C. SELDEN.

FIRE AND POLICE ALARM SIGNAL APPARATUS.

No. 186,887. Patented Jan. 30, 1877.

Fig. 1

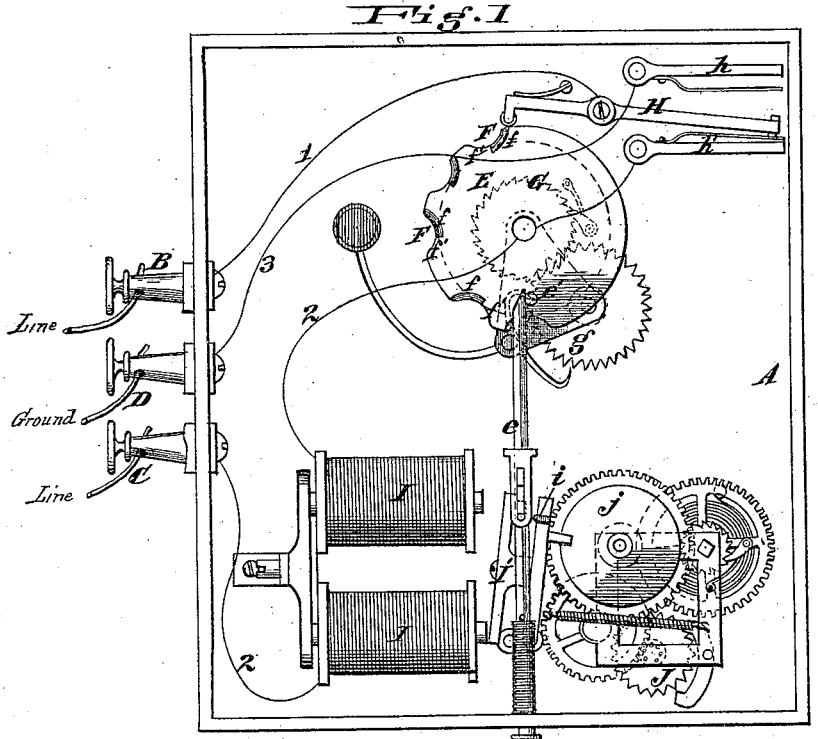
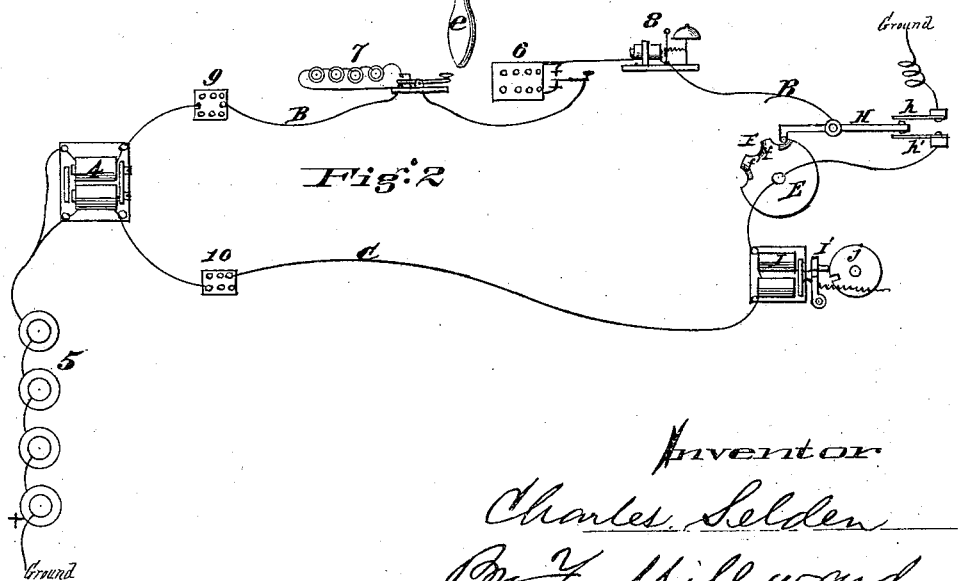


Fig. 2



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CHARLES SELDEN, OF CINCINNATI, OHIO, ASSIGNOR TO HIMSELF AND SEARGENT P. PEABODY, OF SAME PLACE.

IMPROVEMENT IN FIRE AND POLICE ALARM SIGNAL APPARATUS.

Specification forming part of Letters Patent No. **186,887**, dated January 30, 1877; application filed May 26, 1876.

To all whom it may concern:

Be it known that I, CHARLES SELDEN, of Cincinnati, Hamilton county, State of Ohio, have invented an Improvement in Fire and Police Alarm Signal Apparatus, of which the following is a specification:

My invention has for its objects the providence for an unbroken alarm-circuit at all times, should the ordinary loop-wire circuit become broken or disconnected on either side of the alarm-box, and between it and the home-station; also, the introduction into the fire-alarm circuit of a police talking system, by means that will not interrupt the transmission of a fire-alarm; and, further, the prevention of any of the alarm-boxes from interrupting one which has been started to send in an alarm; and my invention consists, in the first part, in connection with the ordinary loop-wire alarm-circuit connecting by "split" to a common end of main battery, or to like poles of two opposing connected batteries, which has or have suitable ground-connection, of a ground-connection at the signal-box, suitably guarded, to at times connect with the loop, whereby a current from main battery is established in circuit through either half of the loop, between the box and home-station and the ground.

My invention consists, in the second part, in connection with the two ends of loop-wire circuit at the signal-box, and a ground-wire, of an operating-wheel, whose signal-depressions are half insulated, and a lever to play into the depressions while breaking from line to ground, and the reverse, the whole operating to connect the two ends of the loop together, or either end of the loop with the ground.

My invention consists, in the third part, in connection with the devices for controlling the operating-wheel, of a relay in the main circuit, whose armature, when previously closed, will prevent the disengaging of the controlling devices of the wheel, and by suitable escapement attachment extend the length of time of said prevention.

My invention consists, in the fourth part, in connection with loop-wire alarm-circuit, connecting, through differential relay, with one end of main battery by "split," and having ground-connections at home and signal stations, of a secondary battery and corresponding resistance, whereby I am enabled to employ the loop in sending in police-alarms.

My invention consists, in the fifth part, in connection with loop-wire alarm-circuit, having connection, through differential relay, to common end of main battery, and suitable ground-connections, of an introduced adjustable rheostat, for the purposes of balancing the line should it become improperly broken and grounded.

Figure 1 is a plane elevation of a station alarm-box embodying my invention. Fig. 2 is a diagram of my improved circuit and connections.

A is the box containing the alarm-signal apparatus at the signal-station. B and C are the two halves of a line-wire loop, and D a ground-connecting wire. E is an index alarm-wheel. It is provided with recesses F, in such number and position upon its periphery as to denote the number of the box or station. The wheel is provided with motive power G, regulated by suitable escapement *g*. Constructed and situated to play into the recesses of wheel E is a lever, H, whose other end plays between spring-points *h h'*. The wheel E is normally prevented from moving by spring-stop *e* engaging with projection *e'* upon the wheel. I is an ordinary relay, connected in the main-line circuit, and whose armature I' has a projection adapted to engage a slot in the wheel *j* when the armature is open. The stopping of the wheel *j* thus effected will also cause the stoppage of the escapement J, which drives wheel *j*.

When the armature is closed, however, the wheel *j* serves, during a revolution, to keep it closed, or until the recess in the wheel arrives in position to receive the projection on the armature. The relay is so situated that when the armature is closed upon it, said armature will be parallel and in line with the spring-stop or operating-lever *e;* and if closed before the lever has been sprung to release the wheel E, the projection *i* will engage with a slot or

projection upon the lever, and prevent its being operated until the wheel *j* has made a revolution.

The speed of the wheel *j*, however, is such that the index-wheel E may make several revolutions to one thereof. The recesses F of wheel E are, at *f*, insulated, and at *f'* not insulated. The line B connects, by wire 1, to lever H; the line C, by wire 2, through relay I, wheel E, to contact-point *h'*; and the ground-line D, through wire 3, to contact-point *h*. The box A, constructed as shown, will be furnished, one for each station, on the loop B C, and each will have a ground-connection, D. As seen in Fig. 2, the loop may be provided with police talking-stations, having battery, rheostat, and bell-relay. As the main battery 5 divides equally through the coils of the differential relay 4, there can be no action in the loop B C from the said battery, but there can be an action from the secondary battery, to be used for police purposes; but by grounding the loop at any point there will be an action through half the loop and the ground, and should either half of the loop be broken, an action can be had through the other half and the ground.

When a fire-alarm is not turned in, the loop-circuit is complete, as follows: from line B, through wire 1, lever H, wheel E, relay I, wire 2, to line C; and when the loop is thus complete, a police-alarm signal may be turned in by simply bringing into the circuit of battery 7 the resistance 6, thereby releasing the armature of the bell-relay 8.

It will be observed, however, that the action of the police-signal must give way to that of the fire-alarm signal, when the latter is turned in by grounding the loop. To provide for balancing the loop B C when, by accident it is provided with an improper ground-connection, I introduce adjustable rheostats 9 and 10.

Operation: When an alarm is turned in, by pulling on the lever *e* and releasing the wheel E, the circuit is formed as follows: The lever H falls into the recesses F as they approach, and connects with ground contact-point *h*. When the lever H is in the insulated part *f* of the depressions F, the current from main battery is complete from line B, through wire 1, lever H, contact-point *h*, wire 3, to ground and the battery at the home-station. When the lever H is in the non-insulated part *f'* of depressions F, the current from main battery is complete from line C, wire 2, wheel E, lever H, point *h*, line 3, to ground and to main battery. Thus it will be seen that either of the halves of the loop can be used with ground-connections to operate the alarm. Instead of the single battery, connected by split through differential relay to the two ends B C of the loop, as seen in Fig. 2, I may employ a double battery, connected together by like poles, having common ground-connection, and attach the two ends B C of the loop to the remaining like poles of the battery, when there will be no action in the loop until the loop is grounded.

Having thus described my invention, I claim—

1. In a fire and police alarm signal circuit, the combination of the loop B C, connected by split to single main battery through differential relay, ground-connection at battery, and ground-connection at signal-box A, suitably controlled, to at times break connection with the loop, the whole connected to operate for the purpose specified.

2. In a fire-alarm-signal circuit, the combination, with the loop B C and ground D, of operating-wheel E F *f f'* and lever H, connected to operate for the purpose specified.

3. In a fire-alarm-signal circuit, the combination, with wheel E *e'* and spring-stop *e*, of a relay, I, in main circuit, having armature I', connected with movement J *j* and the said stop *e*, the whole connected to operate for the purpose specified.

4. In combination with loop-circuit B C, the secondary battery 7, resistance 6, and bell-relay 8, the whole connected and operating substantially as and for the purpose specified.

5. In combination with loop B C, connected through differential relay by split to common end of main battery, and having ground-connections, as described, the adjustable rheostats 9 and 10, connected and operating substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

CHAS. SELDEN.

Witnesses:

JOHN CALVIN FAY,

C. FECKER.