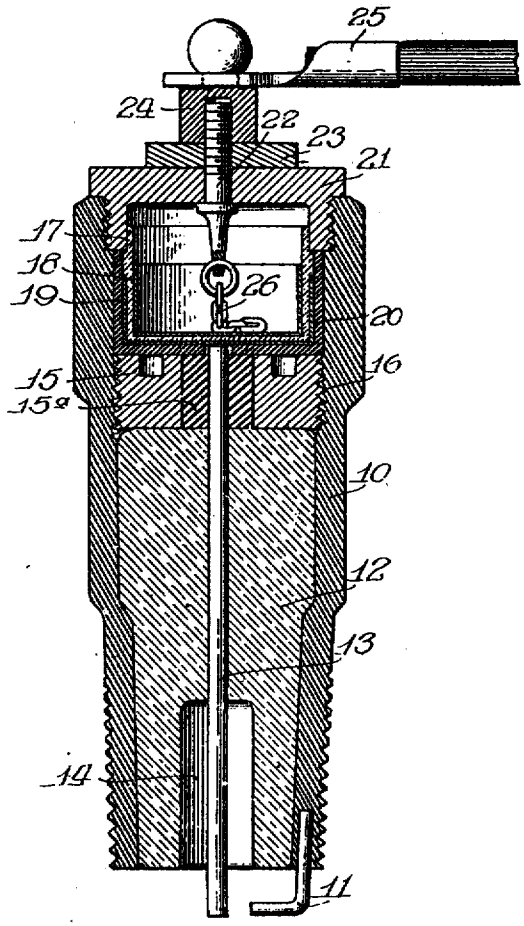
D. M. SWEENEY.

SPARK PLUG.

APPLICATION FILED MAY 25, 1918.

1,317,834. Patented Oct. 7, 1919.



Inventor.
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By: J. F. Jochum, Jr. Atty.

UNITED STATES PATENT OFFICE.

DANIEL M. SWEENEY, OF SOUTH BEND, INDIANA.

SPARK-PLUG.

1,317,834. Specification of Letters Patent. Patented Oct. 7, 1919.

Application filed May 25, 1918. Serial No. 236,467.

To all whom it may concern:

Be it known that I, DANIEL M. SWEENEY, a citizen of the United States, residing at South Bend, in the county of St. Joseph, in the State of Indiana, have invented certain new and useful Improvements in Spark-Plugs, of which the following is a specification.

This invention relates to improvements in spark plugs and sparking circuits, and has for one of its objects to increase the intensity of the spark by including in the circuit a form of condenser, and which condenser is preferably located within the spark plug structure.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear the invention consists in the features of novelty in substantially the construction, combination, and arrangement of the several parts, hereinafter more fully described and claimed, and shown in the accompanying drawing illustrating this invention, and in which:

The figure is a vertical longitudinal sectional view of the spark plug constructed in accordance with the principles of this invention.

Referring more particularly to the drawing, the numeral 10 designates the metallic casing connected with which is one of the terminals of the plug—11. Arranged within the casing, located preferably in the lower portion thereof is an insulating element 12 having secured therein and extending therethrough the other terminal 13 which terminates adjacent to but is spaced from the terminal 11 to form a spark gap. The insulating element 12 is preferably hollow as at 14 adjacent the end of the terminal 13 so as to form an air gap, and the insulating element 12 is secured in position in the casing in any desired or suitable manner such as by means of a fastening nut 15 arranged in the upper portion of the casing and which nut has engagement with internal threads 16. The insulating material 12 and the nut 15 are spaced from the top of the casing 10 and which portion of the casing above the nut forms a chamber in which is arranged a condenser of any suitable construction, but preferably constructed in the form of a Leyden-jar which comprises a container 17 constructed of insulating material such as glass or the like and is provided with an electric conducting coating 18, such as tin foil or the like on the inside thereof and which coating terminates short of the top of the container. A similar electric conducting coating 19 is arranged on the outside of the container and also terminates short of the top of the container so as to be out of electrical connection with the coating 18. The container is placed within the top of the plug and is insulated from the walls thereof by means of suitable insulating material 20 and which insulating material also extends between the bottom of the container and the nut 15. The terminal 13 extends through the insulating material 20 and has contact with the conducting coating 19 on the outside of the container 17.

The cap of the insulating material 21 is removably secured to the casing so as to close the upper portion thereof, and a terminal 22 extends through this cap into the plug. The terminal 22 is supported in any suitable manner such as by means of a nut 23 engaging the thread extremity thereof and a binding post 24 is also threaded upon the terminal 22. Connected with the post 24 is a conductor 25 which leads to the source. A flexible element 26 is connected with the threaded extremity of the terminal 22 and is arranged within the plug, with the end of the terminal 22 projecting into the container and terminating short of the top thereof while the flexible extremity 26 has contact with the inner coating 18.

With this improved construction it will be seen that a very efficient plug is produced, the efficiency thereof being materially increased and the spark being intensified by the condenser which is arranged within the plug and which, in the present form of the invention has been illustrated as being of the Leyden-jar construction.

It will also be manifest that the parts of the plug may be readily removed or separated when desired.

Obviously, the terminal 13 is insulated from the nut 15 to prevent short circuit, and to that end there may be provided an insulating plug 15^{A} arranged in the nut 15 and through which insulating plug the end of the terminal passes.

What is claimed as new is:—

1. A spark plug embodying a condenser therein, the two opposite plates of the condenser being respectively in electrical connection with the opposite poles of the plug.

one of the said connections embodying a metallic terminal provided with a flexible section contacting and resting against one of the plates of the condenser.

2. In a spark plug, an inclosing conducting casing, a terminal electrically connected with the casing, a conductor within and insulated from the casing, the extremity of said conductor terminating adjacent the said terminal and constituting therewith a spark gap, a non-conducting container within the casing, said container having electric conducting coating on the outside thereof and with which coating the first said conductor has electrical connection, said container also having an electric conducting coating in the inside thereof out of electric communication with the coating on the outside thereof, and a conductor extending into the container and having a flexible extremity resting freely against and having electrical connection with the said coating on the interior of the container.

3. In a spark plug, an inclosing conducting casing, a terminal electrically connected with the casing, a conductor within and insulated from the casing, the extremity of said conductor terminating adjacent the said terminal and constituting therewith a spark gap, a non-conducting container within the casing, said container having an electric conducting coating on its inside and on its outside, said coatings being out of electric connection, the said conductor having electric connection with the outside coating, a conductor extending into the casing and having a source of supply of electric current, the end of the last recited conductor extending into the container out of contact with the walls thereof, and a flexible conducting section connected with the last recited conductor and contacting with the inside coating.

4. In a spark plug a Leyden-jar structure forming part and parcel of the plug and of the sparking circuit, the circuit embodying a conductor having a flexible section contacting and resting upon the inner coating of the said jar structure.

In testimony whereof I have signed my name to this specification, on this 16th day of May, A. D. 1918.

DANIEL M. SWEENEY.