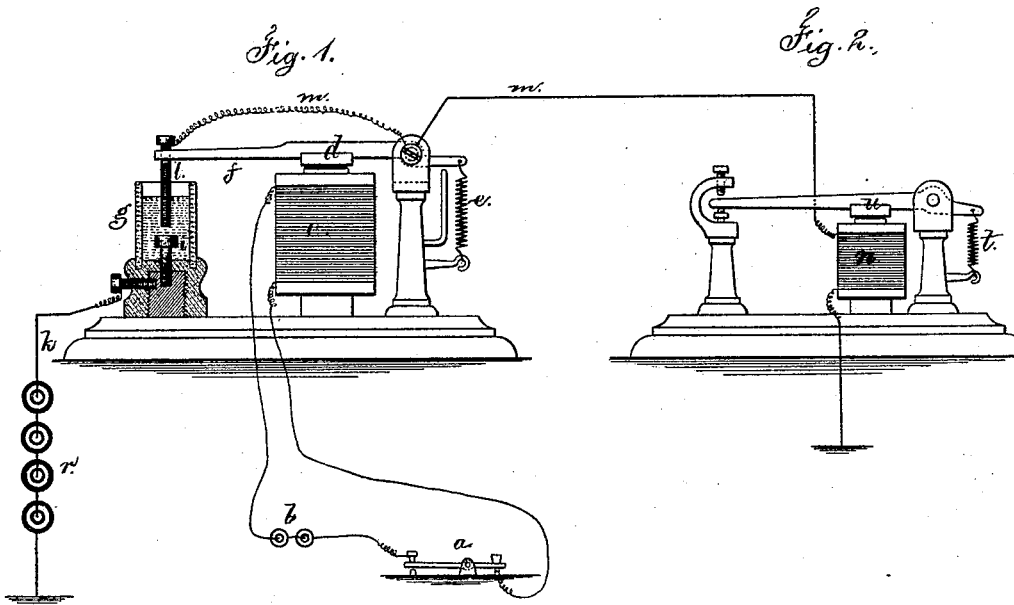


Case 73.

T. A. EDISON.
Relay Magnets.

No. 141,777.

Patented August 12, 1873.



Witnesses,
Chas. Smith
Geo. D. Harter

Inventor
Thomas A. Edison
Lemuel W. Serrell atty.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF NEWARK, NEW JERSEY, ASSIGNOR TO HIMSELF AND
GEORGE HARRINGTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN RELAY-MAGNETS.

Specification forming part of Letters Patent No. **141,777**, dated August 12, 1873; application filed
March 13, 1873.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Newark, in the county of Essex and State of New Jersey, have invented an Improvement in Telegraphic Instruments, of which the following is a specification:

Relay-magnets are employed to a large extent in various telegraphic operations. It is, however, found that the adjustment of the springs that draw back the armature and the burning of the contact-points by the spark are sources of constant annoyance.

My present invention is made for preventing the points burning out, and for avoiding adjustment of the retractile armature-springs.

I make use of metallic contact-points within a liquid, such as glycerine or water, so that the motion of one contact-point nearer to or farther from the other raises and lowers the electric tension in the telegraph-line, and operates a distant magnet without forming a spark or breaking the circuit.

In the drawing, Figure 1 is a side view of the relay-magnet with the circuit-cup in section, and Fig. 2 is a side view of the distant magnet.

The finger-key *a* is in a circuit from the battery *b*; so also are the coils of the relay-magnet *c*. The armature *d* and its lever *f* are moved by the spring *e* in one direction, and by the magnet *c* in the other. The circuit-cup *g* is made to contain water, glycerine, or other suitable liquid. In the bottom is the screw or point *i*, connected with the circuit-wire *k*, and the movable point or screw *l* passing through the lever *f* is connected with the other circuit-wire *m*, extending to the distant magnet *n*. The battery *r* is in the circuit to the magnet *n*; and it will now be understood that by ad-

justing the point *l* nearer to or farther from *i* the proportion of current passing to the magnet *n* can be adjusted so that, when the point *l* is moved by the magnet *c* nearest to *i*, the current from *r* will be sufficiently powerful to energize the magnet *n* and draw down its armature *u*; but when the circuit to the magnet *c* is broken at the key *a*, or otherwise, the movement of the point *l* away from *i* will lessen the tension in the circuit *k m* by the resistance of the intervening liquid, and weaken the power of the electro magnet *n*, so that its spring or weight *t* will draw away its armature.

The movement of the armature *u* may be made operative in effecting any desired telegraphic operation to which it is adapted. I, however, employ the same especially as a sounder, and in that case the battery *r* and circuit *k m* are local.

I am aware that contact-points within a liquid, such as oil or glycerine, have been employed in the circuit-breaker of an electric engine. In my improvement the circuit is not broken, but the relay-magnet or sounder is operated by rise and fall of tension, and the contact-points are adjustable instead of varying the armature-spring of the magnet.

I claim as my invention—

The adjustable contact-points acting within a liquid, in combination with the helix, armature, and spring of a sounder or relay, as set forth.

Signed by me this 7th day of March, A. D. 1873.

THOMAS A. EDISON.

Witnesses:

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