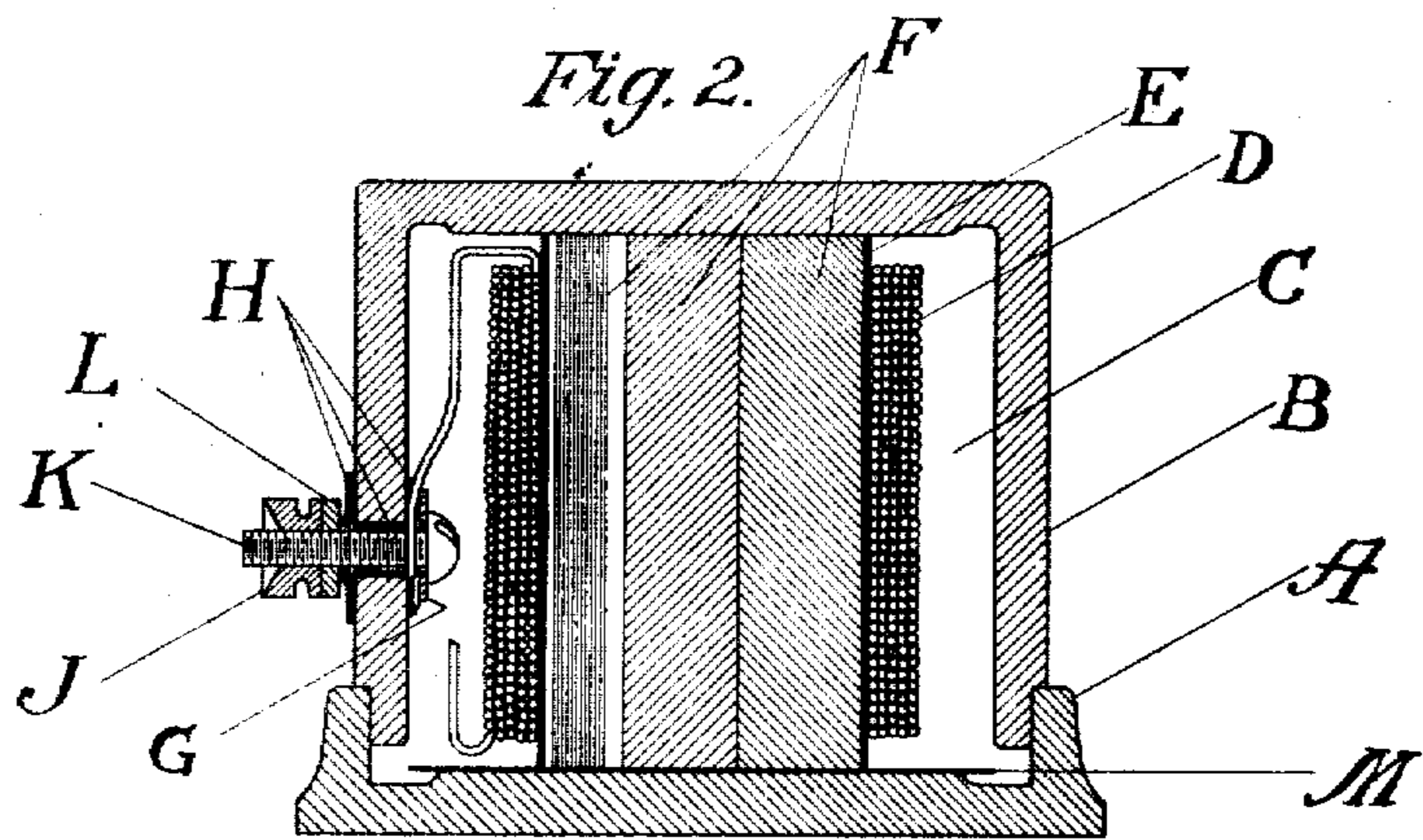


SPARK COIL.

952,692.

Patented Mar. 22, 1910.



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UNITED STATES PATENT OFFICE.

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SPARK-COIL.

952,692.

Specification of Letters Patent.

Patented Mar. 22, 1910.

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To all whom it may concern:

Be it known that I, CHESTER H. THORDARSON, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have made a certain new and useful Invention in Spark-Coils, of which the following is a specification.

This invention relates to spark coils of the character required for use in connection with ignition systems of explosive engines, although spark coils embodying my invention are equally well adapted for use in other relations and for other purposes for which such coils are required or devised.

The object of the invention is to provide a construction of spark coils of the character referred to which is simple, inexpensive, strong, durable and efficient, and which is not affected by moisture.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawing, and finally pointed out in the appended claims.

Referring to the accompanying drawing, and to the various views and reference signs appearing thereon Figure 1 is a view in transverse section of a construction of spark coil embodying my invention. Fig. 2 is a longitudinal section of the same.

In the drawing, reference sign A, designates a base of cast iron, and B, an inclosing cup-shaped casing of the same material, the base and casing being fitted and secured together to inclose the coil D, and its core F, said coil and core being supported longitudinally between the base and the end of the casing, one end of the core resting on the interior surface of the base, and the inner surface of the casing end bearing against the other end of the core. If desired, and preferably, a sheet of insulating material M, may be interposed between the end surface of the core and the surface of the base A, against which the core bears thereby forming and maintaining a separation of the end surface of the core and the adjacent surface of the base, to constitute a gap at this point in the magnetic circuit. The coil D, is preferably of heavy copper wire and is wound upon the core F, with an interposed insulating sleeve or material E, therebetween. The ends of the coil terminate at binding posts

K, which project through openings in the casing, being insulated therefrom by means of the sleeve and washers indicated at H. The ends of the coil are secured in efficient electric contact with the binding posts K, by means of the plates or washers G, and, outside the casing, the binding posts are equipped with the usual binding nuts and washers J, L, for circuit wire connections.

If desired, and in order to secure durability of the device and also to protect the coil against moisture, the space C, between the coil and casing may be filled with insulating compound.

The core F is made up of plates or laminations of iron, and these may be arranged in any suitable or convenient relation with respect to each other for the wire or conductor coils to be wound therearound into cylindrical form.

It has been demonstrated that except as to its permeability, cast iron behaves very much like laminated iron with respect to the rapidity with which it demagnetizes. This is due to its porosity and high electrical resistance. In carrying out my invention, therefore, I employ cast iron for the base and casing, and I make these parts sufficiently heavy to carry the magnetism of the laminated core to form very nearly a closed magnetic circuit. In fact this magnetic circuit is closed except for the gap formed by the sheet M interposed between the base casting and the core, and since the mass of cast iron composing the base and casing surrounds and incloses the coil and its core I am enabled to secure the desired results and to produce a strong durable device having great efficiency as a spark coil, and which can be cheaply manufactured, and which is protected from moisture.

It will be observed that the laminations composing the core are not symmetrically arranged within the coil. This is due to the fact that the laminations, in the particular construction shown, are in the form of flat plates of equal rectangular size which are inclosed within a circular coil. My invention, however, in its broadest scope as defined in the claims, is not to be limited or restricted in this respect.

It will also be seen that by employing heavy copper wire for magnet coil windings I am enabled to secure a high impedance with low resistance in the magnetizing coil, thereby rapidly accumulating and storing

energy in the circuit when the circuit is closed, and also rapidly returning such energy to the circuit when it is opened, and hence enabling the released energy to augment the spark making the latter of greater length and of greater degree of heat than is possible from the battery or current source energy alone, and hence very greatly increasing the efficiency of the spark discharge.

Having now set forth the object and nature of my invention, and a construction embodying the principles thereof, what I claim as new and useful, and of my own invention, and desire to secure by Letters Patent is,—

1. In a spark coil, a cast iron base, a cast iron casing supported thereon, said casing having a permanently closed integral end, a laminated core independent of the casing and its base and arranged within the casing and having its ends presented toward and held between the base and closed end, respectively, of the casing thereby forming air gaps between the ends of the core and the base and closed end respectively of the casing, a single heavy low resistance coil surrounding the laminated core and inclosed within the casing, and circuit terminals for said coil, said terminals extending through to the outside of the casing.

2. In a spark coil, a cast iron base, an inverted cup-shaped cast iron casing sup-

ported thereon, a laminated core independent of the base and casing, but contacting at one end with the inner end surface of the inverted cup-shaped casing and resting at its other end upon said base, an insulating sheet interposed between the core and base a heavy low resistance conductor coil surrounding said core, and circuit terminals for said coil, said terminals extending through said casing.

3. In a spark coil, a cast iron base, an inverted cup-shaped cast iron casing supported thereon, a laminated core independent of the base and casing, but contacting at one end with the inner surface of the inverted cup-shaped casing, and resting at its other end upon said base, an insulating sheet interposed between said core and base, an insulating sleeve inclosing said core, a heavy low resistance conductor coil surrounding said sleeve, and circuit terminals for said coil, said terminals extending through the wall of said casing.

In testimony whereof I have hereunto set my hand in the presence of the subscribing witnesses, on this 11th day of November A. D., 1908.

CHESTER H. THORDARSON.

Witnesses:

SYLVANUS E. LAMBERT,
HENRY L. HANLEY.