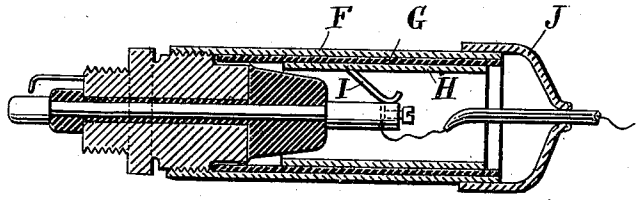
No. 703,759. Patented July 1, 1902.

A. C. BROWN.

ELECTRICAL SPARKING DEVICE.

(Application filed Dec. 21, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

ALFRED CHARLES BROWN, OF LONDON, ENGLAND.

ELECTRICAL SPARKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 703,759, dated July 1, 1902.

Application filed December 21, 1901. Serial No. 86,763. (No model.)

To all whom it may concern:

Be it known that I, ALFRED CHARLES BROWN, a subject of the King of Great Britain, and a resident of London, England, have invented certain new and useful Electrical Sparking Devices, of which the following is a specification.

This invention relates to the class of firing devices wherein an induction-coil or its equivalent is used to produce a spark for firing charges in internal-combustion engines and for similar purposes on the interruption or variation of a current passed through its primary or low-tension circuit.

The invention consists in the combination, with a sparking-plug, of a condenser whose plates or armatures are of tubular or cylindrical form, one of said tubes being an extension of the body of the plug, while the other is contained within the first and is in immediate metallic connection with the electrode in the sparking-plug, so as to produce oscillatory discharges across the spark-gap and provide that the current generated by the induction-coil shall be slightly stored by this condenser and sent in larger quantities across the spark-gap, thereby producing a much "fatter" and more flaming spark.

My invention consists also in the combination, with a sparking-plug, of a condenser, the two opposite plates or surfaces of which are in immediate, direct, and continuous connection with the two sides or poles of said plug.

The drawing shows in longitudinal section a combined sparking-plug and condenser embodying my invention.

F is a metallic tube screwed or otherwise affixed to or formed on the metallic outer part of the plug (and thereby in direct electrical connection with one side of the spark-gap and high-tension-production circuit.)

G is a tube, of insulating material, fitted or slipped inside of F, and H is another metallic tube fitted or slipped inside of G and having, preferably, a metallic spring-nip I, stamped out of a portion of its side to bear on the central conducting-rod of the plug, as shown, or provided with other means for connecting the inner tube H to the opposite side of the spark-gap and high-tension-producing circuit to that to which F is joined, so that F and H form the two plates or armatures of the condenser.

J is an insulating-cap which may be slipped onto the tube F and have a smaller hole to grip or fit onto the outside of the insulation of the connecting-wire to keep out wet.

If the central conducting-rod of the sparking-plug be made large enough, it may itself form or take the place of the tube H, and the ordinary porcelain of the plug may take the place of the tube G; but this method of construction involves unduly increasing the size of the plug and is detrimental in many respects. The capacity of the condenser, however formed, should be approximately proportioned to the size and character of coil, amount of current, and maximum rate of make and break used and for best effect should be adjusted thereto; but if made of the shape and size shown with ebonite, vulcanized fiber, or slightly-stouter mica insulation it will be found to be efficient. By thus placing the two sides of the condenser in immediate mechanical and electrical union with the two sides or poles of the sparking-plug the conductors or connections from both plates of the condenser will have very low self-induction, thus permitting a very free oscillatory discharge of the condenser across the spark-gap. By the use of this invention the volume of the spark produced by each break of the primary circuit is so much increased that one alone is sufficient to insure firing, and I therefore generally prefer to dispense with the ordinary vibrating make and break in the primary circuit of the induction-coil and to produce the makes and breaks by the usual cam or similar timing contact device, which is driven by gearing from the engine-shaft or otherwise in correct phase for firing, as well understood in the art.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a sparking-plug having a metallic body through which one of the electrodes passes, of a tubular condenser comprising two metallic tubes one of which is in immediate metallic union with the body of the plug while the other is contained within the first and is in direct connection with

the wire or conductor terminating in the other electrodes of the device.

2. The combination with a sparking device for an internal-combustion engine comprising a metallic plug, an electrode connected therewith, and a second electrode passing through the plug but insulated therefrom, of a condenser, the capacity plates of which consist of two tubes insulated from one another one of which is connected with the plug and has its axis substantially coincident with the axis thereof, while the other is metallically connected with the conductor which terminates in the opposite electrode of the plug.

3. The combination with a sparking-plug, of a condenser whose two opposite plates are both in immediate direct and uninterrupted electrical connection with the two opposite sides or poles of said plug respectively, as and for the purpose set forth.

Signed at London, in the county of London, England, this 9th day of November, A. D. 1901.

ALFRED CHARLES BROWN.

Witnesses:
H. D. JAMESON,
A. NUTTING.