L. E. TAIT.

SPARK INDICATOR.

APPLICATION FILED MAR. 14, 1911.

1,015,096. Patented Jan. 16, 1912.

Fig. 1.

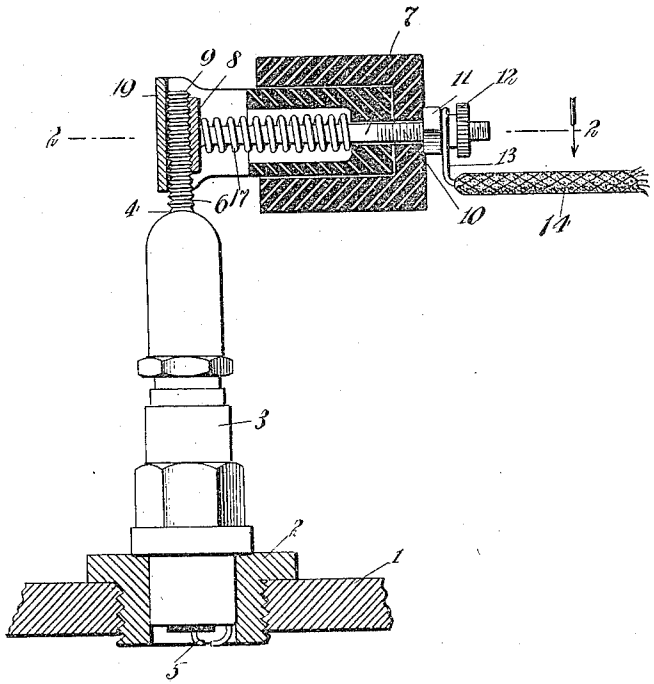
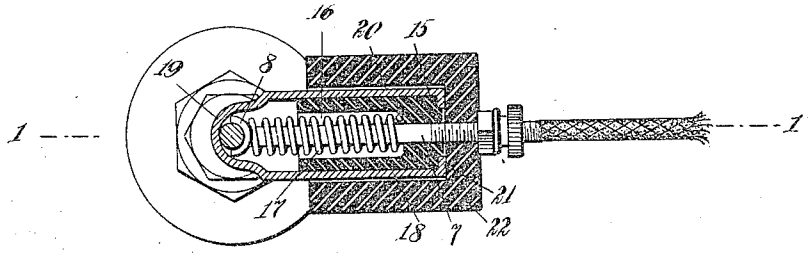


Fig. 2.



WITNESSES

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LAROY E. TAIT, OF RED CLOUD, NEBRASKA.

SPARK-INDICATOR.

1,015,096. Specification of Letters Patent. Patented Jan. 16, 1912.

Application filed March 14, 1911. Serial No. 614,818.

To all whom it may concern:

Be it known that I, LAROY E. TAIT, a citizen of the United States, and a resident of Red Cloud, in the county of Webster and State of Nebraska, have invented a new and Improved Spark-Indicator, of which the following is a full, clear, and exact description.

My invention relates to a device adapted to form part of an electric circuit, and more particularly relates to the means used in conjunction with a spark plug, whereby a spark gap may be formed in the secondary circuit of the induction coil in order to determine the presence of electricity in the circuit.

An object of my invention is to provide a comparatively simple and inexpensive device, which may be readily attached to and detached from the spark plug, and which will visibly indicate the strength and frequency of sparks emitted by the current within the engine, and the operative efficiency of the several parts forming the complete circuit, without necessitating their removal.

A further object is to enable the operator to readily determine the necessity of retiming the ignition without removing any part of the combustion chamber or its appendages.

A further object of my invention is to provide a wide bearing metallic contact between all parts of the electric circuit, and, at the same time, afford a ready and simple means for breaking the circuit.

With the above and other objects in view, as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures, and in which—

Figure 1 is a longitudinal sectional view of a preferred embodiment of my spark indicator attached to a spark plug shown in elevation; and Fig. 2 is a transverse sectional view taken in a plane indicated by the line 2—2 of Fig. 1, looking in the direction of the arrow.

In the figures, the reference character 1 indicates a portion of the casing of the combustion chamber, into which is threaded the customary form of bushing 2 and sleeve 3, partly inclosing the plug 4, which plug terminates within the combustion chamber in a spark point 5, the opposite end of which plug is screw-threaded as shown at 6. Over this screw-threaded portion may be placed my improved form of spark indicator, which comprises an electric terminal rod 7, one end of which terminates in a semi-cylindrical yoke 8 having screw threads 9 upon its inner surface which threads are adapted to engage the threads 6 on the plug 4. The end of the terminal 7 opposite the yoke is screw-threaded, as shown at 10, which threaded portion carries a nut 11 and a binding nut 12, between which is held a metallic end 13 of the lead 14 of the secondary circuit. Intermediate the nut 11 and the yoke 8, is an insulating sleeve 15 encircling the terminal 7 and having the end facing the yoke bored out to form a recess 16. Positioned within this recess 16 is a coil spring 17, one end of which bears upon the sleeve 15 and the other end of which bears upon the yoke 8, thereby tending to form a tension between these members for a purpose hereinafter described.

Inclosing two opposite sides of the sleeve 15 is a substantially rectangular-shaped frame 18, having a closed curved outer end 19. From the curved portion 19, the frame extends outward, with its two parallel sides 20 embracing the sleeve 15, and having two oppositely-disposed inturned ends 21 embracing the outer end of said sleeve. Positioned between the ends of the sleeve 15 and frame 18 and the nut 11 on the terminal, is a hollow cap 22, which extends forward some distance toward the plug and surrounds a part of the side of the frame 18. It will be seen that this cap 22 affords a means for grasping the terminal, and, at the same time, insulates the terminal from the hand and affords a carrying means for the frame and terminal.

It will be seen that in order to place the indicator on the spark plug, it is merely necessary to hook the end 19 of the frame over the end of the plug, and by pulling the cap 22 longitudinally away from the plug, an opening will be formed between the inner side of the end 19 and the yoke 8 into which the plug may be inserted. Then by releasing the hold on the cap 22, the spring 17 will force the yoke 8 into engagement with the

plug, thereby firmly holding the indicator in place.

Should it be desired to determine whether there is sufficient current in the secondary to generate a spark, the cap 22 is drawn in the direction away from the plug, which action will form a spark gap between the threads 6 on the plug 4 and the threads 10 on the yoke 8, thereby affording a ready, quick and accurate means for determining the condition of a current in the secondary. As this entire device is outside of the combustion chamber, said chamber is in no way interfered with during the testing of the sparking circuit, nor is it necessary in any way to interfere with, change or break the secondary circuit.

Many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof. It is intended that all matters contained herein in the above description, or shown in the accompanying drawings, shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is merely intended to cover all the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween, and that materials, sizes and relativities of parts are non-essential, except as called for in the claims.

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

1. In a spark indicator, comprising an electric terminal having a yoke end adapted to engage one side of a combustion engine spark plug, an insulating cap surrounding said terminal adjacent the yoke end, a frame positioned within said cap and inclosing and spaced apart from said yoke end, a sleeve insulating said terminal from said end, and a spring within said sleeve bearing on the same and on the yoke end forcing said yoke and frame together, to hold the spark plug between the same.

2. In a spark indicator, a hollow sleeve, a frame having a closed curved outer end, the inner end of which engages said sleeve, a terminal projecting through said sleeve and having a yoke coacting with the curved end of the frame to hold a spark plug therebetween, a spring in said sleeve maintaining said yoke and frame resiliently in contact with the plug, and means insulated from said frame, by means of which said yoke may be withdrawn from said plug, to form a spark space between said yoke and plug.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LAROY E. TAIT.

Witnesses:
W. S. ORTON,
J. P. DAVIS.