

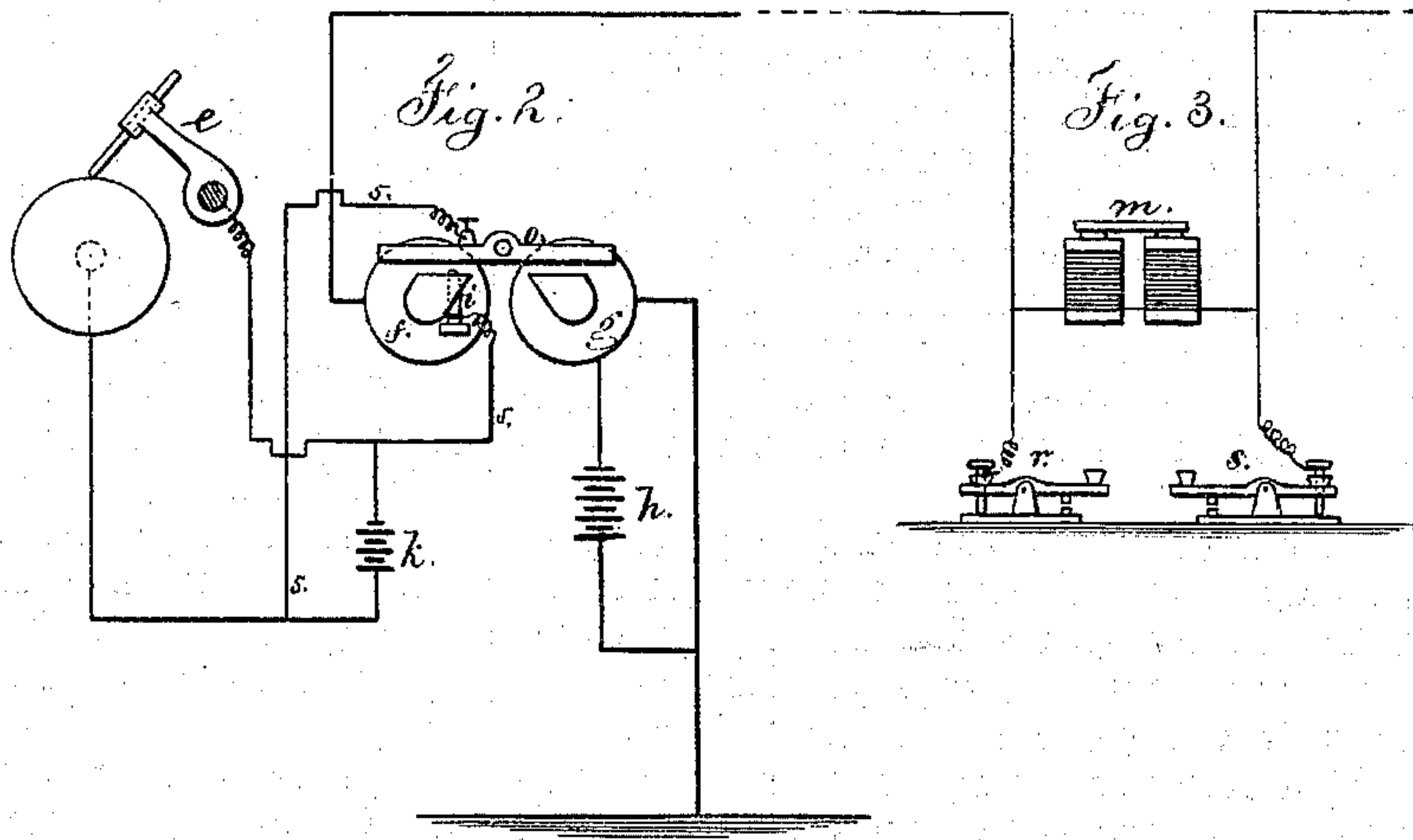
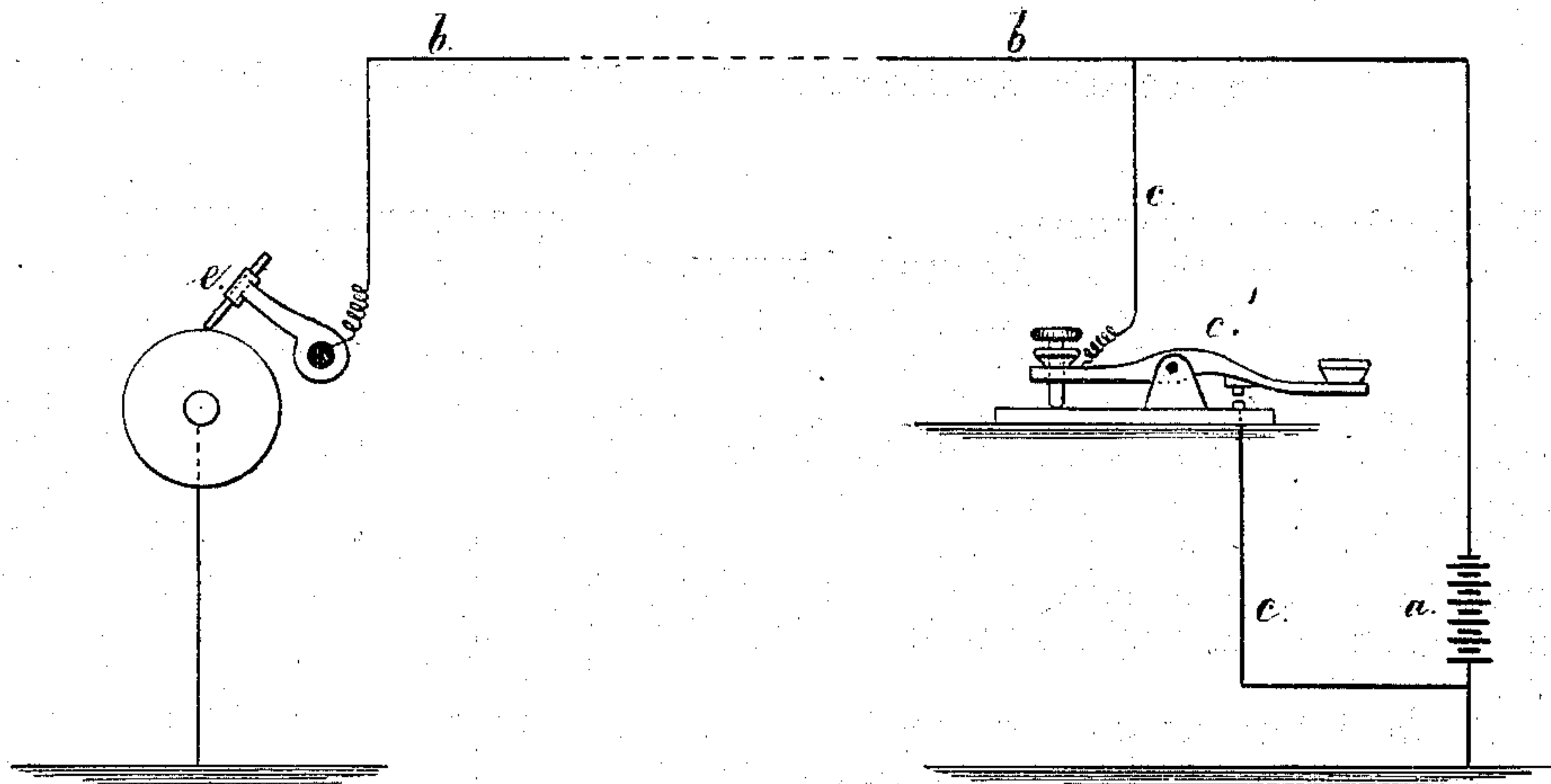
GEORGE LITTLE.

Improvement in Telegraphing by Constant Circuits.

No. 125,587.

Patented April 9, 1872.

Fig. 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE LITTLE, OF RUTHERFORD PARK, NEW JERSEY.

IMPROVEMENT IN TELEGRAPHING BY CONSTANT CIRCUITS.

Specification forming part of Letters Patent No. 125,587, dated April 9, 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 an Improvement in Telegraphing by Constant Circuits; and the following is declared to be a correct description of the same.

Heretofore it has been usual to make and break the main telegraph circuit in order to give the necessary pulsations for communicating signals.

My invention, as distinguished from those that have preceded it, consists in an arrangement of shunt-circuits in connection with the main line, whereby the circuit of the main line always remains closed; but the electric force or tension is lessened by a short shunt, that diverts the current from the main line and returns it to the battery, thereby, upon the main line, producing a signal by lessening the intensity of the current thereon.

In the annexed drawing I have shown by diagrams the said electric circuits. In Figure 1 the battery *a* is connected directly to the main line *b*, and the shunt-circuit *c* passes through a finger-key, *c'*, and when closed the electricity passes through the shorter circuit back to the battery instead of passing over the main line and back by the earth, but when the key is open the main-line circuit is operative.

A roller and stylus, with strip of perforated paper, may be substituted for the finger-key.

At the receiving station the stylus *e* and chemical paper may be employed for receiving the message; but the characters will be indicated by a blank or interruption in the continuous dark line instead of by a colored dot or dash.

If it is desired to make the characters by dark marks, the receiving instrument may be arranged as in Fig. 2; the main-line circuit, being constantly closed through the magnets *f* *g*, acts in *f* to draw the swinging armature *o* to the core of *f* and into contact with the point *i*, because the magnetism in *g* is neutralized

by a constant reverse circuit in *g* from the battery *h*; but as soon as the main-line circuit is lessened, the constant circuit acting in *g* separates the armature *o* and point *i*.

A secondary battery, *k*, is connected with the point *i* and the armature by the wire *s*, so that the electricity will not pass to the stylus *e*, there being greater resistance in the circuit through the stylus than in this secondary shunt-circuit; but when *i* and *o* are separated the current acts upon the chemical paper and produces a signal by a dark mark. If the connections were reversed the signal would be by breaks in an otherwise continuous mark in the chemical paper.

At an intermediate station the constant main-line circuit, passing through a sounder, *m*, or other instrument, as seen in Fig. 3, will not give any signal; but so soon as a short circuit or shunt from either side of the main line is closed to the earth by one of the finger-keys *r* or *s*, or similar device, and the current thereby diverted, the electric tension of the other portions of the line will be lessened, and a signal given at the distant station in consequence of that electric tension being lessened.

Resistances or rheostats may be inserted at any required place in the line to render the shunt-circuit more efficacious in lessening the electric action on the main line.

I claim as my invention—

1. A battery connected constantly with the main line and a shunt-circuit from the same battery, so as to operate the main-line circuit by breaking the shunt-circuit, substantially as specified.

2. A constant reverse circuit and a secondary and shunt circuits, in combination with the constant main-line and shunt circuits, substantially as set forth.

Signed by me this 19th day of February, A. D. 1872.

GEORGE LITTLE.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.