

J. O. HEINZE, JR.
INDUCTION COIL.
APPLICATION FILED MAY 22, 1909.

977,870.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

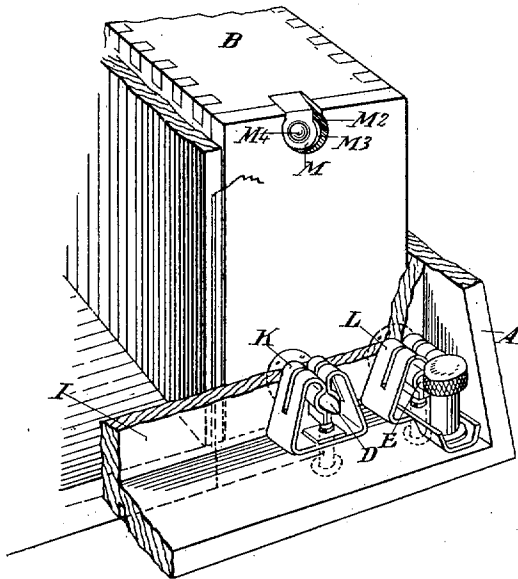


Fig. 2.

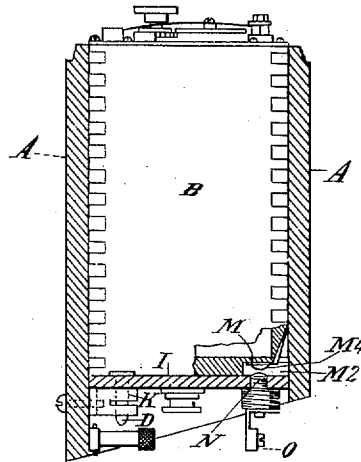


Fig. 3.

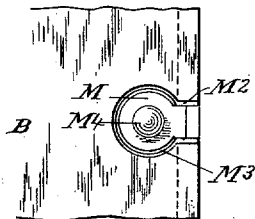
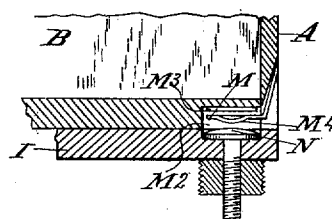


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN OTTO HEINZE, JR., OF LOWELL, MASSACHUSETTS.

INDUCTION-COIL.

977,870.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN OTTO HEINZE, Jr., a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Induction-Coils, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to induction coils, and for the sake of illustrating it, I have embodied it in a spark coil. Its object is to prevent secondary currents, induced in the secondary winding of a spark coil, by the action of an adjacent spark coil, from jumping across the spark gap of a sparking device electrically connected with said secondary winding. I attain this object by introducing into the secondary circuit, wherever most convenient, a spark gap of such a length that the voltage, induced in the secondary winding by said action of the adjacent coil, is not sufficient to cause the secondary current to jump said gap; said gap being between one terminal mounted, for example, on the spark coil case, and the other terminal, on the box containing the coil case.

In the drawings, Figure 1 is a perspective view showing one of the terminals of a secondary spark gap, in the bottom of the spark coil case; the latter being one of two or more spark coil cases, removably mounted in a box which is broken away to show the bottom of the spark coil case with the said secondary terminal. Fig. 2 is a vertical section showing the two secondary terminals, one in the bottom of the spark coil case, and the other in the bottom of the containing box. Fig. 3 is an enlarged detail showing in plan, one secondary terminal mounted in the bottom of the coil case; while Fig. 4 is an enlarged sectional view showing two terminals forming a spark gap in the secondary circuit. Fig. 5 is a diagrammatic view showing the electrical wiring, connections, and secondary spark gaps of an ignition system employed with two spark or induction coils removably mounted in their containing box.

A box A is designed to contain two or more unit spark coil cases, only one, as B, being shown. This case is provided with primary terminals D, E, and spring terminals K, L, which constitute no part of my present invention, viz., a secondary spark gap, formed by two secondary terminals, as M, N.

A recess M^2 is made in the bottom of each spark coil case B, and next to the bottom of the recess is secured a piece of insulating material, as mica M^3 , while in proximity to the mica is the terminal M conforming to the shape of, but lying within the recess, and having a slight protuberance M^4 , in its middle portion to form a suitable sparking surface. This terminal M leads out of the recess, and is secured to the side of the case, where it is connected to a secondary wire, not shown, of the spark coil, in any suitable way. Directly beneath this terminal M, but out of contact with it, is the other secondary metal terminal N, fixed in, and protruding through, the bottom of the containing box A, and provided outside the box, with a binding screw member O, for a wire leading, for example, to a sparking device.

Fig. 5 illustrates the wiring of an ignition system with which my invention may be used. Each of the two spark coils, as B, see also Figs. 1 and 2, has two pin terminals D, E, constituting those, say, of its primary coil, and projecting downwardly from the bottom of the coil case. When each case is in normal position in the box, its pins extend through the bottom I of the box and into frictional engagement with the spring terminals K, L, outside of the box and below its bottom. A common feed wire S connects with screws which secure the bases of the spring terminals K, L, to the box. On the outside of the bottom of the box are two binding screws T, T', which are connected to suitable sources of current U, U', and also terminals l , l' , with which the feed wire S may be connected, as by a switch C. When the parts are in normal position and are in operation, electrical current may be supplied from, say, battery U. As commutator V revolves and contacts the terminal p , electrical current flows first through the feed wire u , binding post T, terminal l , switch C, common feed wire S, spring terminal K, pin terminal D, primary coil of B, pin terminal E, spring clip terminal L, ground wire P, terminal p ; commutator V to ground; and then when the commutator V later contacts terminal p' , current will flow from the common feed wire S, spring terminal K', pin terminal D', primary coil of B', pin terminal L', spring terminal E', ground wire P', terminal p' , commutator V, to ground; secondary currents being induced respectively in the secondary wire of the coil B,

and in the secondary wire of the coil B', and their respective sparking devices O², O³, becoming alternately active. But if, for any reason, the coil B, while active, tends to induce currents in the secondary of the coil B' and hence to render its sparking device O³ active, such tendency is overcome because the spark gap M', N', is of such length that the induced current cannot leap the gap, and hence cause untimely sparking at the spark plug O³. For the same reason, the spark gap M, N, of the secondary circuit of the coil B, prevents any current induced in said latter circuit by the action of the coil B' from untimely operating the spark plug O².

The construction, purpose and operation of my invention are now plain. But it is to be understood that my invention is not limited to spark coils. Obviously it may reside in any induction coil having a secondary spark gap to control any current induced in the secondary winding by any means; and the embodiment of my invention is not dependent upon any particular location of the secondary spark gap terminals; all that is

essential is that the secondary terminals shall be such a distance apart that only secondary currents of at least a certain voltage can pass through the secondary circuit.

Having described my invention and desiring to protect the same in the broadest manner legally possible, what I claim is:—

In a box containing two induction coils, removably mounted therein, and each having a secondary coil; two secondary terminals to form an open circuit spark gap connected into each of said secondary circuits, one terminal being located upon its respective coil, and the other being located upon the box, each pair of said terminals forming a spark gap of suitable length when the induction coils are in normal position in the box.

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

JOHN OTTO HEINZE, JR.

Witnesses:

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