

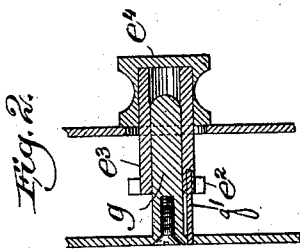
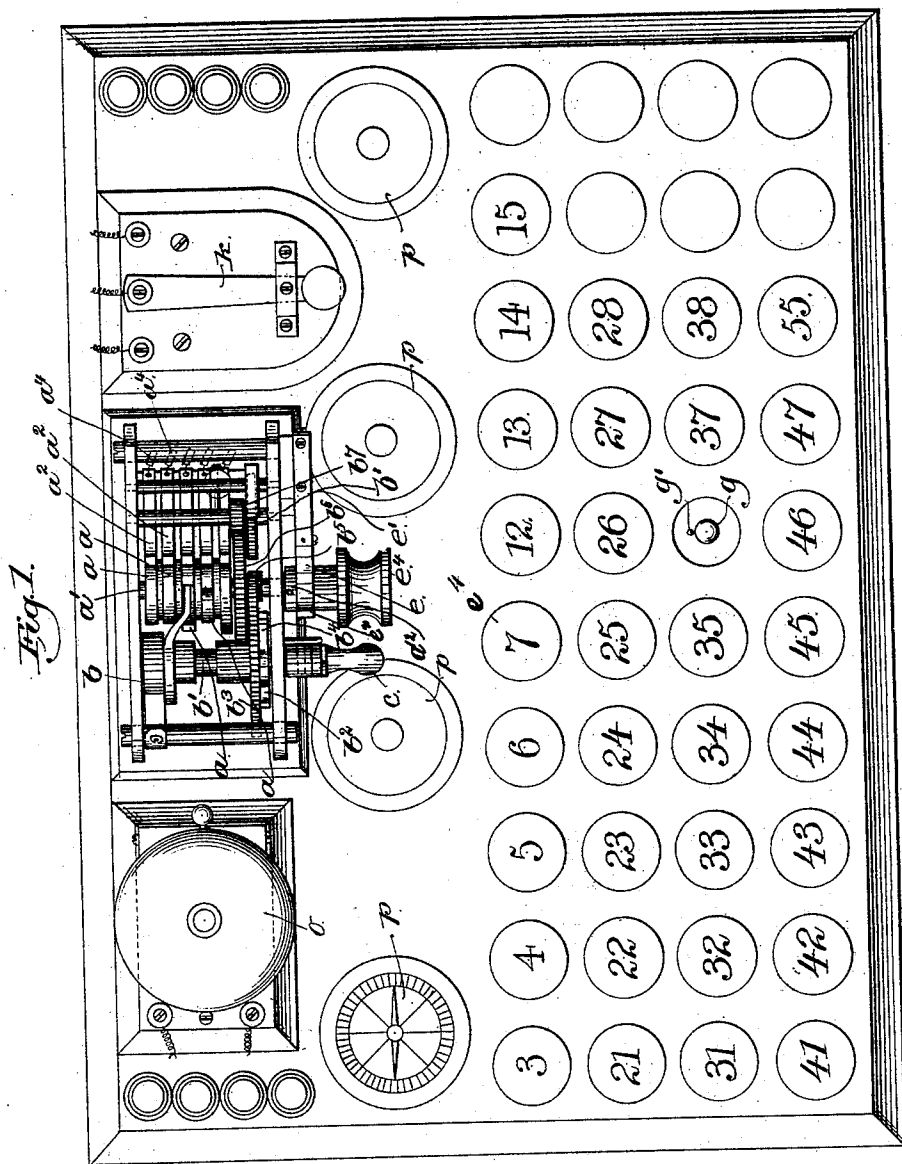
(No Model.)

3 Sheets—Sheet 1.

H. A. CHASE.
POLICE SIGNALING APPARATUS.

No. 452,771.

Patented May 26, 1891.



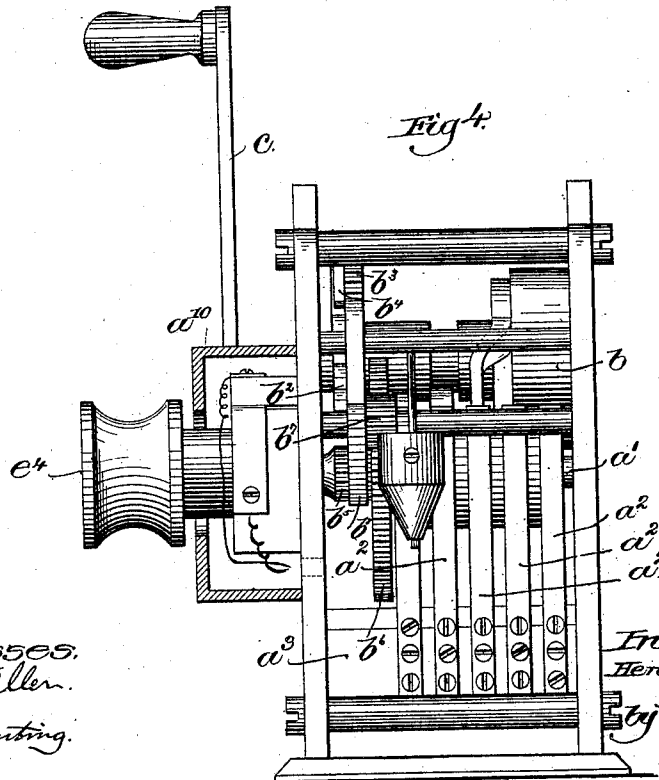
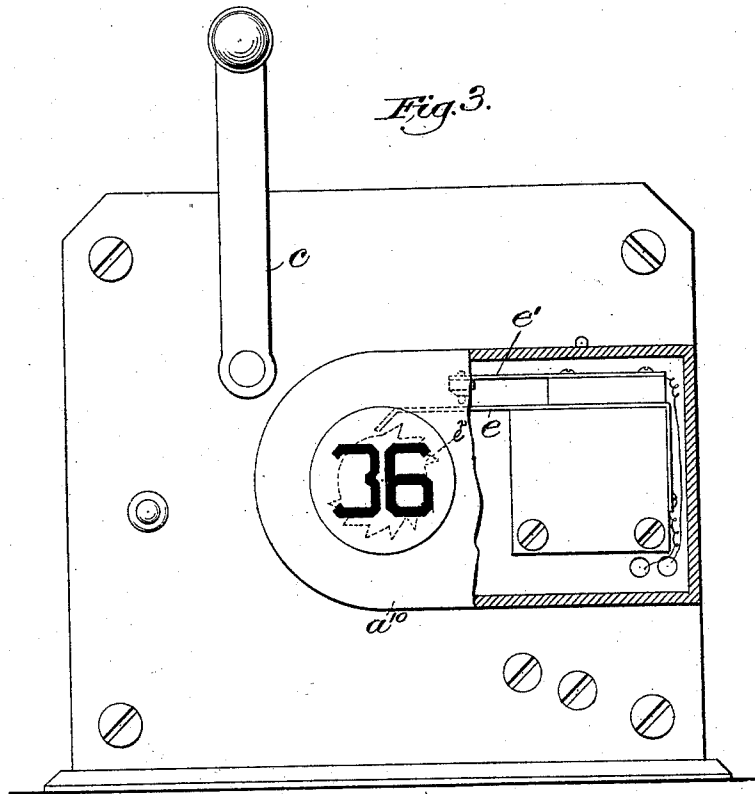
Witnesses.
Fred. S. Greenleaf
George Huntington.

Inventor:
Henry A. Chase,
by Crosby & Gregory attys.

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George C. Huntington.

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Henry A. Chase,
By Crosby & Morgan
attys.

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Fig. 6.

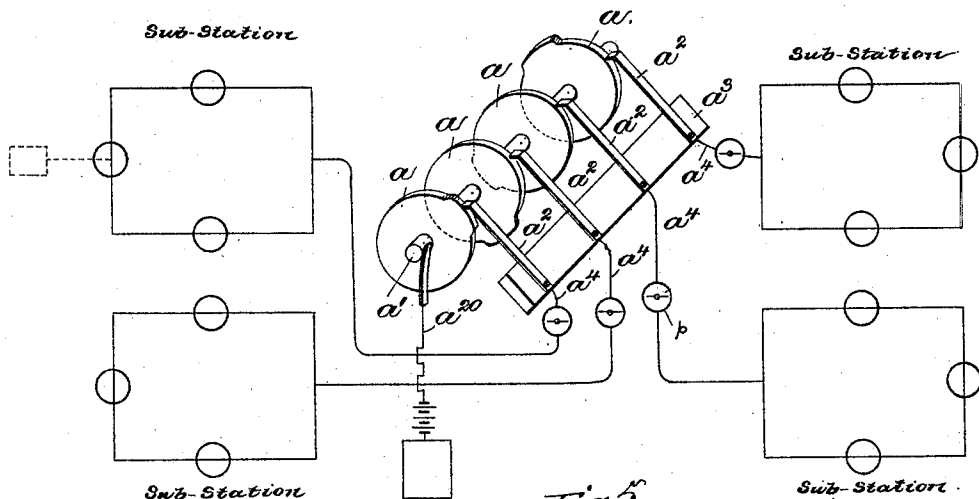
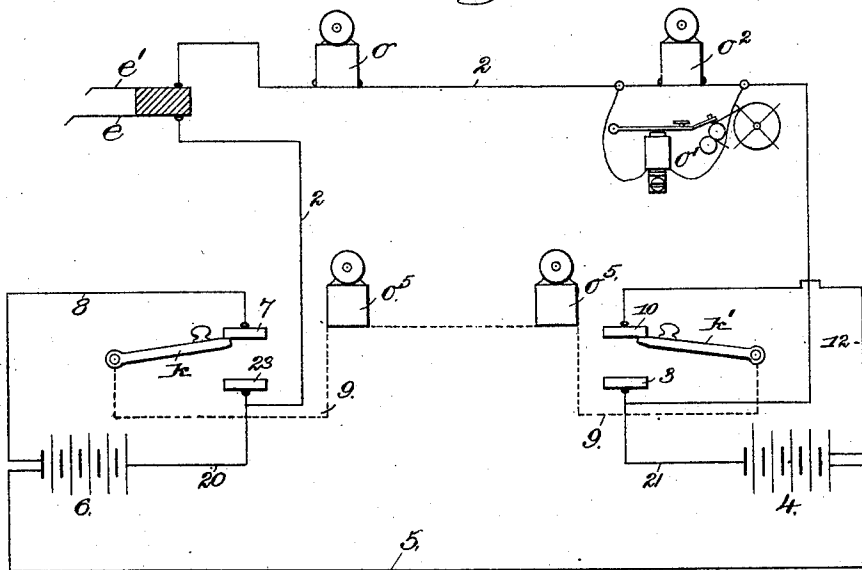


Fig. 5.



Witnesses,
Edward S. Allen.
George A. Hunt.

Inventor,
Henry A. Chase,
by Crosby & Gregory attys.

UNITED STATES PATENT OFFICE.

HENRY A. CHASE, OF BOSTON, MASSACHUSETTS.

POLICE SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 452,771, dated May 26, 1891.

Application filed July 18, 1890. Serial No. 359,127. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. CHASE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Police Signaling Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In police signal systems as now constructed several independent circuits containing signal-boxes are connected with a single central station, where a register is located having as many recording-pens and pen-magnets as there are circuits. One of the troubles which frequently occurs in these circuits is an accidental ground, which is exceedingly annoying if not discovered and removed immediately.

One part of my invention consists in a special form of ground-detector located at the central station, which is operated by the attendant whenever desired. In this central station it is customary to place a signal-transmitter, which is connected in circuit with a wagon-house or stable, so that on the reception of the signal calling for the wagon such a signal may be retransmitted to said wagon-house.

Another part of my invention consists in the specific construction of a signal-transmitter which may be employed for this purpose. This signal-transmitter consists of independent signal-wheels removably impaled on pins on a table and a signal-key with which the signal-wheels co-operate, each signal-wheel being fastened to a tubular shank, to which a moderate-sized finger-piece is secured. A motor mechanism is provided for turning the shaft, upon which one or another signal-wheel is placed. The signal-key is arranged in a shell or case having an opening of sufficient size to receive the signal-wheel, thereby protecting it from dust and from any accidental injury. The ground-detector consists of a series of circuit-closers, the movable members of which are connected with the said motor mechanism of the signal-transmitter, so that at every time the wagon-signal is transmitted the ground-detector will be turned to thereby detect any accidental ground on the main signaling-circuits.

My invention also comprehends a call system in connection with the wagon-house circuit, whereby telephone-calls or other indi-

ating-signals may be transmitted at each end of the circuit as desired by means of manual keys.

Figure 1 shows in plan view an electric signaling apparatus embodying this invention; Fig. 2, a longitudinal section of one of the signal-wheels placed on its stud or pin; Fig. 3, a front view of the signal-transmitter and ground-detector; Fig. 4, a side view of the signal-transmitter and ground-detector; Fig. 5, a diagrammatical view showing the wagon-house circuit, and Fig. 6 a diagrammatical view showing the ground-detector circuit.

The ground-detector consists of a series of wheels, as a , arranged on a shaft a' , and a corresponding series of contact-pens a^2 , secured to a bar a^3 of insulating material. A wire, as a^4 , is connected to each contact-pen a^2 and connects with a signaling-circuit, as represented in Fig. 6, such wires a^4 including a galvanometer, as p . A single wire, as a^5 , leads from the shaft a' to ground, said single wire including a battery. Each wheel a has a projection on it which engages its proper pen when turned into a certain position, and, as herein shown, said wheels are so arranged on the shaft as to engage the contact-pens a^2 in succession.

A motor mechanism is employed to rotate the shaft a' , it consisting of a main spring b , wound on a winding-arbor b' , carrying a ratchet-wheel b^2 . A toothed wheel b^3 is mounted loosely on said winding-arbor b' , which carries a pawl b^4 , said toothed wheel engaging a pinion b^5 on the shaft a' , and a toothed wheel b^6 is secured to said shaft, which engages the pinion b^7 , fixed to a shaft carrying the escape-wheel b^8 . This motor mechanism is adapted to be wound by a winding-arm c , turning it in one direction, and to operate as the winding-arm returns to its normal position. Thus it will be seen that at each operation of the motor mechanism the shaft a' , carrying the wheels a , will be turned one or more revolutions, according to the length of the train. As the shaft a' is revolved the several contact-pens a^2 are successively engaged and the ground branch containing the battery and galvanometer closed. The wires a^4 each leading from a separate main signaling-circuit, (see Fig. 6,) a closed ground branch is provided for each said circuit a short time during each revolution of the shaft

a, and if at such time an accidental ground is present on any one of the said signaling-circuits the galvanometer will indicate the fact.

- 5 The signal-transmitter consists of a signaling-key composed of two members $e e'$, connected in wire 2, (see Figs. 1, 3, and 5,) but normally not in contact with each other, so that the wire is normally open, and a signal-wheel e^2 , having on it suitable projection to indicate the number, said signal-wheel e^2 being secured to a tubular or socketed shank e^3 , to which is secured a head e^4 , bearing the number of the signal-wheel.
- 15 The shaft a' projects through the framework a short distance into the inclosure or case a^{10} , which has an entrance directly opposite said shaft of sufficient size to permit the entrance of a signal-wheel.

- 20 The signal-wheel e^2 is removable from the shaft a' that another wheel having on it a different number may be substituted.

As herein shown, I have arranged on a board a series of studs or posts g , and beside each stud or post a pin g' to receive the signal-wheels when removed from the shaft a' , the said wheels having holes through them to receive said pins g' . A pin like g' is arranged on a block a^{12} on the shaft a' , eccentric to the shaft, to assist in positioning the signal-wheel on the shaft. When it is desired to transmit a signal, one of the signal-wheels e^2 is taken from its stud or post, placed on the shaft a' , and the motor mechanism above described operated.

A tell-tale bell o is preferably included in the wire 2 at the transmitting-station to indicate the proper transmission of the signal.

The wire 2, leading from the branch wire 20, extends to the wagon-house, where a register o' and bell o^2 are included in it, preferably in multiple arc. The wire 2 is then carried to a branch wire 21, and thence to one side of the battery 4. A wire 5 leads from the other side of the battery 4 to the transmitting-station, where it is connected to one side of the battery 6, the wires 2 and 5 thereby forming an open circuit for the transmission of the signals. A key k is located at the transmitting-station, which normally bears against the contact 7, which is connected by the wire 8 with one side of the battery 6, and a wire 9 leads from the key k to a corresponding key k' at the receiving-station, which normally bears against the contact-point 10, connected by the wire 12 with one side of the battery 4. The wires 8, 9, 12, and 5 constitute a closed circuit connecting the transmitting-station and wagon-house, and at each end of this line a bell, as o^5 , is included in the line 9. These keys $k k'$ may be used to effect the operation of the bells o^5 for any purpose desired.

It will be seen that at each time a signal is transmitted from the transmitting-station each main signaling-circuit radiating from the said station is tested for accidental

grounds, thereby discovering such troubles long before they disturb or interrupt the signals; also, it will be seen that the signal-wheel e^2 , when in place on the shaft a' , is concealed, and the contact-pens $e e'$, each being included, will keep free from dust and from accidental injury; also, by means of the heads e , they may be easily handled; also, by depressing key k against contact 23 the battery 6 will be included in the circuit with the bells $o^5 o^5$, and by depressing the key k' against the contact 3 the battery 4 will be included in the circuit with the bells.

I claim—

1. In an electric signaling apparatus, a signal-transmitter comprising a motor mechanism, a signaling-key, and a removable signal-wheel, as e^2 , fixed to a tubular shank, as e^3 , and a head, as e^4 , on said shank, on which the number on the wheel is placed, substantially as described.

2. In an electric signaling apparatus, two batteries 6 4, a closed wire 8 9 12, connecting opposite ends of said batteries, and a closed wire 5, connecting the same ends of said batteries, combined with branch wires 20 21, connected to the other ends of said batteries and terminating, respectively, at contact-points 23 3, and signaling-keys $k k'$, included in wire 8 9 12 and adapted, when operated to make contact, respectively, with 23 3, to include one or the other batteries in the circuit, substantially as described.

3. In an electric signaling apparatus, two batteries 6 4, a closed wire 8 9 12, connecting opposite ends of said batteries, and a closed wire 5, connecting the same ends of said batteries, combined with branch wires 20 21, connected to the other ends of said batteries, and terminating, respectively, at contact-points 23 3, and signaling-keys $k k'$, included in wire 8 9 12 and adapted, when operated to make contact, respectively, with 23 3, to include one or the other of the batteries in the circuit, and a normally-open wire 2, connecting the branch wires 20 21, and a signal transmitter and receiver included in said wire 2, substantially as described.

4. In an electric signaling apparatus, the combination of the following instrumentalities, viz: a series of circuit-closers, each controlling a separate circuit, and a signaling-key controlling another circuit separate from those controlled by the said circuit-closers, a signal-wheel for said signaling-key, a single motor mechanism to operate all the circuit-closers and also the signal-wheel, and a signaling-lever for said motor mechanism, substantially as described.

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

HENRY A. CHASE.

Witnesses:

BERNICE J. NOYES,
EMMA J. BENNETT.