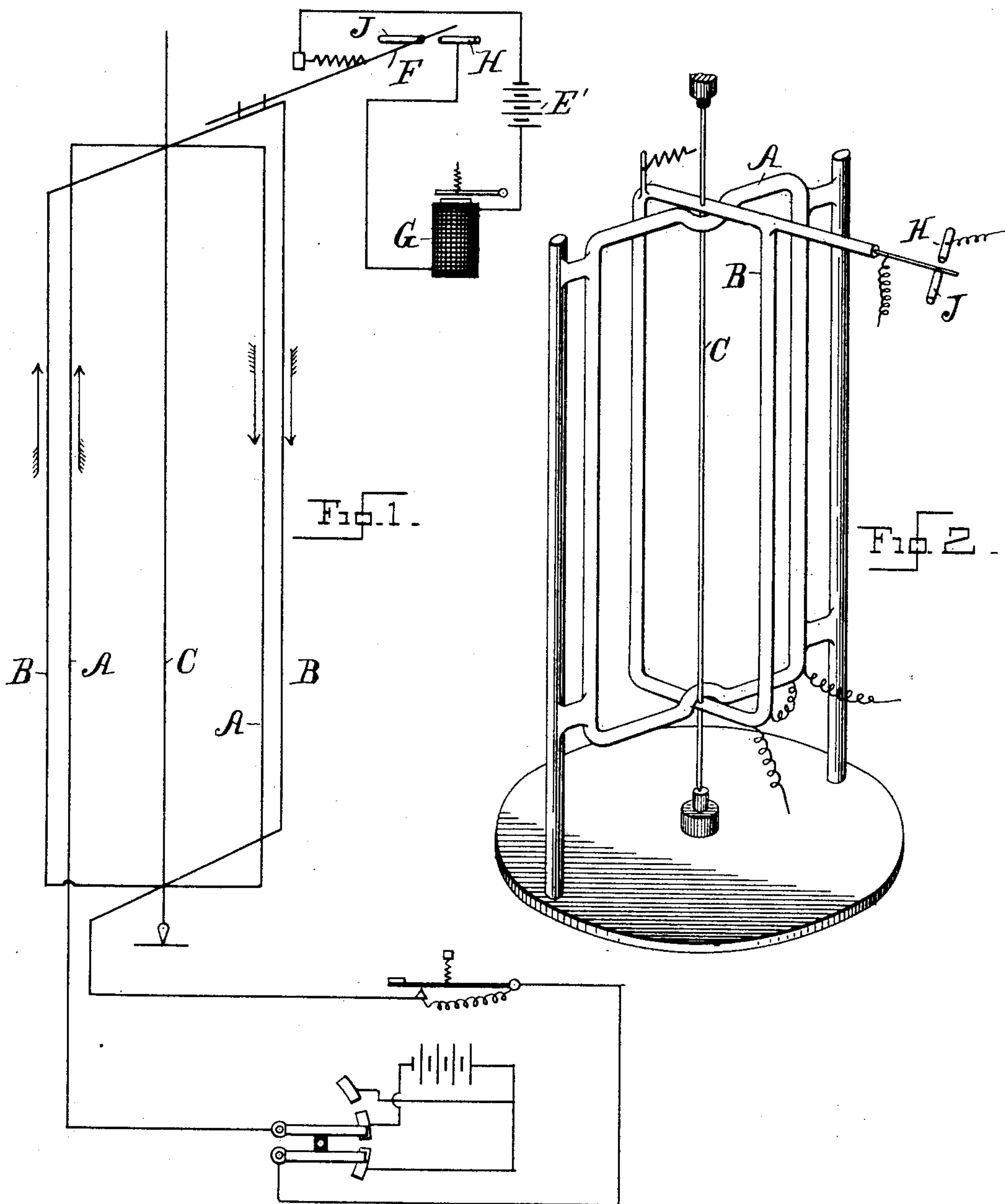


(No Model.)

W. MAVER, Jr.  
TELEGRAPH RELAY.

No. 482,440.

Patented Sept. 13, 1892.



Witnesses

Lecadia M. Linnan

Nellie L. Pope.

Inventor

WILLIAM MAVER JR.

BY HIS ATTORNEY

Edward P. Thompson

# UNITED STATES PATENT OFFICE.

WILLIAM MAVER, JR., OF NEW YORK, N. Y.

## TELEGRAPH-RELAY.

SPECIFICATION forming part of Letters Patent No. 482,440, dated September 13, 1892.

Application filed July 18, 1891. Serial No. 399,914. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM MAVER, JR., a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Telegraph-Relays, (Case No. 2,) of which the following is a specification.

My invention relates to a telegraph-relay which is quickly responsive to reversals of polarity. It is a fact that in certain systems telegraph-relays possessing this quality are very desirable—for instance, in quadruplex telegraphy, in which at certain times it is desired that the “neutral” relay shall remain practically passive during the time of reversals of current on the line. In the neutral relays usually employed in quadruplex telegraphy various means have been employed to reduce the moment of “no magnetism” at the time of “reversals”—for instance, by shortening the cores of the relay, splitting them, forming the core of bundled iron wires, &c.; but none of these devices have been completely successful, in consequence of which a certain loss of efficiency results.

My invention furnishes a relay in which the moment of no magnetism between reversals is minimized, thereby securing an increased working efficiency, as will readily be understood by those familiar with the art of quadruplex telegraphy. By my invention any current passing in the coils of the relay always tends to move the circuit-closer of the relay in one direction, however quickly the currents may succeed each other and regardless of their direction. The device for solving this problem is fortunately very simple, and it admits of replacing the ordinary relay without extra cost.

Figure 1 is a diagram of the complete invention and circuit therefor. Fig. 2 is an elevation of the mechanical construction of the relay.

A is a fixed coil, and B is a coil rotary about the axis C, which may be common to the coil A. The coils are in series with one another and connected with the telegraph-transmitters D K and electric generator E. The coils are so connected that the currents in the two coils will be parallel. The movable coil carries a circuit-closer F, being in-

cluded in circuit with the electro-magnet G and local generator E'.

H is the contact, which is touched by the circuit-closer F for including the generator E'. The circuit-closer F is retained by a retractile spring I against the stop J.

In practice the transmitter D may be arranged to insert or short-circuit a resistance R, by which means the total current strength is increased or decreased. The pull of the retractile spring I of the circuit-closer F is adjusted to withdraw the circuit-closer from its contact-point H to the stop J when the transmitter D is open, or vice versa.

The operation is as follows: When the key D is alternately closed and opened to send a message, the currents in the parallel coils pass in the same direction and attract one another. The local-circuit closer is operated in accordance with the openings and closings of the key D, and the local circuit of generator E' is alternately closed and opened by the circuit-closer F coming in contact with the terminal H. K represents typically the pole-changer or commutator in circuit with the generator E. This may be operated as required in practice, and yet the local-circuit closer F will remain closed or open or practically passive so far as the pole-changer is concerned. The fixed magnet is A, and the movable magnet is B, and this carries the circuit-closer F. In whatever direction the current passes through the series magnet, the magnet B will always tend to be moved in but one direction.

The instrument serves also as a sounder, since the stop J causes a sound when struck by the rod F.

My form of relay is especially adapted to respond quickly to reversals of polarity and to minimize the moment of no magnetism between reversals, because the coils are arranged in the manner of the ordinary electrical dynamometer and free from iron cores.

I claim as my invention—

1. In a telegraph system, the combination of a main-line conductor, ironless rectangular coils, a rotary arbor carrying one of the coils, the other coil being stationary and both coils being in series with each other and in circuit with the said main-line conductor, two