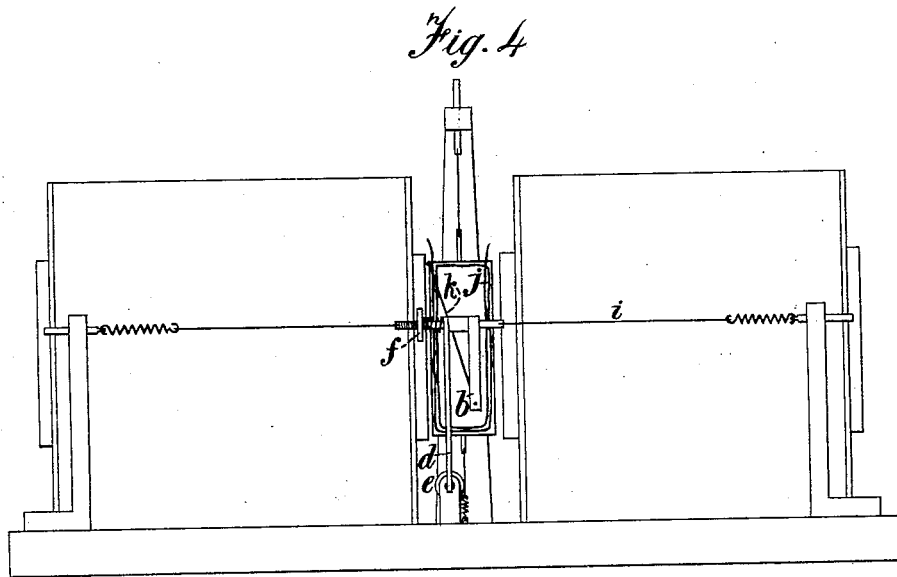
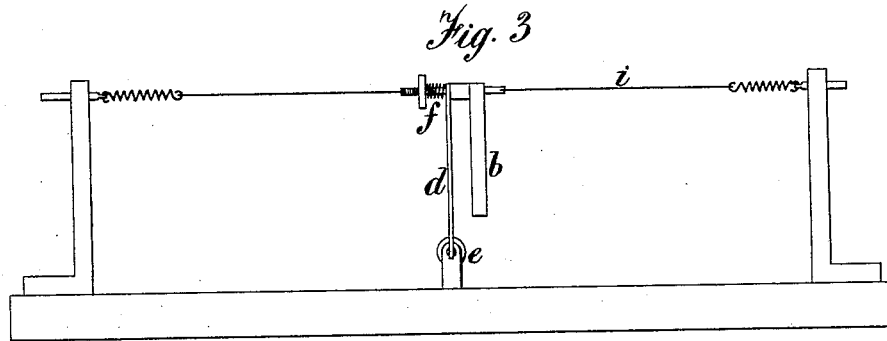
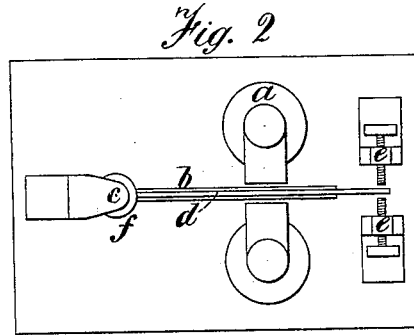
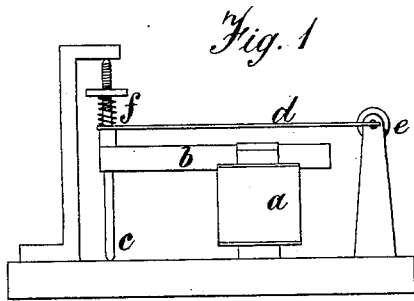


G. ALLAN & J. W. BROWN.
Telegraph Relays.

No. 200,680.

Patented Feb. 26, 1878.



Witnesses

S. W. H. H. H.
J. E. Wright

Inventors

G. Allan
J. W. Brown

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN TELEGRAPH-RELAYS.

Specification forming part of Letters Patent No. **200,680**, dated February 26, 1878; 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 Relay-Armatures, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of this invention is to so construct the armature of a relay that local circuit shall be made and broken upon a very slight rise and fall of potential in the actuating current. For this purpose we form the said armature in two parts, free to move separately on the same center or axis. One part is operated by electro-magnets or like appliances, around which the line-current or its equivalent passes, and the other part makes and breaks local circuit. We have found that when an armature is constructed in two parts, working from different centers, too great friction is opposed to the working of such armatures when actuated only by very small rises and falls of potential in the electric currents.

Figures 1, 2, 3, and 4 illustrate three modifications of armature constructed under our invention, having both of the movable portions of the armature working separately on the same center or axis.

Figs. 1 and 2: *a*, electro-magnets, through which the line-current passes; *b*, main armature actuated by the magnets pivoted at *c*; *d*, jockey-armature, also working on the pivot *c*; *e*, contact-stops; *f*, spring and nut for adjusting the friction between *c* and *d*.

Fig. 3: Here a torsion-thread, *i*, is employed instead of the pivot *c*, and the main armature

b is secured to such torsion-thread, so as to be maintained in a central position when not acted upon by the electro-magnets through which the line-currents pass. The jockey-armature *d* works on, but is not secured to, the torsion-thread *i*, and is only caused to move by the friction between itself and the armature *b*, maintained and regulated by the spring and nut *f*.

Fig. 4 shows a method of applying the modification shown in Fig. 3 to a suspended coil. Here the main armature *b* is connected to the coil *j* by the thread *k*, and the said main armature is caused to move by the motion of the suspended coil *j*, whether such coil is actuated by the line-current passing therethrough or around electro-magnets in any well-known manner.

It will be obvious that compound armatures constructed in accordance with our invention—that is, having two parts free to move on the same center or axis—may be applied to a variety of instruments where armatures for making and breaking circuit are employed.

We claim—

A compound armature for electric-telegraph relays constructed in two parts, pivoted or working, and free to move separately on the same center or axis, substantially as set forth.

G. ALLAN.

J. W. BROWN.

Witnesses:

S. CRANSA,

Clerk to Messrs. Ridgway Bros., Notaries, 28 Royal Exchange, London.

J. E. WRIGHT,

Electrician, 17 and 18 Leadenhall street, London.