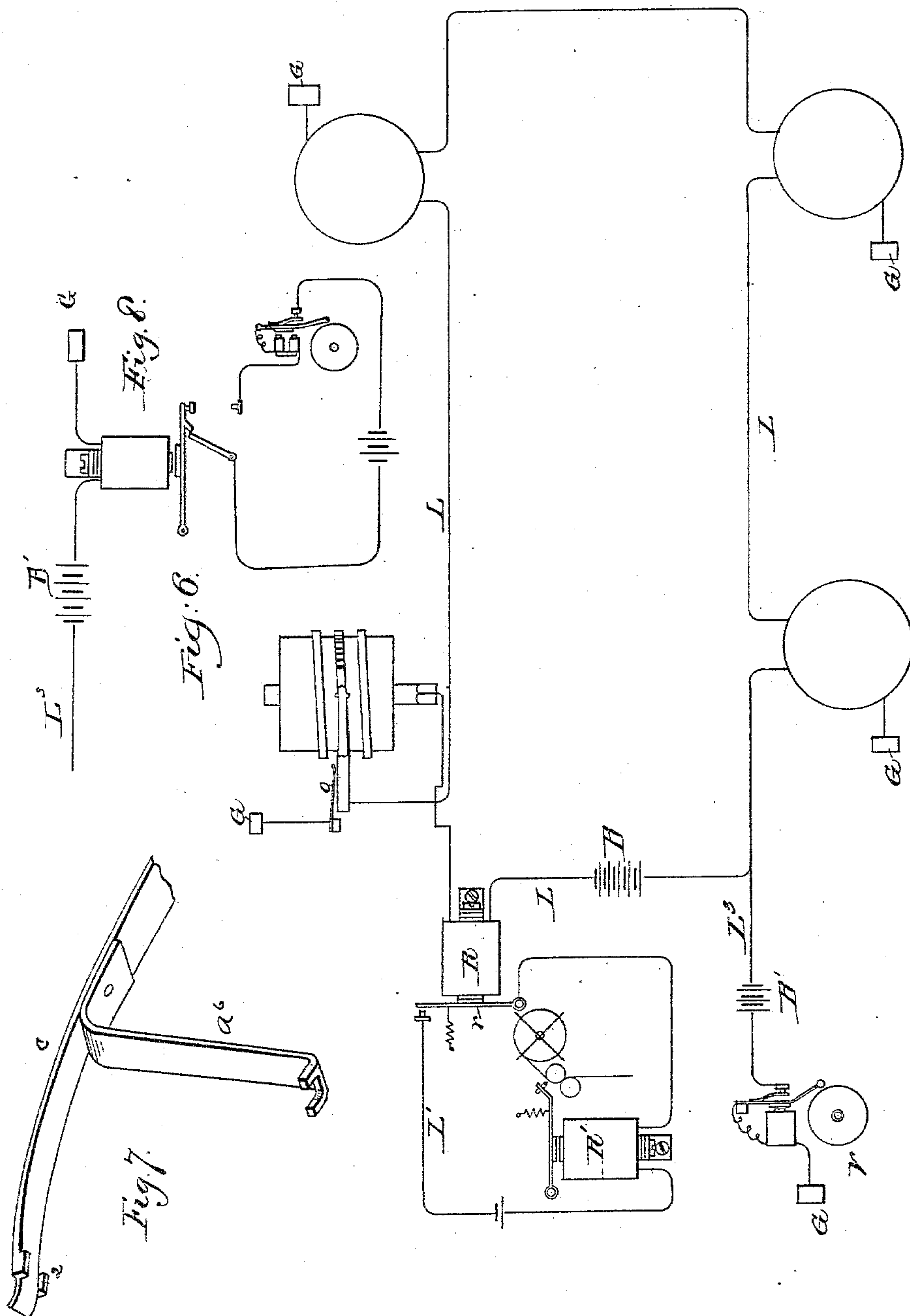
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

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MUNICIPAL SIGNAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 359,686, dated March 22, 1887.

Application filed May 5, 1886. Serial No. 201,133. (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 Municipal Signal Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct a simple and efficient apparatus, by means of which different signals can be transmitted from a sub-station to a central station to meet the requirements of a municipal or police signal system.

In accordance with this invention, the multiple signaling device is employed at the sub-station, which may be operated to transmit several different signals which are divided into two classes, signifying their importance, and a message-receiving instrument is employed at the central station to receive the signals transmitted by the multiple signaling device, and an audible alarm is also employed at the central station, which gives notice to the attendant when a message of one class—in this instance the important class—is being received or awaits a reply.

The multiple signaling device consists of a signaling-surface containing several signals wound about a cylinder, and a pen is provided to co-operate with the signaling-surface to transmit whatever message or signal is set up as the cylinder is rotated.

The devices herein shown for revolving the signal-cylinder to set up a signal consist of keys of different construction, depending upon what signal is desired to be transmitted, each key being so designed that it can only be employed to transmit a certain signal or a certain kind of signals. At the central station a relay is included in the main-line circuit, the armature-lever of which controls a local circuit, in which a message-receiving instrument, herein shown as an ordinary recorder or register, is located, the said relay responding to total interruptions of the main line caused by the multiple signaling device. An audible alarm, herein shown as a vibrating bell, is connected in a ground-circuit connected with the main line, and each sub-station is pro-

vided with means for closing the ground branch or terminal, to thereby cause the said vibrating bell to respond while the ground-circuit is closed, the relay controlling the local circuit not being effected by the ground-circuit.

In another application filed by me May 5, 1886, Serial No. 201,134, devices are shown for operating the multiple-signaling device, as are herein shown; and a receiving-instrument for recording the messages, as well as an audible alarm, was also shown, but operated by a current of different character.

It is herein designed, as in the application referred to, that the patrolman shall transmit his patrol or "on duty" signal, and also shall be able to transmit any special or want signal necessary, and that certain authorized citizens shall have access to the box or sub-station to transmit a signal when in need of assistance. The receiving-instrument at the central station is arranged to respond to all signals, whether patrol, special, or a citizen's signal; but the audible alarm is arranged to be responsive to only the special or citizen's signal, the two last-named signals being of special importance and demanding immediate attention, while the former need little attention.

Figure 1 shows in perspective a multiple signaling device and its co-operating parts removed from the box or inclosing-case; Fig. 2, a rear side view of a portion thereof; Fig. 3, a rear side view of a portion of the face-plate, showing the key-hole and limiting-stops; Fig. 4, a portion of the key that is carried by a citizen; Fig. 5, a key carried by the policeman, the shank portion being broken away; Fig. 6, a diagram of one sub-station and a central station connected in circuit; Fig. 7, a detail of the contact-pen, to be referred to; and Fig. 8, a modification to be referred to.

The multiple-signaling device consists of a cylinder, A, having a worm, a, wound thereon, the said worm being notched or provided with insulated portions a', to thus form a signaling-surface wound about a cylinder. A contact-pen, c, is provided, normally bearing upon said signaling-surface, the end of the said pen having two prongs bent at right angles therefrom, which bestride the said signaling-surface, and thereby cause the pen to fol-

low as the cylinder is revolved, the pen being connected with a block, a^2 , by a pin, a^3 , turning freely in a block, a^4 .

The signaling-surface $a a'$ is provided with a series of cams, e , similar to that shown and described in the application, Serial No. 201,134, referred to, which as the cylinder is revolved causes the pen c to rise to be engaged and held in its most elevated position by two spring-latches, $f f'$, depending from an overhanging arm, f^2 , attached to the block a^2 by the pin a^3 , but insulated from the said block, so that as the pen c is turned on its pivot in one or another direction the arm f^2 will be correspondingly moved.

Suitably-shaped pins are placed upon opposite sides of the signaling-surface adjacent to the cams or projections e , which strike the beveled ends of spring-arms $f f'$, spreading them to release the pen c , that it may again come in contact with the signaling-surface after having been disengaged therefrom. An arm, a^6 , having a bifurcated end, is attached to the under side of the pen c , normally disengaged from the signaling-surface, but lying so near thereto that as the pen c is raised by the cam or projection e the arm a^6 will bestride the signaling-surface and bear upon the cylinder A .

In Fig. 1 I have only shown one signal indicating the box-number; but it will be understood that as many signals may be cut upon the worm or thread as occasion may require, and that the cylinder may be rotated in both directions, similar to that described in the application referred to, wherein one break-wheel was shown having several signals thereon. The cylinder A is mounted upon a shaft, b , having a squared end and a bent pin, b' , the latter being engaged by suitable key to rotate the cylinder.

It being designed, as previously described, to transmit different kinds of signals—as, for instance, a patrol, special, and citizen's signal—the keys employed to revolve the cylinder are of different construction, and together with their co-operating devices can only be used for the purposes intended. In this instance Fig. 1 shows the cylinder in its normal position, and when revolved in the direction of the arrow 2 the citizen's signal and also any special or want signal is set up, and when turned in the direction of the arrow 3 the patrol-signal is set up. To do this the keys shown in Figs. 4 and 5 are employed, that shown in Fig. 5 being carried by the patrolman, and to enable him to transmit his patrol-signal the end marked "patrol" is employed, it having the short projection n and the squared socket (in dotted lines) which fits the squared end of the shaft b to turn it, the projection n bearing against the stop s on the under side of the dial, and preventing rotation of the shaft in that direction, but to permit rotation in the opposite direction, as shown by the arrow, Fig. 3, until the said projection n strikes against the stop s' .

To transmit any special signal the opposite

end of the said key is employed, it having a projection, n' , a recess, n^2 , cut therein, and a cylindrical socket, n^3 , that it may turn freely upon the squared end of the shaft b , the projection n' bearing against the stop s^2 to prevent rotation in the direction of the arrow 5, but permitting rotation in the direction of the arrow 6 any desired distance.

To transmit the citizen's signal, the citizen carries the key shown in Fig. 4, it having the longest projection m , so that when inserted in the key-hole k the said projection will bear against the stop s^2 , preventing rotation in the direction of the arrow 5, but permitting rotation in the direction of the arrow 6 so far as to strike the limiting-stop s^3 , this being a sufficient distance to transmit the box-number, which alone it is desired the citizen shall be capable of doing.

At the central station a relay, R , is interposed into the main line L , having the battery B , the armature-lever r of which controls a local circuit, L' , which latter includes a recorder or register, R' , which will respond to interruptions in the main circuit, and, as described, all signals transmitted, whether patrol, special, or citizen, cause a total interruption in the current, and are therefore duly recorded upon the receiving-instrument R' .

It is desirable when any special or citizen's signal is transmitted that an audible alarm be sounded to indicate the fact, calling the attention of any person at the station. To do this a ground branch or circuit, L^3 , is connected with the main line L , having the battery B' and the vibrating bell V , while at the sub-station a contact pen or point, o , is connected with a ground-terminal normally adjacent to but disengaged from the arm f^2 , which latter is made of conducting material, so that as the said arm f^2 is moved in one direction (and in this instance in that direction to set up any special or citizen's signal) it will make contact with the said pen or point o , closing the ground-circuit and causing the bell V to respond during the time that the signal is being set up. The pen c at such time, being elevated and retained by the spring-latches $f f'$, causes the arm a^6 to engage with the cylinder A , thus keeping the main circuit closed while the ground-circuit is closed.

The contact-pen o and arm f^2 and the co-operating devices constitute a circuit-controller to change the condition of a current of different character from that employed by the multiple-transmitter for transmitting the signals. The contact-pen o is placed in such proximity to the arm f^2 that upon any movement of said arm sufficient to set up a special signal the said contact-pen will be struck, it yielding to compensate for the various signals upon the cylinder A .

By referring to Fig. 7, the contact-pen c and arm a^6 are shown independent, and it will be seen that the guide-pieces at the end of arm a^6 are a sufficient distance apart to bestride the

signaling-surface, and also to insure contact with the cylinder A, the ends of the said guide-pieces, when the arm a^b is pressed into engagement, bearing directly upon the cylinder.

5 As the pen c is released from the engaging-latches $f f'$ the ground-circuit is immediately broken, and the cylinder A, while returning to its normal position, transmits the signal set up.

10 It is obvious that an annunciator-drop might be included in the ground branch or circuit, which would control the local circuit in which the vibrating bell might be placed, as shown in Fig. 8, and, if desired, the multiple signaling device could be employed for many other
15 purposes besides police-signaling. A cylinder being employed, about which the signaling-surface is wound, a large number of signals can be accommodated in a small space and at
20 little cost.

Any other suitable transmitter may be employed at the sub-station to transmit the various signals than that herein described, the single message-receiving apparatus at the central
25 office receiving the same, while the audible alarm responds to such as have hereinbefore been termed the "important signals."

I claim—

1. In a system for transmitting signals from
30 a sub-station to a main station, a multiple signaling device located at the sub-station for producing changes in the main circuit to transmit a message, and a circuit-controlling device, also located at the sub-station and operated mechanically by the multiple signaling
35 device at the will of the operator for producing changes in another circuit, to transmit a warning signal, a message-receiving instrument located at the main station to receive the
40 message transmitted over the main circuit by the multiple signaling device, and an audible alarm, also located at the main station, responsive to the change in the current produced by the circuit-controlling device at the sub-
45 station, all substantially as described.

2. In an electric circuit, the combination, substantially as described, of the multiple signaling device located at the sub-station for

transmitting several different signals, a circuit-controlling device also located at the sub-
50 station for changing the condition of a current of different character from that employed to transmit the signals, a message-receiving instrument at the central station responsive to
55 all signals transmitted by the multiple transmitter, and an audible alarm, also at the central station, responsive only to the circuit-controlling device at the sub-station.

3. In an electric circuit, a signal-transmitting apparatus consisting of a signaling-sur-
60 face wound spirally about a rocking cylinder and a pen co-operating therewith, means, substantially as described, for removing the pen from its contact with the signaling surface as
65 the cylinder is moved in one direction and to restore the pen to its normal condition that it may pass over in contact with the signaling-surface as the cylinder is moved in the opposite direction, substantially as described.

4. In an electric circuit, a signal-transmit-
70 ting apparatus consisting of a cylinder having a signaling-surface thereon and a co-operating pen made both laterally and vertically movable, to be disengaged from the contacting surface, and provided at its contacting
75 ends with guide-pieces to follow upon the signaling-surface as the cylinder is revolved, all substantially as described.

5. The combination, substantially as described, of a multiple signaling device for send-
80 ing two or more different signals over an electric circuit of one character when revolving in one direction, it consisting of a cylinder having a signaling-surface wound thereon and
85 a co-operating pen, and a circuit-controlling device for changing the condition of a current of another character as the cylinder is revolved in the opposite direction.

In testimony whereof I have signed my name to this specification in the presence of two
90 subscribing witnesses.

BERNICE J. NOYES.

Witnesses:

F. CUTTER,
C. M. CONE.