Dec. 15, 1931. H. J. STRAHAN 1,836,293

TERMINAL CONNECTING AND TESTING ELEMENT FOR SPARK PLUGS

Filed Aug. 28, 1929

Fig. 1.

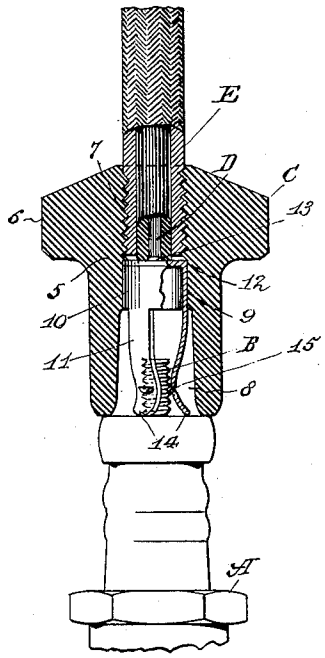


Fig. 2.

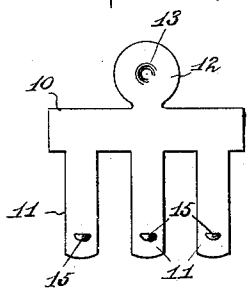
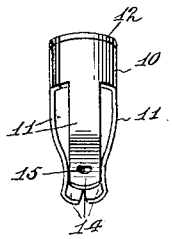


Fig. 3.



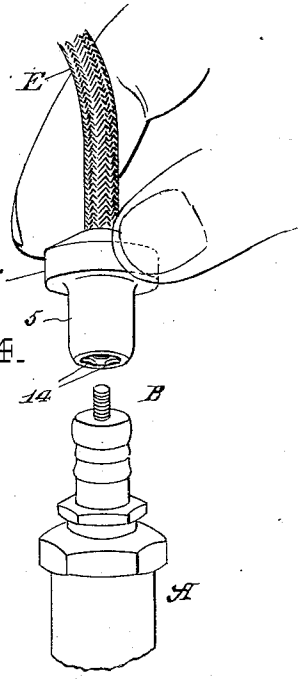


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE

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TERMINAL CONNECTING AND TESTING ELEMENT FOR SPARK PLUGS

Application filed August 28, 1929. Serial No. 389,039.

This invention relates to a terminal element for connecting insulated conductor wires to spark plugs whereby the same may be removed and separated from the plug to afford a spark gap for testing purposes, and the present terminal element is in the nature of an improvement over my prior United States Letters Patent No. 1,650,546, granted November 22, 1927.

The terminal element set forth in the prior patent above referred to has been found deficient and open to certain objections, notably, the time, labor and expense involved in establishing a lasting and effectual connection between the conductor wire and the terminal element.

The present invention, therefore, comprehends a terminal connecting and testing element for spark plug conductor wires which is so fashioned as to readily permit of its application to or removal from an insulated conductor wire without resorting to soldering, riveting or the use of tools.

The invention furthermore embodies a terminal element of the character set forth which is provided with a spark plug binding post gripping means which is capable of use in connection with any standard spark plug now on the market and which affords an effectual and positive means for establishing an electrical connection between the wire, terminal element and spark plug binding post.

Other features of the invention reside in the simplicity of construction of the terminal element, the economy with which it may be produced and the general efficiency derived therefrom.

With the above recited and other objects in view, reference is had to the following description and accompanying drawings, in which there is exhibited one example or embodiment of the invention, while the claims define the actual scope of the same.

In the drawings:

Figure 1 is a longitudinal sectional view through the terminal element in applied position to a spark plug.

Figure 2 is a blank view of the binding post gripping member.

Figure 3 is a perspective view of said member after the same has been formed.

Figure 4 is a perspective view illustrating the manner in which the device is used for testing purposes.

Referring to the drawings by characters of reference, A designates a spark plug which is provided with the projecting stem or binding post B which leads to the central electrode of the plug. The terminal element designated generally by the reference character C which constitutes the subject matter of the present invention includes a body 5 of any suitable insulating material, and said body is preferably formed at one end with an enlarged head 6 of a sufficient size to readily permit of the grasping and manipulation of the same. The body is provided with a longitudinal or axial bore extending completely therethrough, which bore is threaded at 7 at the headed end of the body. The opposite end 8 of the bore is of gradually increasing diameters or flared outwardly from its juncture with the intermediate straight portion 9 of the bore. The gripping member is located within the body 5, and said gripping member is preferably constructed from a single blank or sheet of resilient material which is a conductor of electrical current. The gripping member includes a substantially rectangular strip portion 10 having projecting from one of its longitudinal edges, equi-distantly spaced fingers 11, and from the medial portion of its opposite longitudinal edge, a circular head 12, the circumference of which approximately equals the length of said longitudinal edge. The blank thus formed is bent upon itself so that the strip portion 10 finally assumes a circle or

band shape, as illustrated in Figures 1 and 3. The head 12 is bent downwardly against the band portion to provide an upper wall, and said upper wall or head is provided with an outwardly pressed substantially semi-spherical teat 13. The depending fingers 11, which are now circumferentially disposed and which project from the substantially inverted cup shaped upper end of the gripping member, are directed or curved inwardly toward each other with the terminals 14 flared outwardly. The inwardly curved or deflected portions of the fingers 11 are punched inwardly to form the sharp projections 15 and are normally disposed relative to each other and spaced a distance apart which is slightly less than the smallest binding post of a standard spark plug. The inherent resiliency of the material from which the gripping member is formed and the projections 15 will cause the fingers to set up an embracing and gripping action on the spark plug binding post B when the gripping member is slipped thereover, as illustrated in Fig. 1 of the drawings. The band portion 10 of the gripping member, together with its head 12, is designed to be disposed within the straight portion 9 of the bore of the body 5, as shown in Figure 1, with the fingers 11 lying within the flared end 8 of the bore. The band portion 10 may be frictionally held in place or otherwise secured against accidental displacement and the head or upper wall 12 lies at a point at the juncture of the threaded portion 7 of the bore with the straight portion 9. The conductor wire D including its insulation E is designed to be screwed into the threaded bore 7 and the threads of said bore will form threads on the insulation E which will effectually retain the conductor wire coupled to the terminal element C with the wire proper D impinged against the teat 13 so as to establish an electrical connection with the conducting material of the gripping member. The flared end of the bore 8 will permit the fingers 11 to spread or engage over the binding post B, and it is obvious that the element C may be readily removed by exerting an outward pull thereon. When disconnected, the element C may be slightly spaced from the binding post B, as illustrated in Figure 4, to afford a spark gap for testing the operativeness of the plug.

Under this construction and arrangement, it is obvious that the terminal element C may be readily connected with or disconnected from the spark plug binding post B without resorting to the use of tools while the conductor wire may be assembled with the terminal element or disassembled therefrom without resorting to soldering, riveting or other expensive modes of connection.

What is claimed is:

1. In a terminal element for connecting an insulated conductor wire with a spark plug binding post, a body of insulating material having an axial bore extending therethrough, a spark plug binding post gripping element arranged in said bore and having a head intersecting the bore intermediate its ends, said bore being threaded at one end to receive and cut a thread into the insulated conductor wire screwed thereinto for connecting the wire with the body and for impinging the wire against the head of the gripping member to establish an electrical connection therewith.

2. A terminal element of the character set forth including a body of insulating material having an axial bore threaded at one end to receive and form a thread on an insulated conductor wire for connecting the same with the terminal element, said bore having an outwardly flared opposite end and an intermediate straight portion, a cup shaped conductor element arranged in the intermediate bore portion having circumferentially spaced resilient fingers protruding therefrom and disposed within the outwardly flared end of the bore for frictionally gripping and retaining the element electrically connected with a spark plug binding post.

3. In a terminal element of the character set forth, a body of insulating material having an axial bore, a gripping member including a substantially cup shaped head secured intermediately of the bore and provided with resilient circumferentially spaced gripping fingers arranged within one end of the bore for embracing and retaining said element in electrically connected relation to a spark plug binding post, the opposite end of the bore being threaded to receive and form a thread on an insulated conductor wire for connecting the same with the terminal element and for impinging the conductor wire against the cup shaped head of the gripping member.

4. In a terminal element including a body of insulating material having an axial bore, threaded at one end to receive and form a thread on an insulated conductor wire for connecting the same with the terminal element, said bore having an outwardly flared opposite end and an intermediate straight portion, a gripping member cut, bent and formed from a single sheet of material to provide a cup shaped head arranged and secured within the intermediate straight portion of the bore, in contact with which the conductor wire is impinged at its threaded engagement in the threaded end of the bore and resilient fingers extending into the flared end of the bore for gripping and retaining the element electrically connected with a spark plug binding post.

5. As a new article of manufacture, a terminal element for detachably connecting an insulated conductor wire with a spark plug binding post, said element including a body of insulating material having an axial bore,

a spark plug binding post gripping element arranged within the bore and having a portion intersecting the bore between its ends, said bore having a threaded opposite end within which an insulated conductor wire is screwed for impinging said wire against the gripping element, and for forming a thread on the insulated wire to retain the wire in associated relation with the terminal element against accidental displacement.

Signed at the city of New York, in the county of New York and State of New York, this 13th day of August, 1929.

HARRY J. STRAHAN.