

W. SMITH & J. M. SMITH.

ELECTRIC-TELEGRAPH APPARATUS.

No. 175,183.

Patented March 21, 1876.

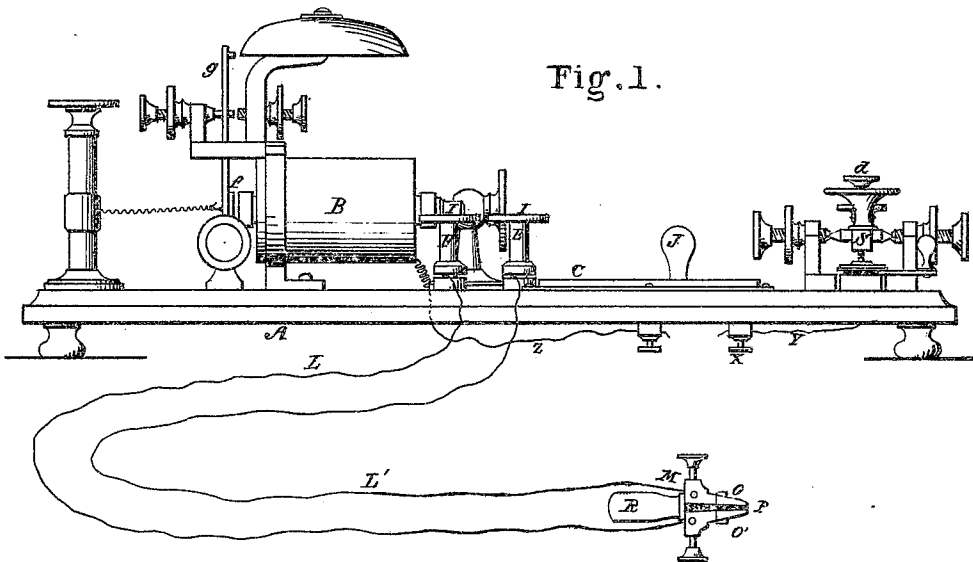
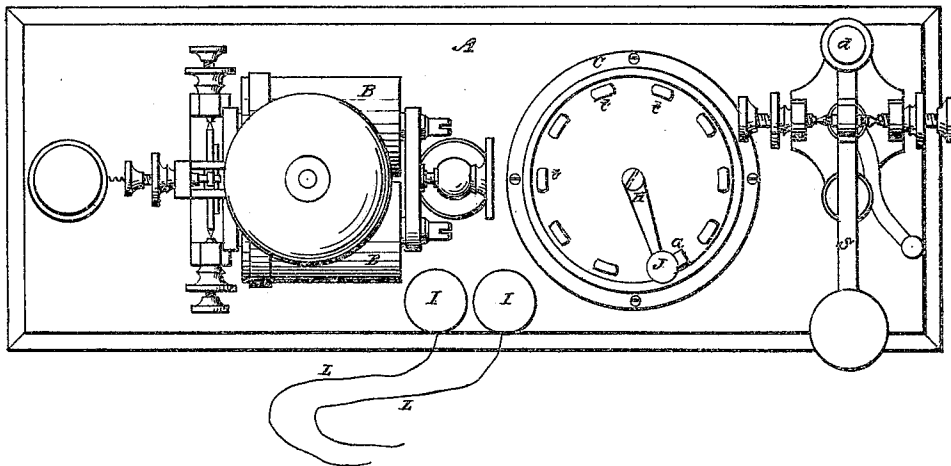


Fig. 1.

Fig. 2.



Witnesses.

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per Josiah W. Ellis
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Fig. 3.

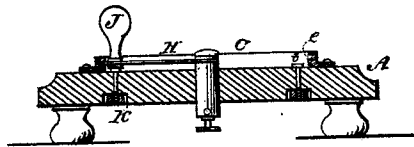
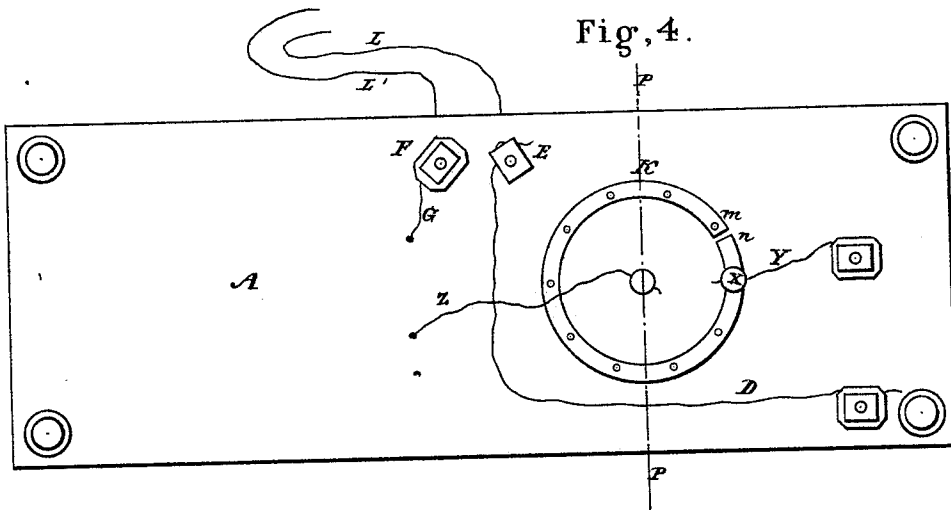


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

WALTON SMITH AND JOHN M. SMITH, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN ELECTRIC-TELEGRAPH APPARATUS.

Specification forming part of Letters Patent No. **175,183**, dated March 21, 1876; application filed August 11, 1874.

To all whom it may concern:

Be it known that we, WALTON SMITH and JOHN M. SMITH, of Erie, in the county of Erie and State of Pennsylvania, have made a new and useful Improvement in Telegraphic Instruments, that may be carried on railway-trains, enabling those skilled or unskilled in the art to send intelligible communications, from any point along a line of telegraph to the main office, that an accident has occurred and assistance is required, or for any purpose whatever.

To this end, and as a preparatory step to the use of our instrument, at certain places along the line of said telegraph the main wire should be brought down in the form of a loop, and the lowermost part thereof cut or severed, and the ends formed thereby arranged within a box, which may be similar in size and shape to those used for fire-alarm purposes, and the ends of the wire may be made to enter it in the same manner, where they are to be held in contact, each end with the other, by means of a spring-clamp or equivalent device, so as to maintain the completeness of the electric circuit, but easily separated, that they may be used in the manner hereinafter explained.

The box should be so constructed as that its top may be raised and thrown back out of the way, and its front let down and held by a suitable contrivance in a horizontal position, to answer the purpose of a table, partly for supporting our newly-invented instrument and partly to serve as a writing-desk.

Our invention relates to the instrument to be used, in combination with the ends of the looped wire, for sending and receiving messages from any place along a telegraphic line, as hereinbefore set forth.

The construction and operation of this instrument will be readily understood from the following description, taken in connection with the accompanying drawings, wherein—

Figure 1 represents a side elevation of our newly-invented instrument, and denominated by us the "electric signal, or accident-locator;" Fig. 2, a top view of the instrument; Fig. 3, a transverse vertical section through the line P P; Fig. 4, a bottom view of the apparatus.

To construct our signaling instrument, we prepare a small rectangular wooden tablet, A,

upon which and near one end we have arranged a signal-key, to be used exclusively by those skilled in the telegraphic art, as represented. This key consists of a lever, S, mounted on a horizontal axis, and with a knob of vulcanite or other non-conducting material for the hand at the extremity of its long arm. This lever is thrown up by a spring, so as to avoid contact with the button on the frame below, except when the lever is depressed for the purpose of completing the electric circuit. A regulating-screw, *d*, is seen at that end of the lever remotest from the vulcanite knob, which graduates precisely the amount of movement necessary to make the contrivance work well. On the opposite end of the wooden tablet A is arranged the receiving-magnet or alarm-relay, used for the purpose of combining or connecting the circuits, the armature being mounted on an upright bar, *g*, and is seen forming part of the cross just in front of the poles of the horizontal electro-magnets B B, which are surrounded with fine helices of insulated wire. The long or telegraphic circuit, when connected to these helices and the current of electricity allowed to flow, causes the armature to be attracted by the magnet, and the upright bar made to strike a bell, seen at the top of the instrument. This, with the exception of the bell, completes a local or branch circuit, such as are in common and every-day use, the construction and operation of which being so well known that any further description thereof is herein deemed unnecessary.

Near the middle of the tablet A, or between the signal-key and the receiving-magnet, is arranged an annular metallic ring, C, in the center of which is pivoted a radial arm, H, provided at its outer end with a hand-knob, J, by which it may be easily rotated. The extreme end of this arm is held down and partially guided in its movement by sliding in a circular groove, *e*, in the inside edge of the ring, and at a point just below the hand-knob it carries a small, thin platina strip, *a*, that is slightly bent downward so as to strike successively, when rotated, against a series of flat metallic buttons, *t t t*, arranged at short intervals around and inside of the annular ring, but not touching it. These buttons are attached each by its individual stem to a brass circle or ring

K, on the under side of the wooden tablet, which ring is cut and separated at one part of its circumference, forming two ends, *m n*, that, although near together, fail to join. This allows electric communication with the button under the long lever of the signal key, by means of a binding-screw, X, and wire, Y. In the same manner, and by similar means, the central part, to which the rotating arm H is pivoted, communicates with the helices of the receiving-magnet, through its wire Z. From a point under the short lever of the signal-key a wire, D, extends that leads to and is connected with the bottom of a post, E, near the front edge of the tablet, and from another similarly constructed and arranged post F, a wire, G, continues through the tablet, and is attached to one extremity of the insulated helix that surrounds the electro-magnet.

Each of these posts E F is furnished with a binding-screw, I I, at its top, and from each a long flexible wire, L, extends, the extreme ends of which are fastened to a mechanical device used by telegraphic operators, and known as a "plug," M, and which consists of two tapering bits of brass *o o'* united with an insulating body, P, between, the whole being wedge-shaped, and provided with a short non-electric handle, R.

The several parts of our instrument having been constructed as described, and the preliminary arrangement of the boxes and their relation to the main wire being complete, a message may be sent and received from any box stationed along the line to that end. Such box should be unlocked, the top raised and thrown back, and its front part let down to a horizontal position, as hereinbefore stated. Our telegraphic instrument, just de-

scribed, is then to be placed within the box, and the "plug" forced into the switch, or between the ends of the main wire with sufficient force to separate them. The current of electricity will then flow into one side of the plug and through its connecting-wire L to our instrument, and from thence through the other wire L', leading to the opposite side of the plug, and onward to the main wire, thus completing the circuit, so that any operator skilled in the use of the key may communicate with, send, and receive messages from the principal office. On the other hand, if there is no person present capable of working the instrument by means of the key, then, and in that case, the rotating arm H should be turned so as to bring its platina strip *a* successively in contact with the several buttons *t t t* within the circle of the ring C, by which an alarm will be sounded in the superintendent's office; that may be repeated at short intervals, or until an answer is given, which will be known by the ringing of the small bell on top of the instrument. An intelligent message may then be sent or received by the person in charge of the box, by simply observing the rules for moving the arm set forth in a code of signals accompanying each apparatus.

We claim—

The grooved ring C, rotating arm H, buttons *t t t*, and divided circle K, in combination with the signal-key S, electro-magnets B B, posts E F, plug M, and tablet A, substantially as and for the purposes set forth.

WALTON SMITH.
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Witnesses:

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