

No. 882,048.

PATENTED MAR. 17, 1908.

M. S. BRIGHAM.  
INDUCTION COIL.  
APPLICATION FILED AUG. 19, 1907.

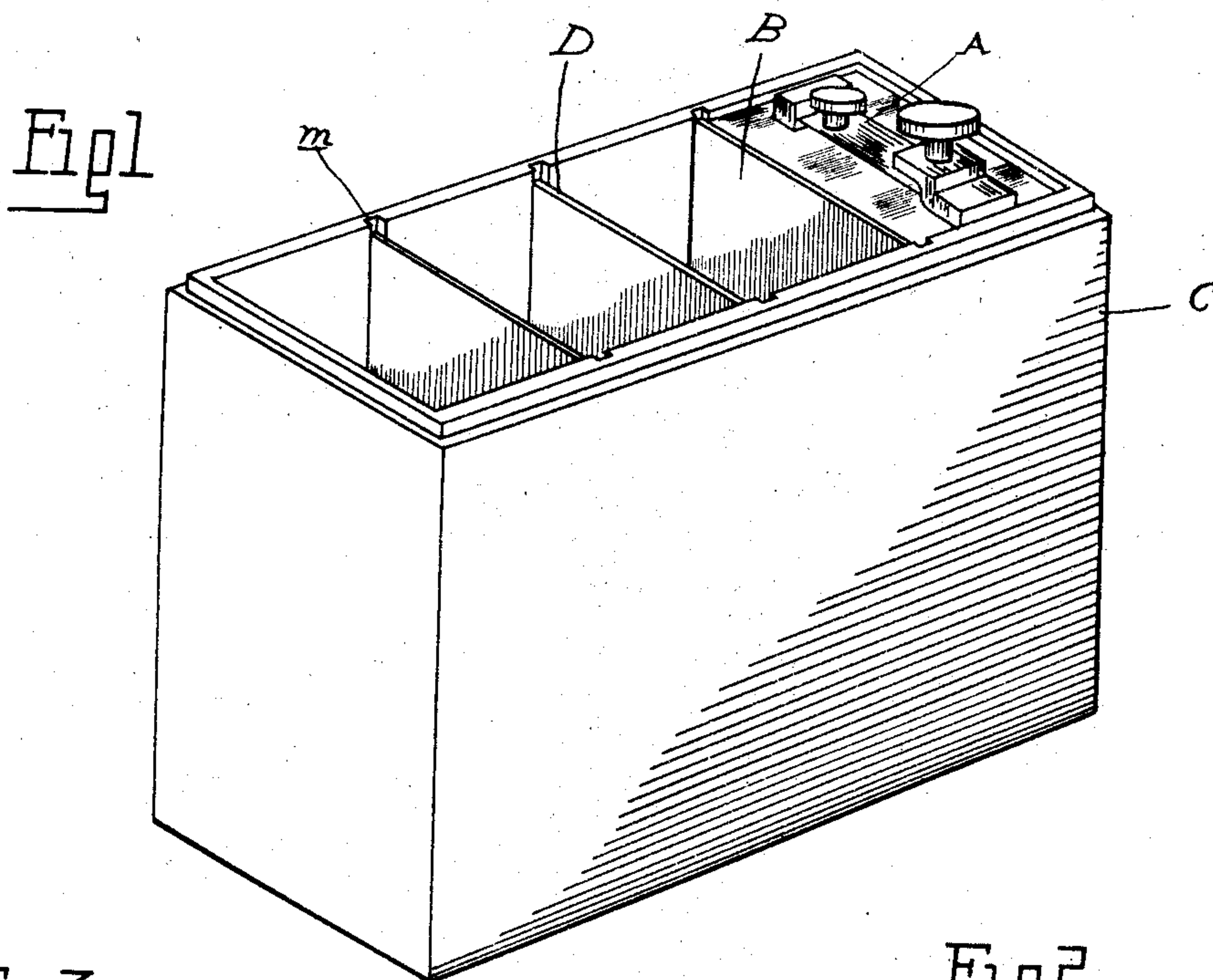


Fig 3.

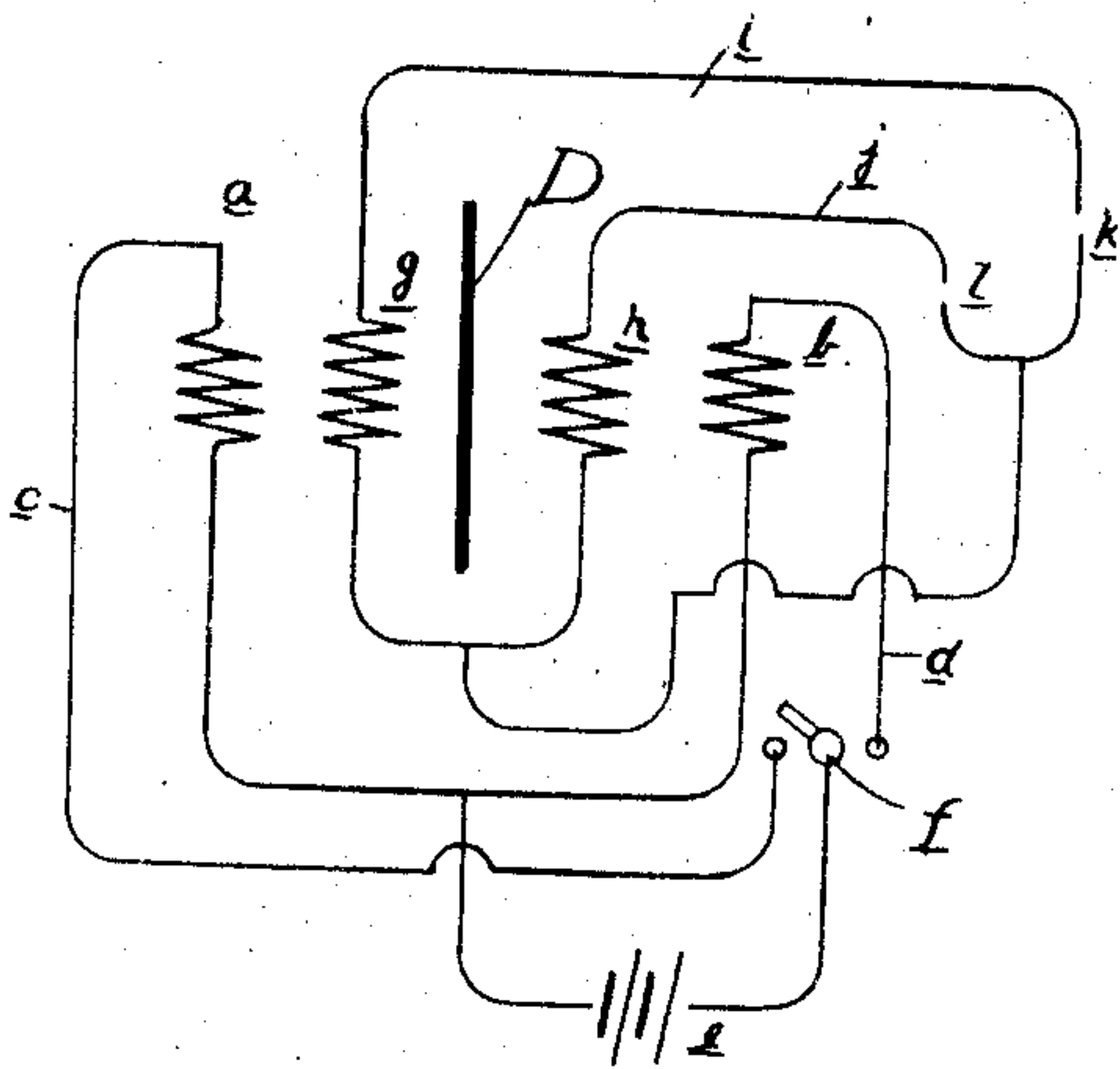
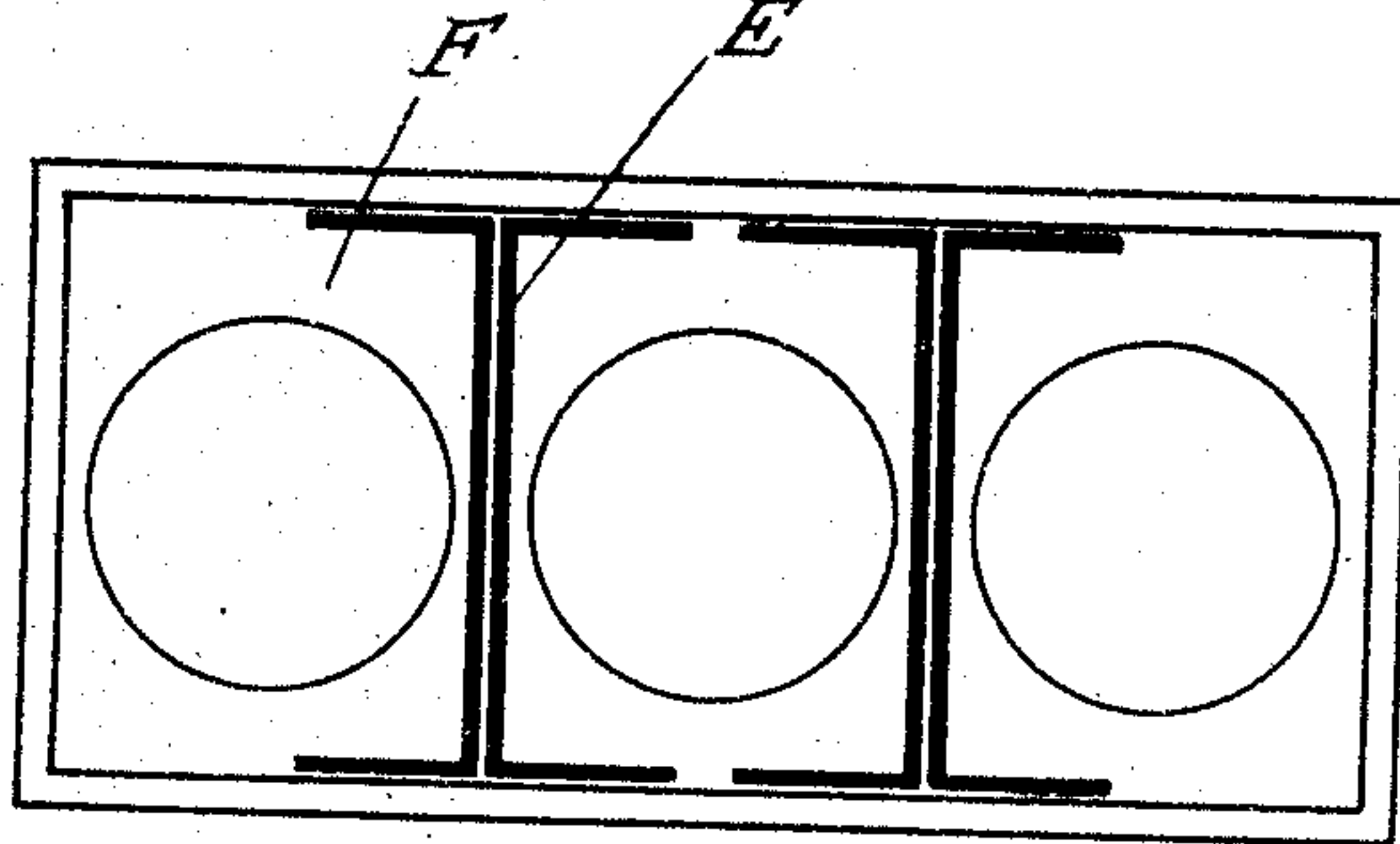


Fig 2.



WITNESSES

W. K. Ford  
Amelia Brigham

INVENTOR

MELVILLE S. BRIGHAM

By Whittemore Halbert + Whittemore

attys



# UNITED STATES PATENT OFFICE.

MELVILLE S. BRIGHAM, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO A. R. BLISS,  
OF LOWELL, MASSACHUSETTS.

## INDUCTION-COIL.

No. 882,048.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed August 19, 1907. Serial No. 389,295.

*To all whom it may concern:*

Be it known that I, MELVILLE S. BRIGHAM, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, 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.

10 The invention relates generally to induction coils for igniting and exploding the cylinder charges of explosive engines, and the invention consists in means associated with mechanism of this character for preventing premature sparking and the consequent reversing or stopping of the engine.

In the manufacture of induction coils it is highly desirable for obvious reasons to economize space, and with this end in view the coils,—where a number are to be employed,—are grouped in close proximity one to another, usually in a single box or casing of minimum size. In view of this arrangement of the coils, the respective secondary windings are closely adjacent, with the result that in many instances where one secondary is energized a current is induced in the next adjoining secondary by reason of the close proximity of the coils. This induced current causes the premature sparking, and it is to obviate this defect that the present invention is designed.

In the drawings illustrating my invention,—Figure 1 is a perspective view of the conventional form of the sparking coils, showing the means for preventing the premature sparking; Fig. 2 is a sectional view, showing a modified form of induction coil mechanism and also showing a modification of the invention; and Fig. 3 is a diagrammatic view, illustrating the circuits for the coils.

In the drawings thus briefly described, A designates an induction coil of the usual construction, arranged, as customary, in a box, and the several coils,—four in number, as illustrated in Fig. 1,—adapted for use with a four-cylinder explosive engine, and grouped in close proximity one to another in a suitable casing C. The casing is provided with the usual contacts (not shown), and connections are made between the contacts and the coil windings.

In Fig. 3 the primary and secondary windings of two adjoining induction coils are

shown diagrammatically. *a* and *b* designate the primary windings, *c* and *d* independent circuits for these windings, each including the battery *e* common to both circuits. *f* represents a commutator adapted to be rotated by any suitable mechanism, and acting upon its rotation to successively close and open the primary circuits, thus inducing currents in the secondaries. *g* and *h* represent the secondary windings respectively for the primaries *a* and *b*, included respectively in circuits *i* and *j* provided with the usual spark-gaps *k* and *l* arranged within the cylinders. Currents are induced in the secondary circuits, producing successively sparking at the gaps, the spark acting to explode the cylinder charge in the ordinary manner.

The means employed for preventing induction of currents in the secondary windings by the influence of the immediately adjacent coil are open magnetic circuit shields,—preferably in the form of plates, as D (Fig. 1),—formed of copper or other suitable conducting material. These plates, as shown, are arranged one intermediate each pair of adjoining coils. In Fig. 1 the plates are shown as rectangular in form, of slightly greater width than the width of the box, and engaging grooves, as *m*, in the box or casing sides.

In Fig. 3 a modified form of plate or shield is shown, consisting of the body section E similar to the plate D described, provided with marginal flanges F, forming in connection with the body a trough-shaped structure. Preferably two shields of this character are interposed between each adjoining pair of coils, as illustrated in the figure last referred to.

In practice, with the use of open magnetic circuit shields in connection with the mechanism described arranged in operative relation between the secondaries, I absolutely prevent premature sparking with its resulting disadvantages, and provide means whereby the charges will be exploded successively in every instance.

It will be obvious from the construction of the shield mechanism that the particular forms illustrated are not essential, and that various modifications may be constructed without in any manner departing from the spirit of my invention. I do not therefore



desire to be limited to the specific means shown, although I deem the same preferable in use.

What I claim as my invention is

5 1. The combination with a plurality of open magnetic circuit coils arranged in close proximity one with another, of an electric circuit for each coil including its primary winding, a plurality of independent open  
10 circuits corresponding in number to and including respectively the secondary windings of the coils, means for successively closing and opening the several circuits of the primary series, and means for preventing the  
15 induction of currents in each secondary winding by the influence of its immediately adjacent secondary.

2. The combination with a plurality of

open magnetic circuit coils grouped in proximity to one another, of an electric circuit for each coil including its primary winding, a plurality of independent open circuits corresponding in number to and including respectively the secondary windings of the coils, a commutator for successively closing  
25 and opening the several primary circuits, and an open magnetic circuit shield arranged intermediate each pair of adjoining coils.

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

MELVILLE S. BRIGHAM.

Witnesses:

AMELIA WILLIAMS,  
HARRY W. GALVIN