

(50.)

GEORGE LITTLE.

Improvement in Telegraph Apparatus.

No. 122,474.

Patented Jan. 2, 1872.

Fig. 2.

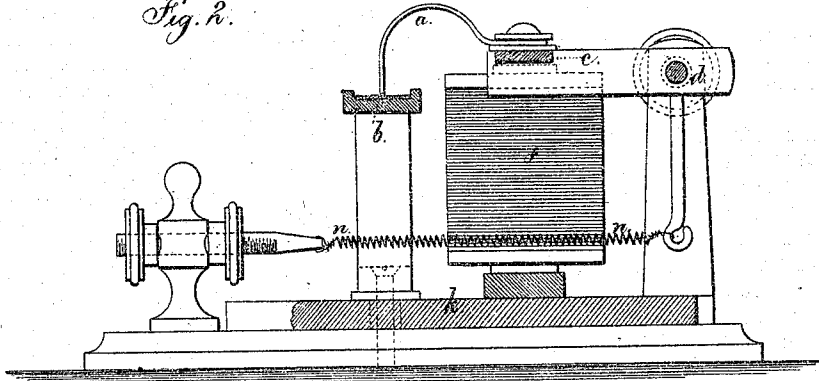
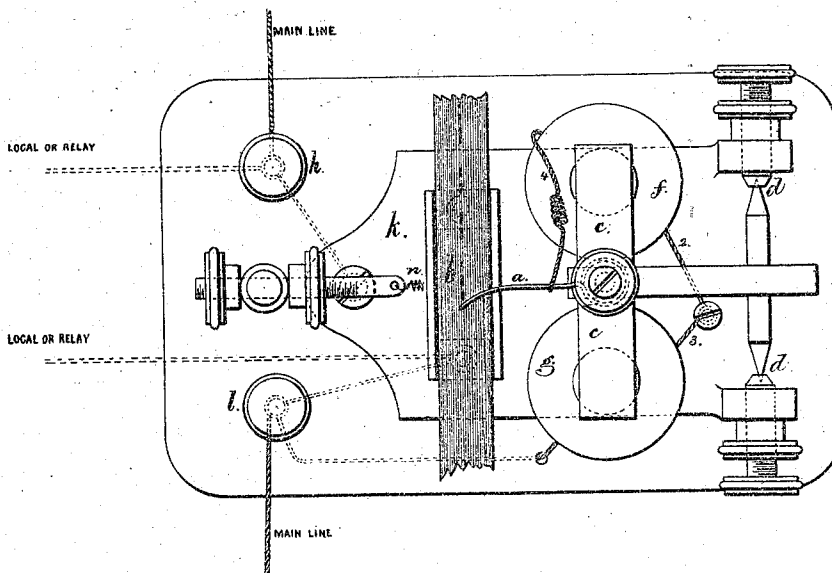


Fig. 1.



Witness

Chas. Smith
Geo. D. Walker

George Little
Lemuel W. Perrell atty.

UNITED STATES PATENT OFFICE.

GEORGE LITTLE, OF RUTHERFORD PARK, NEW JERSEY.

IMPROVEMENT IN TELEGRAPH APPARATUS.

Specification forming part of Letters Patent No. 122,474, dated January 2, 1872.

To all whom it may concern:

Be it known that I, GEORGE LITTLE, of Rutherford Park, in the county of Bergen and State of New Jersey, have invented and made an Improvement in Telegraph Apparatus; and the following is declared to be a correct description thereof.

This invention relates to a magnet in which one of the helices is in a shunt circuit and the other in the main line, and the movement of the armature of this magnet opens or closes the shunt circuit; and this apparatus is especially adapted to marking on chemically-prepared paper by a stylus; but the movement of the armature may also be employed to open or close a relay or a local circuit passing also through the shunt circuit. The armature of the magnet gives a movement to the stylus and lifts or depresses the same so that the stylus shall be in contact with the paper when the current is passing, and shall be lifted therefrom between one pulsation and the other, thereby preventing the tailing or attenuation of the mark, and causing distinct dots or dashes to form the telegraphic characters.

The stylus ordinarily being in contact with the chemical paper forms part of the main electric circuit; but should the stylus be raised as aforesaid the main circuit could not be operated, and it would, hence, become necessary to employ a local circuit and battery to mark the paper. In my invention the stylus is operated directly from the main line by using a shunt circuit through the stylus, while the main line is through part of the electro-magnet that gives motion to the armature and stylus; thereby a local battery can be entirely dispensed with.

In the drawing, Fig. 1 is a plan, and Fig. 2 an elevation of the instrument made use of by me.

The stylus *a* is either a wire or a small roller, and the surface *b*, over which the paper is drawn, is to be of metal, but it may be in the form of a roller or a flat or convex plate, and the device for moving the paper is provided in any usual manner. The stylus *a* extends as an arm from the electro-magnet armature *c* that swings on the centers *d*, and is contiguous to the soft iron-cores of the electro-magnets *f* and *g*. The line binding-screw *h* is in connection with the metal bed *k*, and from said bed the

wires 2 and 3 pass to the helices of the magnets *f* and *g*, the helix of *f* being in metallic connection with the stylus *a* through the wire 4, and the helix of *g* being connected to the other line-binder *l*. The surface *b* is also connected with *l* but insulated from the bed *k*.

It will now be evident that the current divides at 2 and 3, a portion going into each magnet *f g*; that through *f* passing by 4 to the stylus *a*, chemically-prepared paper, surface *b*, and connection to *l*, while the portion of the current through *g* goes to *l* direct. The electro-magnetism draws down the armature *c* in order that a contact of the stylus with the chemical paper may be made, and upon a cessation of the pulsation the stylus *a* is lifted by the spring *n* or its equivalent.

It will be thus seen that the mark on the chemically-prepared paper is made by a shunt current, and that the magnet *f* becomes a resistance that allows only a sufficient portion of the current to pass over said shunt to make the mark; and the relative resistances of the magnets *f* and *g* are to be proportioned according to the resistances in the main line in order that only the proper proportion of the pulsation may be shunted.

The surface *b* may be connected with the earth instead of the binding-screw *l*.

The portion *f* of the magnet becomes a rheostat, and the current through the same is opened or closed by the main-line current in the portion *g* of the magnet; and this arrangement of rheostat and shunt circuit opened or closed by a magnet in the main line might be employed for other operations in telegraphic apparatus, such as operating a relay circuit or a local circuit, in which case the relay or local circuit is to be connected to the binding-screw *h* and to the surface *b*, and that is to be insulated from the binder *l*, as illustrated by dotted lines. In this case the local or relay circuit passes only through the portion *f* of the magnet.

I claim as my invention—

1. A shunt circuit, opened or closed by an electro-magnet in the main line.
2. A resistance in a shunt circuit, in combination with an armature that opens or closes the shunt circuit and an electro-magnet in the main line, substantially as set forth.
3. A stylus in combination with a shunt cir-

cuit, resistance and electro-magnet in the main line, substantially as set forth.

4. An electro-magnet in which one helix is in the main line circuit and the other in a shunt circuit, and that shunt circuit is opened or closed by a movement derived from the armature of the magnet.

5. A local or relay circuit connected in a shunt circuit, substantially as set forth, so that the movement derived from the armature to open

or close the shunt circuit simultaneously opens and closes the local or relay circuit, substantially as set forth.

Signed by me this 17th day of October, A. D. 1871.

GEO. LITTLE.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.

(50)