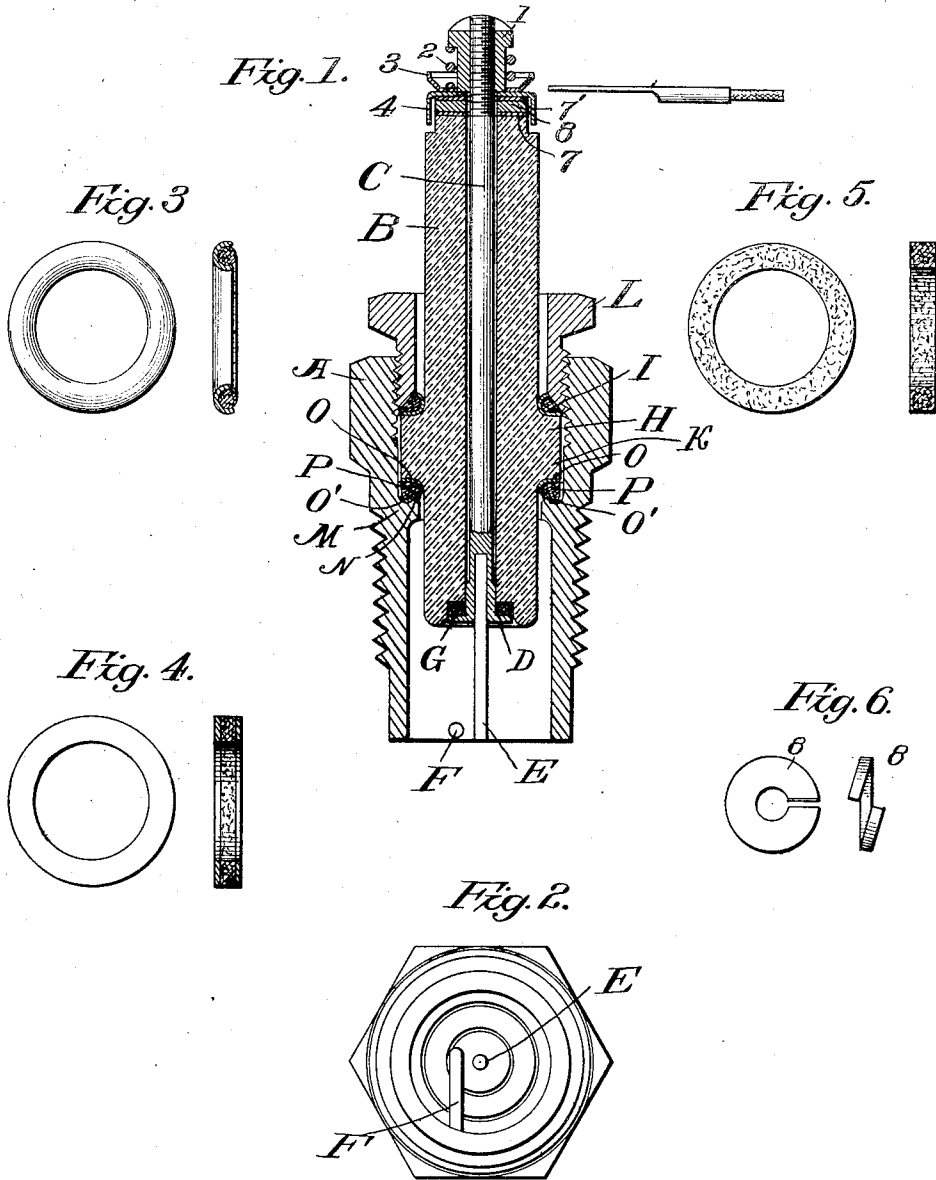


J. M. DAYTON.  
SPARK PLUG.  
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1,001,364.

Patented Aug. 22, 1911



Witnesses

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# UNITED STATES PATENT OFFICE.

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## SPARK-PLUG.

1,001,364.

Specification of Letters Patent.

Patented Aug. 22, 1911.

Application filed November 14, 1910. Serial No. 592,367.

*To all whom it may concern:*

Be it known that I, JAMES M. DAYTON, a citizen of the United States, residing at Torrington, in the county of Litchfield, State of Connecticut, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

My invention relates to an improvement in spark plugs, particularly of the type employed in what is termed the "jump" spark or high tension system of ignition in gas and oil engines.

The object of the invention is to provide a simple and effective means of securing the center or stem which carries one of the electrodes, to the insulating sleeve, tube or plug, whereby it may be firmly secured, and yet expansion and contraction provided for. Means are also provided for securely yet removably holding the terminal clip in engagement with the rod.

Another feature of improvement consists in the arrangement of the sparking points or electrodes, so that the spark jumps from the round side of the wire of one electrode to the round side of the wire of the other electrode.

The invention, therefore, consists in the matters hereinafter described and referred to in the appended claims.

The invention is illustrated in the accompanying drawings, in which,—

Figure 1 is a sectional view of a spark plug, constructed in accordance with my invention; Fig. 2 is a bottom plan view; Figs. 3, 4 and 5 are detail views of various forms of packing gaskets used by me; and Fig. 6 is a detail view of the split steel spring washer.

In these drawings, A represents the nipple or plug base or body portion of the spark plug, and B the insulating sleeve, tube or plug of porcelain, which forms an insulating support for the metal center rod or stem C passing through said sleeve or tube, and forming a part of the conductor of the sparking circuit.

At the inner end of the sleeve, the rod carries a head D in the hollow part of which is attached the stem of the center electrode E. The other electrode or spark-

ing terminal F is of wire, and is secured to the plug base or nipple A. In four cylinder engines using magneto ignition, the alternating current generated by the magneto, causes a spark to jump from the center electrode to the side electrode in two cylinders, and from the side electrode to the center electrode on the other two cylinders, thus sparking differently. The majority of plugs using wire electrodes have one electrode bent, so that the spark jumps from its point against the round wire of the other electrode. It has been found that with this arrangement the points wear unequally. With my construction, the wear is equal for all four cylinders, because the surfaces presented to each other by the electrodes are the same. In the inner end of the insulating plug B is a cavity, in which is placed a packing G of asbestos, and the flange on the head D is adapted to bear against this packing, forming a tight joint. Means are also provided for forming a tight joint between the nipple or base, and the insulating tube, as follows: The insulating tube or plug is formed with an enlargement H forming upper and lower shoulders I and K.

L represents the bushing or stuffing nut, which is screw-threaded into the base or nipple, and upon its lower end bears upon the copper gasket with asbestos filling, which rests upon the shoulder I and is shown in Fig. 3.

The insulating tube or plug B has screw-threaded engagement with the nipple or plug base, which latter has beneath the shoulder K a shoulder M, having a projection or corrugation N, and forming a round corner and a sharp edge.

In the space between the two shoulders are placed two copper washers with an asbestos washer between, as shown at O, O' and P. When the parts are screwed together, the base being as above stated, counterbored so as to have both a round corner and a sharp edge N, the porcelain plug is forced against the packing O, P, O'; and the copper washer O' takes the form of the counterbore, and the asbestos is expressed out beyond the edges of the copper washers, as shown.

On top of the porcelain is placed a brass washer 7, on which is a split steel spring

washer 8. Another brass washer 7' is placed on top of the spring washer 8 to reinforce the cap 4.

The cap 4 fits over the washers and extends down below the top of the porcelain, and serves the purpose of a cap, and also is the seat for the terminal clip. The cupped washer 3 is pressed against the cap 4 by the spring 2.

The nut 1 is threaded on to the center rod, and its lower end is tightened down on the cap 4, thereby compressing the split steel spring washer 8, thus holding the center rod tightly lengthwise in the porcelain plug, and compressing the asbestos packing in the lower end thereof.

Any elongation of the center rod, due to heating is taken up by this split spring steel washer, thus maintaining a tight joint at the lower end of the porcelain. After the nut 1 is tightened, the top of the center rod is headed over, thus making it impossible for the nut to work loose. The spring 2 is assembled under the head of nut 1, and presses against the cupped washer 3, holding the same under compression against the cap 4. The terminal clip is a forked piece of sheet metal, which is forced under the cupped portion 3, thus forming an electrical connection between the clip and center rod.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A sparking plug including an insulating tube, a center rod extending therethrough, a cap on the insulating tube, surrounding the center rod, a spring interposed between the cap and the insulating tube, a nut on the center rod, bearing at its lower end on the cap, and a spring surrounding the nut and seated at its upper end beneath the head on the nut.

2. A sparking plug including an insulating tube, a center rod extending there-  
through, a cap on the insulating tube  
surrounding the center rod, a spring in-

terposed between the cap and the insulating tube, a nut on the center rod, bearing at its lower end on the cap, a spring surrounding the nut and seated at its upper end beneath the head on the nut, and a cupped washer resting upon the cap, and in which the lower end of said spring is seated.

3. A sparking plug including an insulating tube, a center rod extending there-  
through, a cap on the insulating tube sur-  
rounding the center rod, a split steel spring  
washer interposed between the cap and the  
tube, a washer resting on the cap, a nut hav-  
ing a head and a shank bearing at its lower  
end on the cap, and embraced by the washer,  
and a spring between the head of the nut  
and said washer.

4. A sparking plug including an insulating tube, a center rod extending there-  
through, a cap on the insulating tube, sur-  
rounding the center rod, a spring interposed  
between the cap and the insulating tube, a  
nut on the center rod, bearing at its lower end  
on the cap, a spring surrounding the nut  
and seated at its upper end beneath the head  
on the nut, said center rod having a head on  
its lower end and a packing interposed be-  
tween said head and the insulating tube.

5. A sparking plug including an insulating tube, a center rod extending there-  
through, a washer on top of the tube, a split  
steel spring washer on said washer, a second  
washer on top of the split spring steel  
washer, a cap fitting over said washers and  
forming a seat for the terminal clip, the  
cupped washer on said cap, a nut having a  
head and a shank threaded on said center  
rod and bearing on the cap, and a spring  
surrounding the shank and interposed be-  
tween the cupped washer and the head.

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

JAMES M. DAYTON.

Witnesses:

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CHAS. M. HIBBARD.