G. ALLAN & J. W. BROWN.
Electric Telegraph Relay.

No. 198,482. Patented Dec. 25, 1877.

Fig. 3

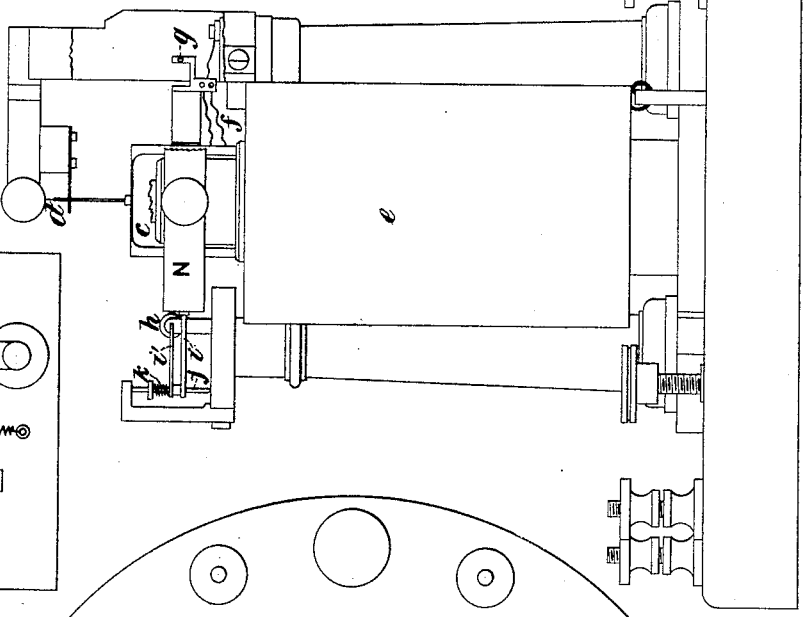


Fig. 1

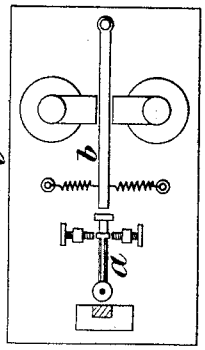
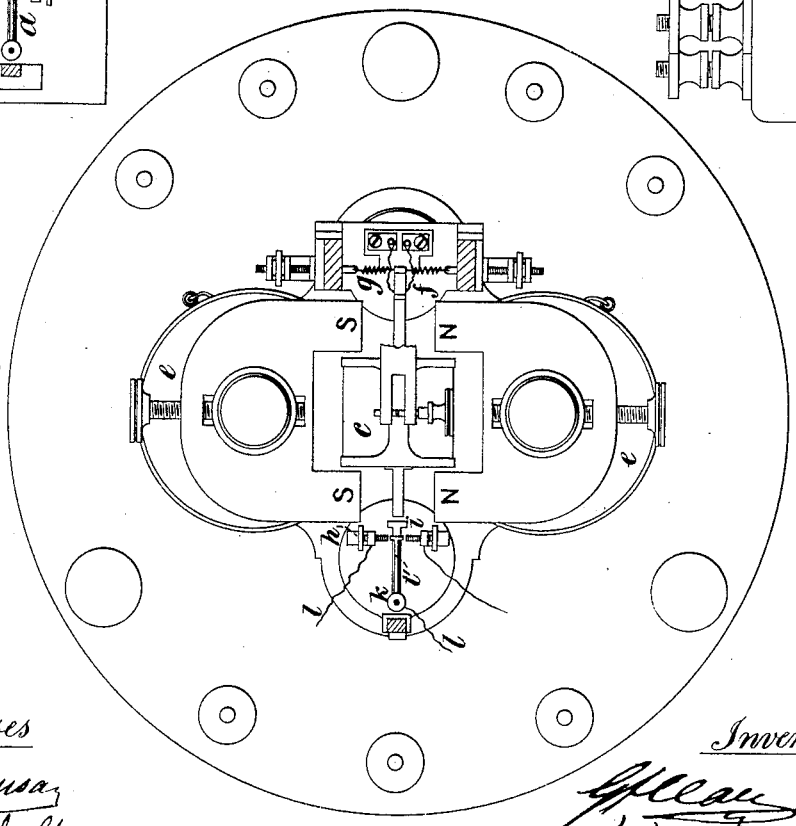


Fig. 2



Witnesses
S. B. Mansa
J. E. Wright

Inventor
G. Allan
J. W. Brown.

UNITED STATES PATENT OFFICE.

GEORGE ALLAN AND JAMES W. BROWN, OF LONDON, ENGLAND.

IMPROVEMENT IN ELECTRIC-TELEGRAPH RELAYS.

Specification forming part of Letters Patent No. **198,482**, dated December 25, 1877; application filed September 20, 1877.

To all whom it may concern:

Be it known that we, GEORGE ALLAN, civil engineer, and JAMES WALLACE BROWN, electrician, both of 18 Leadenhall street, in the city of London, England, have invented a new and useful Improvement in Electric-Telegraph Relays, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of this invention is to provide a relay or receiving-instrument in which local circuit shall be made and broken upon a very slight rise and fall of potential in the actuating current; and consists in so constructing a relay or receiving-instrument that the local-circuit contact maker and breaker shall be operated from the armature by induced magnetism.

The armature of the said relay or receiving-instrument may be of any ordinary kind, or, as we prefer, it may consist of a suspended electro-magnet or coil.

Figure 1 illustrates a relay or receiving-instrument of ordinary construction, in which the local-circuit contact maker and breaker *a* is operated by induced magnetism from the armature *b*. Fig. 2 is a plan view, and Fig. 3 a side elevation, illustrative of a modification of a relay or receiving-instrument. Here *c* is an electro-magnet suspended by the thread *d*; *e*, permanent magnets, with the south poles S on one side, and the north poles N on the other side of the suspended electro-magnet; *f*, line-wires; *g*, compensating-springs to hold the electro-magnet in central position when a current is not passing; *h*, stops; *i i'*, contact maker and breaker, formed of the piece *i*, secured to and working with the pivot *j*, and the piece *i'*, free to move on *j*; *k*, spring and nut to adjust the friction between *i* and *i'* and cause the two to move together; *l*, local connections.

When a line-current is passed around the electro-magnet the said electro-magnet is polarized, and vibrates toward one or other of the poles S N of the permanent magnets. The magnetism in *c* induces magnetism in the piece *i*, which is formed of soft iron. The piece *i* therefore vibrates with or follows the motion of the electro-magnet *e*, and gives motion to the piece *i'*, which makes and breaks contact with the stops *h*.

It will be obvious that various modifications of relays or receiving-instruments may be made without departing from the said invention.

We claim—

The combination, with a vibrating armature, of an independent contact maker and breaker acted upon inductively by the said armature, so as to move in unison therewith to make and break the current, substantially as specified.

G. ALLAN.
J. W. BROWN.

Witnesses:
S. CRANSAN,
Clerk to Messrs. Ridgway Bros., Notaries, 28 Royal Exchange, London.
J. E. WRIGHT,
Electrician, 17 & 18 Leadenhall St., London.