

GEORGE LITTLE.

Improvement in Relay-Telegraph Instruments.

No. 115,967.

Patented June 13, 1871.

Fig. 2.

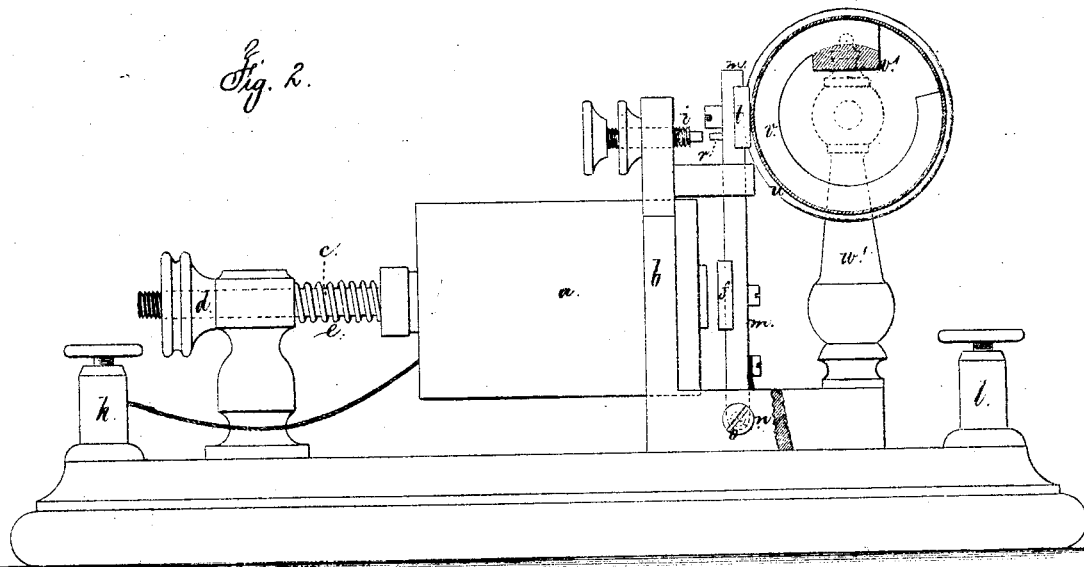
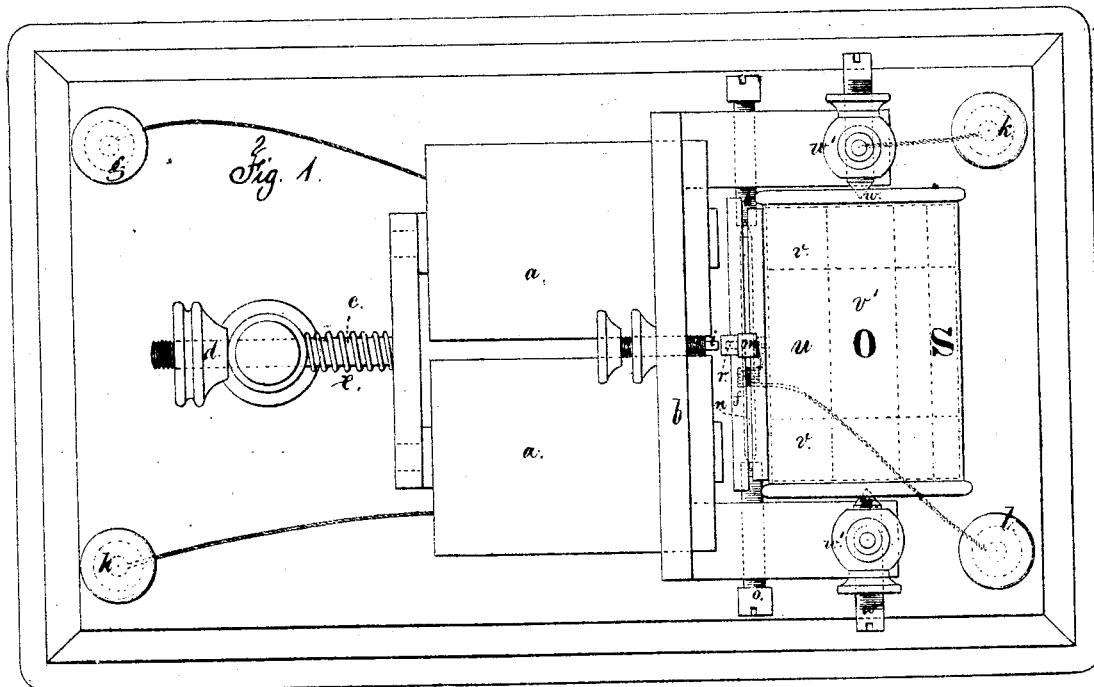


Fig. 1.



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IMPROVEMENT IN RELAY-TELEGRAPH INSTRUMENTS.

Specification forming part of Letters Patent No. 115,967, dated June 13, 1871.

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 a new and useful Improvement in Relay-Telegraph Instruments; and I do hereby declare the following to be a correct description of the same.

Relay-telegraph instruments have before been made with a spring to draw back the armature and break the secondary or local circuit, and this spring has been made adjustable so as to exert greater or lesser power. The spring, however, is liable to be injured or its tension varied by atmospheric changes and the contact of any substance that may fall thereon or come against it.

The object of my invention is to dispense with the spring that draws back the armature, and apply the power of a permanent magnet to effect that object, said permanent magnet being constructed and applied in such a manner that its attractive force upon the armature can be adjusted to the greatest accuracy, and remain without liability to accidental derangement or variation.

In the drawing, Figure 1 is a plan of a relay instrument fitted with my improvement, and Fig. 2 is an elevation of the same, the permanent magnet and its case being shown in section.

The electro-magnets *a* are mounted in any usual manner. I have shown them as supported in the stationary head *b*, and provided with a guide-rod, *c*, adjusting-nut *d*, and spring *e*, by means of which the entire magnet can be moved to adjust the poles nearer to or further from the armature *f*. *g* and *h* are the binding-screws of the main line, and *k* and *l* the binding-screws of the relay or local circuit. The armature *f* is upon an arm, *m*, sustained by an axis, *n*, hung in the screw-bearings *o o*, that are insulated from the base of the head *b*. One wire of the relay circuit is coiled around this axis *n* and connected to the arm *m*, so that the electrical connection is perfect, but the free movement of the armature is not interfered with. The other wire of the relay circuit is connected with the head *b*; and *i* is the circuit-closing screw, acting with the

arm *m* and point *r* to close or open the relay or local circuit as the armature is vibrated. Upon the arm *m* I provide a second armature, *t*, that lies in contact with the case *u* of the permanent magnet *v* when the relay circuit is broken. I have shown this magnet *v* as made of bars bent into the form of the segment of a cylinder, and united by the bar *v'* at one end, and the other ends of the bars *v* are magnetized.

The magnet *v v'* may be made in one piece, bent up into the cylindrical form described. The case *u* is made cylindrical with one removable head, so that the permanent magnet *v v'* can be inserted, and this case is mounted upon screw centers *w* in the columns *w'*, so that the necessary pressure can be applied by the screw centers *w* to detain the cylindrical case by friction at any point to which the said case and magnet may be revolved. When said case and magnet are turned until the ends of the magnet-bars *v* come contiguous to the armature *t* the magnetic attraction will exert its maximum force; hence the outside of the case *u* should be marked with some indicating device at this point, (such as *s* strong,) and the attractive force of the magnet will grade down to zero (0) at the bar *v'*; hence, by turning this cylinder, the force exerted to draw the armature *t* back and break the relay circuit can be adjusted with the greatest accuracy.

A spring point or pawl taking one of a series of teeth upon the case *u* might be used to hold the said case from turning accidentally.

I have represented my improvement as applied with the magnet of a relay instrument, but the same may be used with any electro-magnet and armature to withdraw the said armature.

I claim as my invention—

A permanent magnet combined with the armature of an electro-magnet to withdraw said armature, substantially as set forth.

Dated November 22, 1869.

GEORGE LITTLE.

Witnesses:

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