

E. F. HOPKINS.
SPARK PLUG.

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1,044,528

Patented Nov. 19, 1912.

Fig. 1.

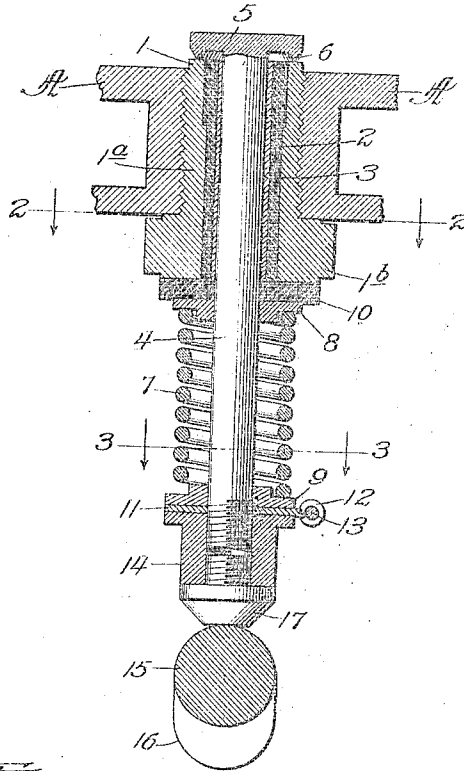


Fig. 2.

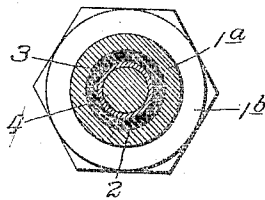
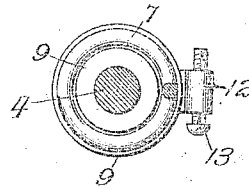


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SPARK-PLUG.

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To all whom it may concern:

Be it known that I, EZRA F. HOPKINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification.

The object of this invention is to improve the construction of spark plugs of the type commonly know as the "make-and-break" type.

In the accompanying drawings; Figure 1 is a longitudinal central section through a spark plug embodying the features of my invention. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a section on line 3—3 of Fig. 1.

The embodiment herein shown of my invention comprises a bushing 1 having a screw-threaded portion 1^a adapted to be screwed into an engine frame A and a portion 1^b adapted to be engaged by a suitable wrench for turning the bushing. Within the bushing 1 is a sleeve 2 of insulating material and this sleeve is lined with a thin sleeve 3 of metal or other wear-resisting material.

Slidably mounted in the sleeve 3 is a rod 4 having a head 5 at one end, said head having thereon an electrode in the form of an annular flange 6 adapted to engage the end of the bushing 1 and make electrical contact therewith. Said flange has an edge which comes in contact with the bushing and tends to cut through any insulating substance that may collect on either the bushing or the edge of the flange.

A coiled spring 7 surrounding the rod 4 bears at one end against a washer 8 and at its other end against a nut 9 threaded upon the end of the rod, the spring 7 tending to hold the flange 6 in contact with the bushing 1. The washer 8 is insulated from the head 1^a of the bushing 1 by means of an insulating washer 10.

A member 11 fitted upon the rod 4 has a socket 12 thereon adapted to receive a screw 13 for the purpose of connecting an electric wire (not shown) to the member 11. Said

member is clamped in place by means of a nut 14 threaded upon the rod 4 the nut clamping said member against the nut 9.

As will be seen an electric circuit is established through the member 11, rod 4, bushing 1 and the engine frame A, and this circuit is normally closed, but may be broken by sliding the rod 4 to carry the electrode 6 away from the end of the bushing 1. Such separation will draw a large spark between said electrode and bushing 1.

The spark plug may be operated in any desired manner as by means of a rotary shaft 15 having a cam 16 thereon arranged to engage the lower end of the nut 14 and move the rod 4 upwardly. An insulating member 17 may be secured to the nut 14 to prevent electrical contact between the cam 16 and said nut.

I claim as my invention:

1. In a spark plug in combination, a bushing adapted to be screwed into an engine frame, an insulating lining in said bushing, a rod slidable in said lining and having an electrode at one end said electrode having a flange with an edge thereon, said edge being adapted to engage the end of said bushing, and means tending to hold said rod in position where said electrode engages said bushing.

2. In a spark plug in combination, a bushing adapted to be screwed into an engine frame; an insulating sleeve within said bushing; a rod extending through said sleeve and slidable therein, said rod having a head at one end with a flange thereon, and an edge on said flange; said edge adapted to make electrical contact with the end of said bushing; a coiled spring adapted to normally hold said head in such contact; and means for insulating said spring from said bushing.

3. In an electric ignition device, in combination, a bushing adapted to be screwed into an engine frame; an insulated rod slidable in said bushing; an electrode on one end of said rod, said electrode having an edge thereon; and means for bringing the edge of said electrode in contact with said

bushing, with the remainder of said electrode out of contact with said bushing.

4. In an electric ignition device, a bushing adapted to be screwed into an engine
5 frame, an insulated rod slidable in said bushing, a sharp projecting edge on said rod, and means for bringing said edge in contact with said bushing, with the re-

mainder of said rod spaced away from said bushing.

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

EZRA F. HOPKINS.

Witnesses:

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