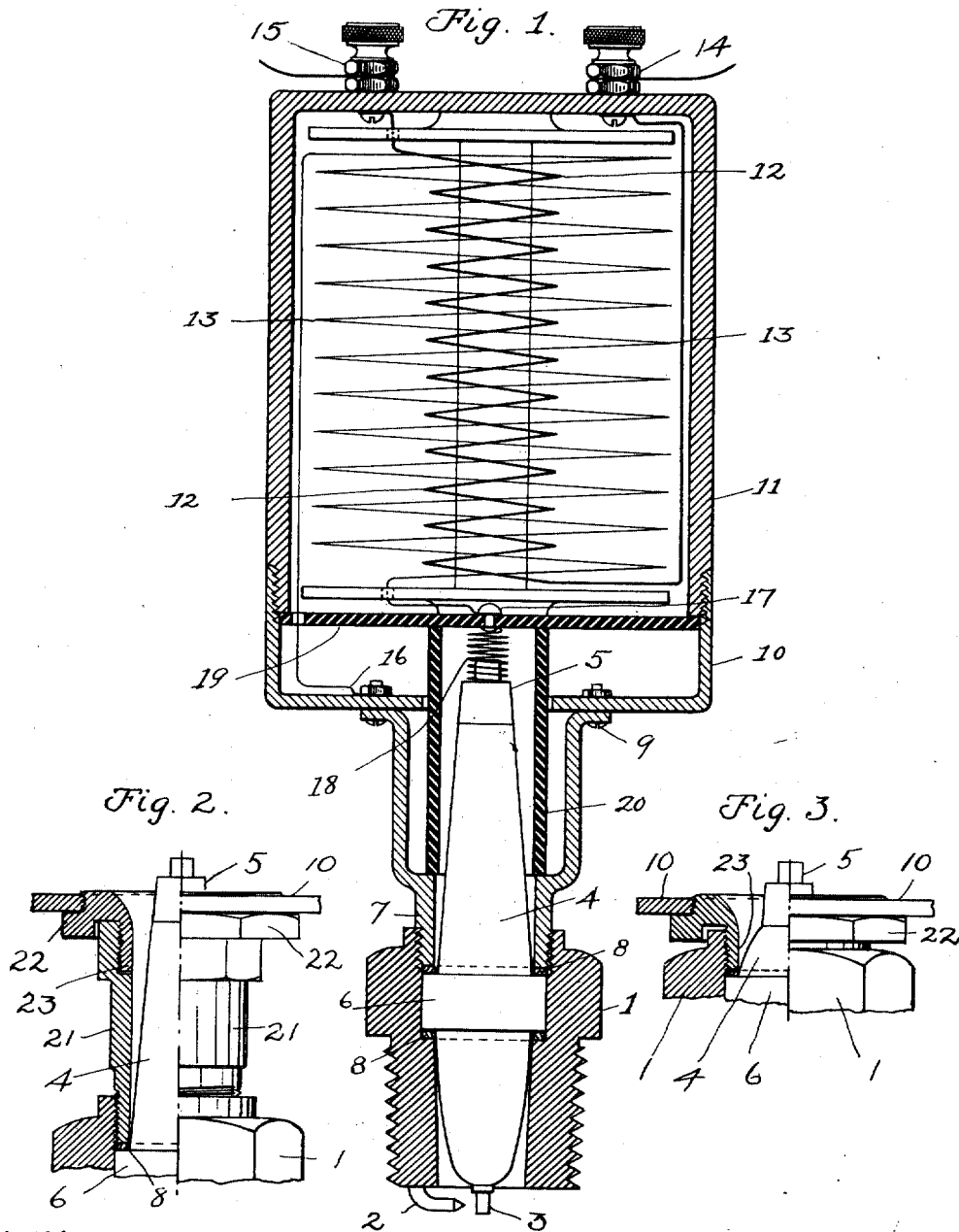


1,008,351.

Patented Nov. 14, 1911.



Witnesses:
Oscar F. Hill
Aaron F. Randall

Inventor
Benjamin F. Merritt,
by Nathan B. Day,
Attorney.

UNITED STATES PATENT OFFICE.

BENJAMIN F. MERRITT, OF CANTON, MASSACHUSETTS.

IGNITION-PLUG.

1,008,351.

Specification of Letters Patent.

Patented Nov. 14, 1911.

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To all whom it may concern:

Be it known that I, BENJAMIN F. MERRITT, a citizen of the United States, residing at Canton, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Ignition-Plugs, of which the following is a specification.

My invention has reference to electric ignition devices for use in connection with internal combustion engines, or the like, for the purpose of igniting a vaporized charge of combustible in the cylinders of the same, and more especially refers to those devices which comprise, essentially, a spark plug on which is supported in an operative relation, an induction coil by which the high tension current required to render said plug effective as an ignition device is induced.

More especially my invention relates to the means which are employed for the purpose of supporting the induction coil upon the ignition plug, and the object of the same is to provide a coil supporting means which includes, preferably as an integral portion of the same, a plug engaging portion designed to be substituted for the element commonly known under the term "bushing", by which the plug body and the central core of the plug are retained in their assembled relation. In consequence said coil support may be secured to the plug body by screwing said plug engaging portion into engagement with the threaded bushing seat provided for the bushing on the plug body, said plug engaging portion, in such position of engagement, also serving to secure the plug body and the central core in their assembled relation.

My invention is illustrated in the drawings which accompany this specification and form a part of this application.

In the said drawings Figure 1 shows one of the preferred forms of my invention principally in section and in part diagrammatically. Fig. 2 shows a modified form of the tubular supporting sleeve which may be advantageously employed in connection with my invention. Fig. 3 shows the top portion of such modified tubular supporting sleeve. In use alone for supporting coil support.

In all said figures, like numerals refer to like parts.

In said figures 1, is the plug body, preferably externally threaded and adapted to screw, in usual manner, into the wall of the

cylinder of the explosive engine of which it is designed to control the ignition. As shown in Fig. 1, one of the spark points, 2, is preferably grounded in the body of the plug as shown, or in any other approved manner. The other spark point 3, may be carried on one end of a central core 4 of porcelain, mica, or other suitable insulating material, and is in electrical connection with a conducting nut or cap 5, mounted at the other or outer, end of the said central core 4. The said core 4 preferably embodies an enlarged or shouldered portion 6 and is secured within the body of the plug by means of a threaded tubular bushing forming a part of the coil supporting sleeve 7, in a manner to be hereinafter more particularly set forth.

As indicated in the drawing, the coil support comprises a tubular supporting sleeve extending upwardly from the plug engaging bushing 7, and preferably flaring outwardly as shown. To such tubular supporting sleeve is secured, as by bolts 9, a coil frame 10 which is adapted to carry a casing 11, which may be screwed thereupon as shown, said casing being preferably waterproof and inclosing an induction coil. If desired, however, the coil frame and the tubular portion as well as the plug engaging bushing, may be all formed from a single piece.

From the above, it will be apparent that the coil support may be rigidly mounted on the plug body by screwing the bushing portion of the coil supporting sleeve 7 into the bushing seat formed in the plug body. When in such engaged position said bushing portion of the coil supporting sleeve will not only operate to support the said coil supporting sleeve 7 and the coil frame 10 upon the plug body, but it will also bear against the shouldered portion, 6, of the central core 4, and hold the same in assembled relation to the plug body. If desired gaskets, 8 may be provided to insure absence of leakage at the joints. It may be here also noted that where a spark plug is employed in which the bushing is interiorly threaded and is adapted to engage with an exterior thread formed on the plug body, the plug engaging portion of the tubular supporting sleeve hereinabove described may be modified in form, if necessary, so that the same may be interiorly threaded for the purpose of engaging the exterior thread on the plug body.

The induction coil comprises a primary

winding 12 and a secondary winding 13, the two terminals of the former being led to binding posts 14 and 15 preferably located on the exterior of said case 11. One terminal of the secondary winding is grounded on the coil frame at 16, the other secondary terminal being preferably led to a stud 17 which secures a spring 18 or other resilient conducting means to the center of an insulating disk 19 which is set in the coil frame and preferably adapted to cooperate in supporting the induction coil. An insulating bushing 20 preferably incloses the said spring 18 and also the upper part of the central core 4 as shown, so as to prevent electrical leakage between the coil frame or coil support and the spring 18 or cap 5 with which said spring 8 is adapted to contact.

The dimensions and relation of the parts hereinabove described are so proportioned that when the threaded bushing formed at the end of the tubular supporting sleeve is screwed up in the plug body so as to secure the central core 4 properly therein, the spring 18 is in electrical engagement with the cap 5 on the end of such core, 4, thereby putting the secondary terminal which leads to stud 17 in electrical connection with spark point 3, the other spark point 2 being in electrical connection with the other secondary terminal grounded on frame at 16 through the ground established by engagement of frame 12, coil support and bushing 7, and plug body 1.

In Figs. 2 and 3 are shown modifications in the supporting sleeve which at times may be advantageously adopted. As appears in said Fig. 2, said sleeve may comprise several interengaging portions, preferably two in number, the sleeve portion 21 and the coil support engaging portion 22. The latter preferably has a threaded engagement with the coil support 10, instead of being bolted thereto, as in Fig. 1. The sleeve portion 21

of said supporting sleeve embodies a tubular threaded portion adapted to engage the plug body in a manner like that of the coil supporting sleeve 7 shown in Fig. 1, operating to simultaneously support the said coil and to secure the core 4 in the plug body 1. The upper portion of said sleeve is also internally threaded as shown to receive the coil support engaging portion. Preferably the said coil support engaging portion 22 engages the said sleeve portion 21 of the coil supporting sleeve by means of a threaded extension 23 having the same dimensions, and threaded identically with the threaded or bushing end of the sleeve 21. Hence, when a short core, as indicated by Fig. 3, is employed, the threaded extension 23 of said coil supporting portion 22 may be screwed into direct engagement with the plug body, as shown in said Fig. 3, without the interposition of the sleeve portion 21.

The advantages resulting from my improved construction are due to the elimination of the specially formed coacting elements in part embodied in the plug body, and in the tubular coil supporting sleeve and engaging for the purpose of supporting the coil upon the plug, which have been heretofore present in similar devices.

Having described my invention, I claim,—

In an ignition device, in combination with an induction coil, a protecting shell incasing said coil and having a base secured thereto, and with a spark plug having a body provided with a bushing seat; a coil supporting sleeve having a threaded engagement with said base at one end and with said bushing seat at the other end.

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

BENJAMIN F. MERRITT.

Witnesses:

NATHAN B. DAY,
CHAS. F. RANDALL.