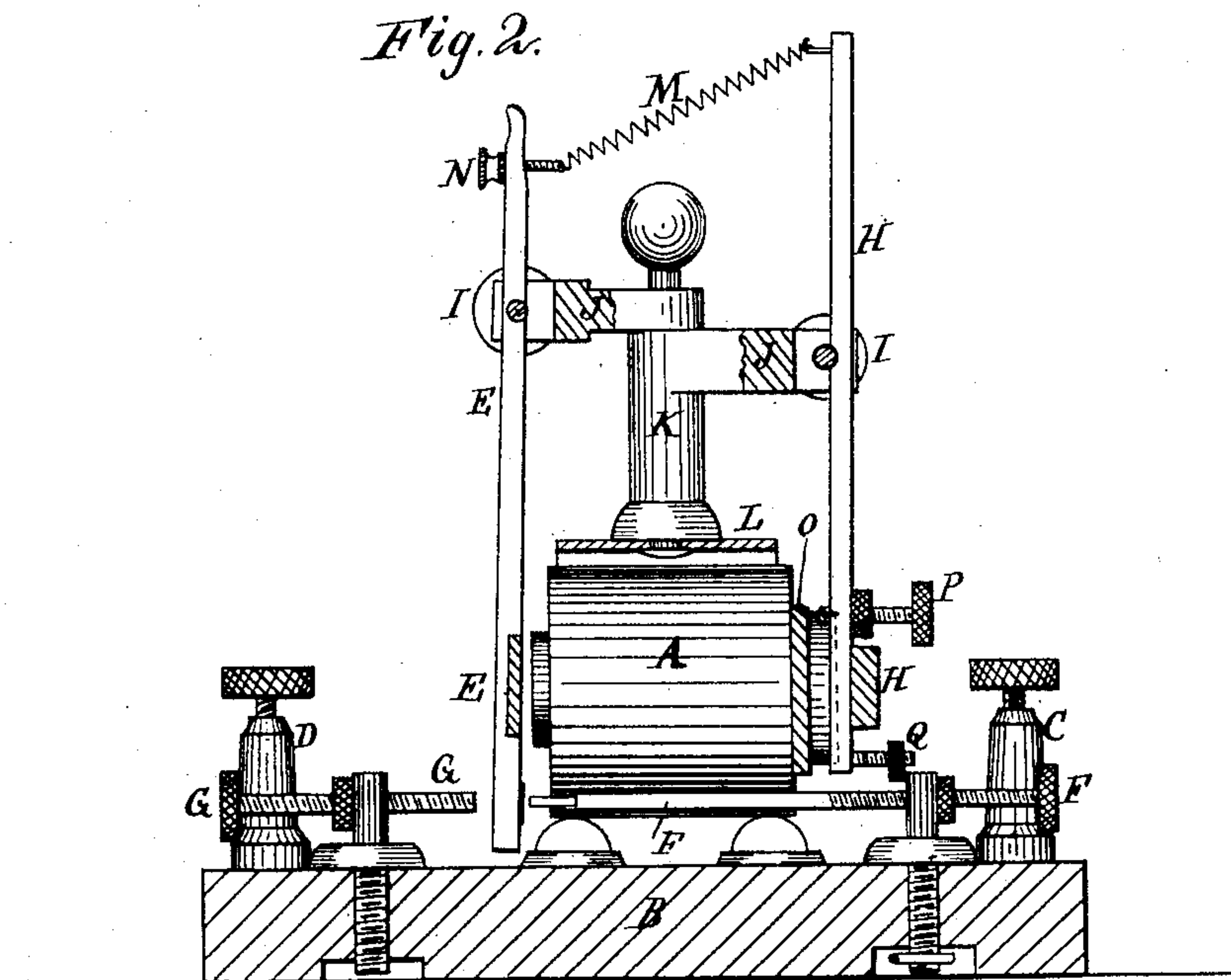
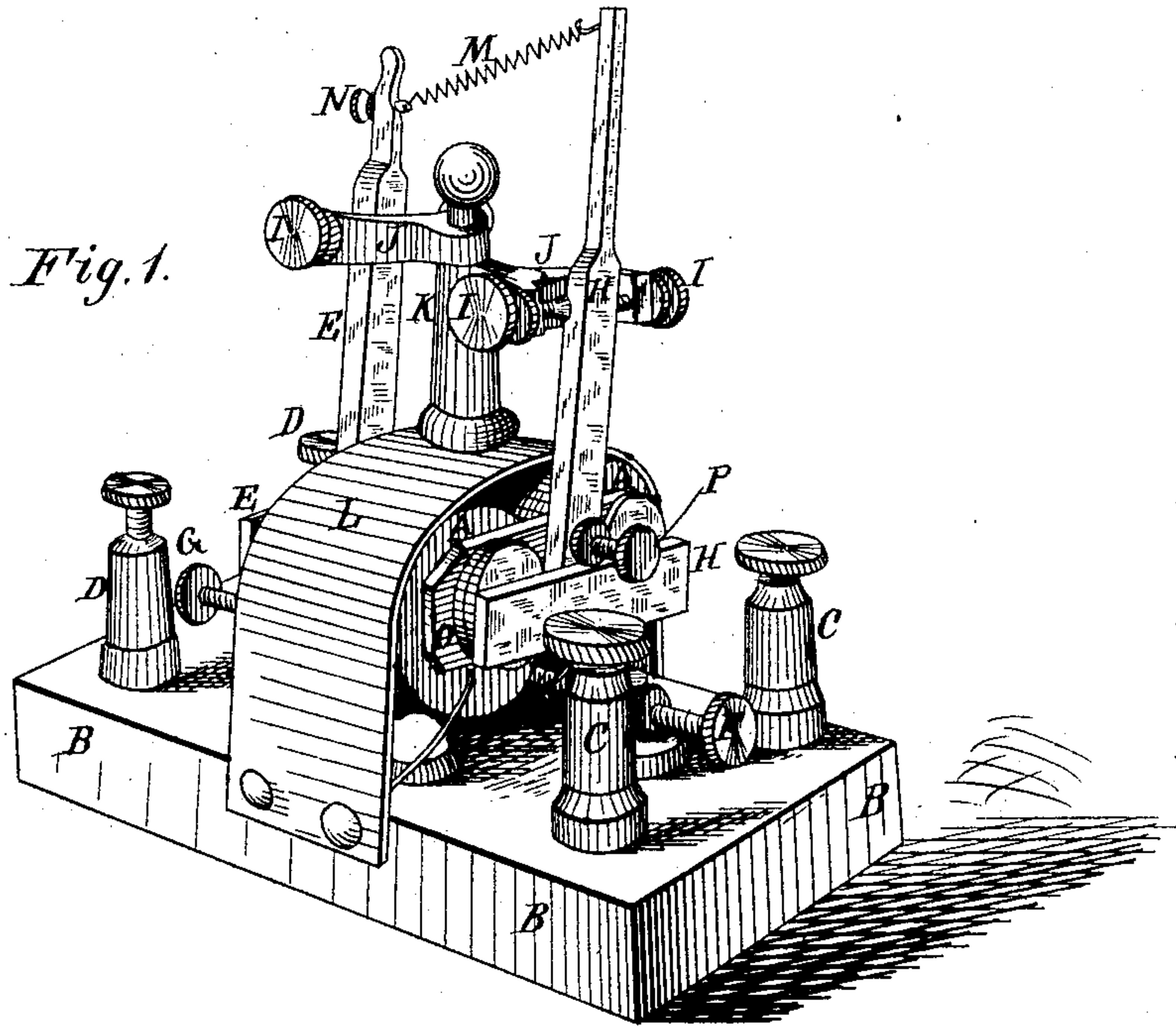


P. S. BATES.  
Self-Adjusting Relay.

No. 220,333.

Patented Oct. 7, 1879.



WITNESSES:

*Henry V. Miller*  
*C. Sedgwick*

INVENTOR:

*P. S. Bates*  
BY *Mumford*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

PETER S. BATES, OF BLOOMSBURG, PENNSYLVANIA.

## IMPROVEMENT IN SELF-ADJUSTING RELAYS.

Specification forming part of Letters Patent No. **220,333**, dated October 7, 1879; application filed April 24, 1879.

*To all whom it may concern:*

Be it known that I, PETER S. BATES, of Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented a new and useful Improvement in Telegraphic Relay-Instruments, of which the following is a specification.

Figure 1 is a perspective view of a relay-instrument to which my improvement has been applied. Fig. 2 is a vertical longitudinal section of the same.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish relay-instruments which shall be so constructed that the current passing through it will govern the spring of the armature and cause it to adjust itself to the force of the current, whether the said current be very strong or the weakest current that will pass over the line, rendering it unnecessary for the operator to touch the instrument.

The invention consists in hanging two armatures on pivot-screws, connecting them at the upper end by a spiral spring, and arranging gage-screws with respect to their lower ends, as hereinafter described.

A represents the magnets, which are secured to a stand, B, in the usual way. C represents the posts for the line-wires. D represents the posts for the wires of the local circuit.

E is armature or key for the sounder, and F is the screw that the armature E communicates with to open and close the circuit.

G is the adjusting-screw for regulating the stroke of the armature E. At the other or rear end of the magnet A is placed an armature, H.

The armatures E and H are suspended by adjusting pivot-screws I from brackets J, attached to a central post, K, which is attached to the casing L, that incloses the magnets A. The supporting-arms of the armatures E and

H rise above the pivot-screws I, and their upper ends are connected by a spiral spring, M, which regulates the resistance of the armature E to the attractive force of the magnets, and the tension of which is regulated by the screw N, connected with one of its ends, and passing through a screw-hole in the end of the supporting-arm of the armature E.

O is the insulator between the magnets A, and against which strikes the screw P, that regulates the inward movement of the armature H. The outward movement of the armature H is regulated by the screw Q, the insulated head of which strikes against the post that supports the screw F, or other suitable stop.

With this construction, when a very weak current is passing through the instrument the armature H will not be attracted at all, and will allow the tension-spring M to be very loose, so as to offer very little resistance to the movement of the armature E; but when a strong current passes through the instrument the armature H will be attracted, putting the spring M under tension and offering more resistance to the movement of the armature E, so that the instrument never has to be adjusted by the operator, the current itself regulating the tension according to its force by the double attraction of the magnets A.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The armatures E H, hung on pivot-screws I from the arms of an intermediate post, K, connected at the upper ends by a spiral spring, M, and brought into local relation with gage-screws G P Q and magnets A A, as shown and described.

PETER S. BATES.

Witnesses:

C. F. KNAPP,  
C. C. MARR.