(No Model.)

J. ALLEN.

INDUCTION COIL.

No. 307,699. Patented Nov. 4, 1884.

Fig. 5.

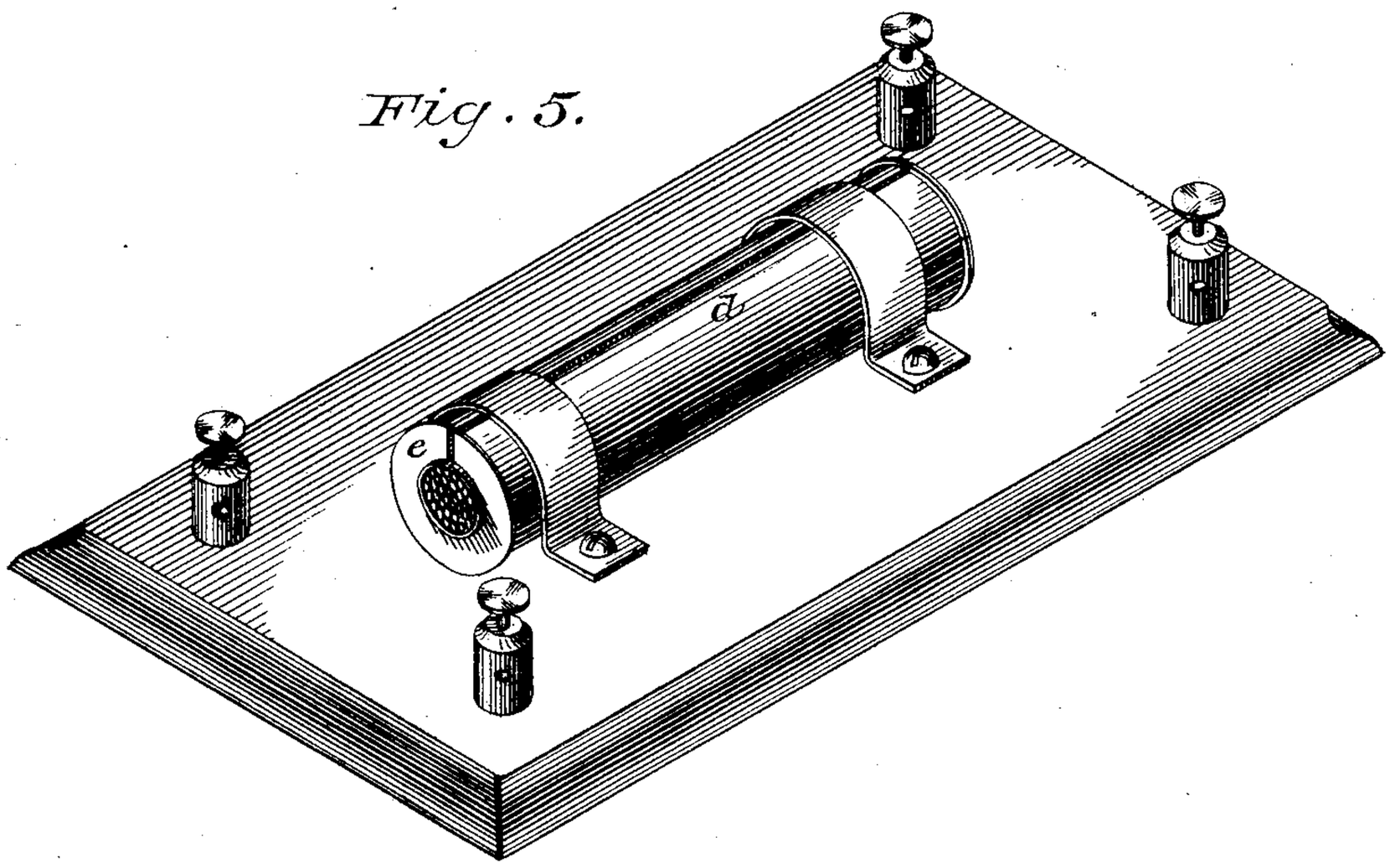


Fig. 1.

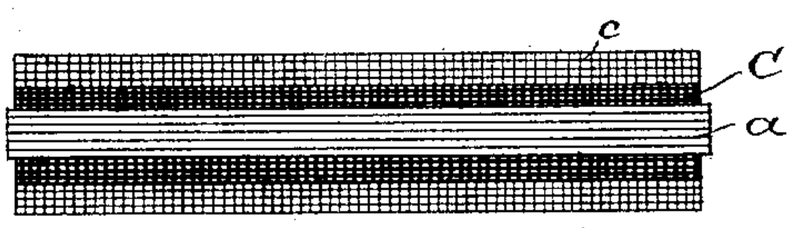


Fig. 2.

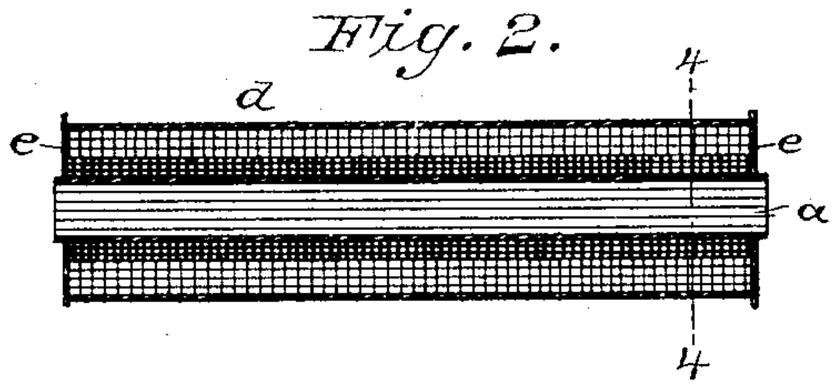


Fig. 3.

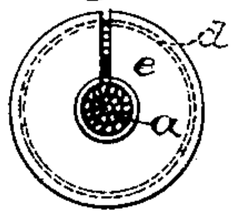
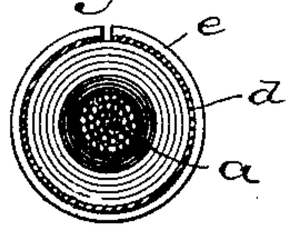


Fig. 4.



WITNESSES

Ed. A. Newman.
Al. C. Newman.

INVENTOR

James Allen

UNITED STATES PATENT OFFICE.

JAMES ALLEN, OF WASHINGTON, DISTRICT OF COLUMBIA.

INDUCTION-COIL.

SPECIFICATION forming part of Letters Patent No. 307,699, dated November 4, 1884.

Application filed April 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES ALLEN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Induction-Coils, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide means whereby the currents induced in the secondary coil of an induction-coil by a variation in the current flowing in the primary coil may be greater than at present produced by such variation in the primary current.

The improvement consists in the application of an iron band or cylinder placed around the outside of the secondary coil. The band may completely encircle the coil, or may only partially do so, leaving a siit or space between the edges. I prefer to make an iron connection between the band and the core, either at one or both ends. In the drawings I have shown it connected at both ends.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of an ordinary induction-coil; Fig. 2, a similar view of an induction-coil constructed according to my invention; Fig. 3, an end view of the same; Fig. 4, a transverse section, and Fig. 5 a perspective view.

In Fig. 1, *a* is the core. *b* is the primary coil. *c* is the secondary coil.

The improvement as set forth above consists in extending the core *a* and bending it back in the shape of a cylinder, so as to encircle the coil. This in effect is accomplished by fitting to each end of the core *a* an iron disk and connecting the two disks by an iron band.

Fig. 2 represents the disks and band as added to Fig. 1. The same letters represent the same parts as in Fig. 1.

e e are the disks, and *d* the band.

It is claimed that the iron band, connected as above set forth, causes a greater number of lines of magnetic force to cut the secondary coil when the current in the primary coil is varied than would otherwise be the case. Thus, in Fig. 2, suppose that when there is a current in the primary coil the lines of magnetic force in the core are from left to right at the right-hand end of the core. Instead of continuing to the right in the prolongation of the core, they will take the path of least resistance and follow the disk and iron band, and are thus deflected to the outside and to the left until they re-enter the core at the left-hand end. The lines of force are then from left to right on the inside of the coil and from right to left on the outside. Any change in the lines of force in the core will be followed by a change in the same direction in the band, and they will cut the coil in opposite directions; but as the direction of the lines of force on the inside is opposite to the direction of that on the outside, the two conspire to produce a current in the secondary coil.

I am aware that British Letters Patent No. 2,103 of 1855 describe an induction coil having an iron band or cylinder placed between the primary and secondary coils and connected with the core at both ends; but such a structure is not contemplated by my invention.

Having thus fully described my invention, I claim as new the following:

1. An ordinary induction-coil consisting, essentially, in its entirety, of a central core, the winding of the primary wire, and the winding of the secondary wire, in combination with a band or cylinder of magnetic metal placed outside of said induction-coil, for the purpose set forth.

2. An ordinary induction-coil consisting, essentially, in its entirety, of a central core, the winding of the primary wire, and the winding of the secondary wire, in combination with a band or cylinder of magnetic metal placed outside of said induction-coil, and connected by magnetic metal at one or both ends with the central core, for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES ALLEN.

Witnesses:

JAS. S. PARNELL,

LOUIS V. CAZIARC.