

G. W. MANVILLE.
 SPARK PLUG CONNECTOR AND SWITCH.
 APPLICATION FILED APR. 5, 1910.

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Patented Feb. 7, 1911.

Fig. 1.

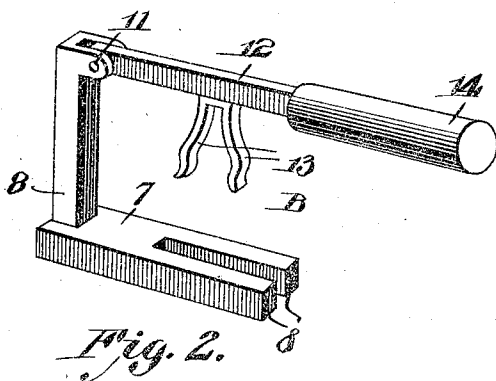
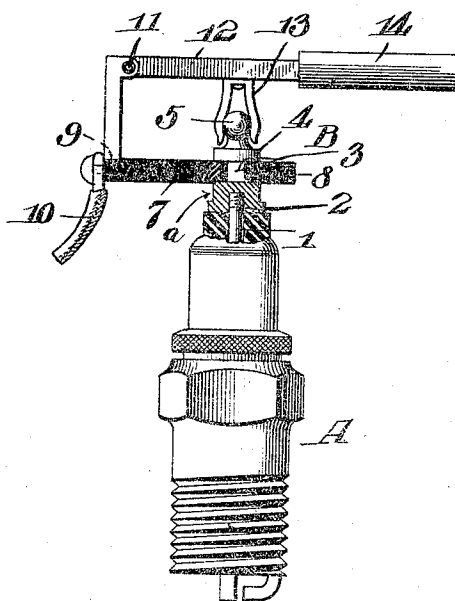
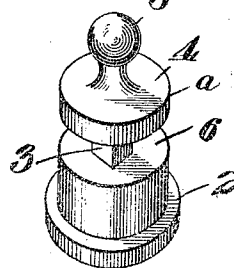


Fig. 3.



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GEORGE W. MANVILLE, OF TOWANDA, PENNSYLVANIA.

SPARK-PLUG CONNECTOR AND SWITCH.

Specification of Letters Patent.

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Application filed April 5, 1910. Serial No. 553,584.

To all whom it may concern:

Be it known that I, GEORGE W. MANVILLE, a citizen of the United States, residing at Towanda, in the county of Bradford and State of Pennsylvania, have invented new and useful Improvements in Spark-Plug Connectors and Switches, of which the following is a specification.

This invention relates to devices for attaching circuit wires to the terminals of spark plugs, either of the jump spark or the make-and-break type.

The invention has for one of its objects to improve and simplify the construction of devices of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use, and so designed as to be quickly attached or detached without danger of injuring the spark plug or altering the positions of the electrodes.

Another object of the invention is the provision of a connector that embodies a switch, whereby the spark plug can be tested from time to time to see whether it is operating, or the strength of the current may be determined by the spark produced by holding the switch partially open.

Another object of the invention is the provision of combined connector and testing device which includes a metallic tip adapted to be applied to the ungrounded electrode of the spark plug, and to also form means for attaching the device to the spark plug so that the contact of the device can engage the tip for completing the circuit and while the contact is thus engaged, the device will be locked in position.

With these objects in view, and others as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention;— Figure 1 is a side view of the combined connector and testing device applied to a spark plug. Fig. 2 is a perspective view of the device. Fig. 3 is a perspective view of the combined electrode tip and attaching means for the device.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, A designates a spark plug which, in the present instance, is of the jump spark type but it is to be understood that a make-and-break plug may be used in connection with the invention. The ungrounded electrode 1 of the spark plug is provided with a metallic tip *a*, which serves as means for attaching the combined connector and testing device B to the spark plug. This tip has a threaded base 2 into which engages the upper end of the fixed electrode, and above the base is a non-circular stem 3 that is surmounted by an enlarged portion 4 terminating in a ball 5. The base 2 and enlargement 4 provides spaced shoulders 6 between which fits the insulating supporting arm 7 of the device B, the said arm having one end bifurcated to form members 8 which straddle the stem. On the outer end of the arm 7 is a metallic standard 8 that is provided with a screw 9, by which the circuit wire 10 is connected and on the upper end of the standard is pivoted at 11 a lever 12 which is also of metal, and on this lever are spring contacts 13 spaced apart to engage opposite sides of the portion 5 of the tip *a*. The outer end of the lever is provided with a handle 14 of insulating material for permitting the lever to be readily manipulated without receiving a shock.

When the device B is applied, the spring contacts 13 engage the tip *a* so that the device will be locked on the spark plug. When it is desired to remove the device B, it is merely necessary to first raise the lever 12 to disengage the contacts 13 from the tip and then by a lateral or horizontal movement, the arm 7 can be slipped over the tip *a*. To apply the device B, the arm is first engaged with the tip *a* and then the lever depressed to engage the spring contacts 13 with the tip. Whenever it is desired to test the spark plug to see whether it is operating effectively, the lever 12 can be raised slightly to separate the spring contacts from the ball 5 and in doing this, a slight gap will be created across which a spark will jump if the electrodes of the spark plug are clean. Also by the intensity of the spark between the contacts 13 and ball 5, it can be determined.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily

apparent to those skilled in the art to which the invention relates, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as are within the scope of the claims.

What I claim as new and desire to secure by Letters Patent is:—

1. The combination of a spark plug including an electrode, and a nut on the outer end of the electrode, with the combined connector and switch comprising an insulating supporting arm fastened to the nut, and a contact movably mounted on the arm and shaped to grip the nut to connect the spark plug in circuit and to test the condition of the plug or circuit.

2. The combination of a spark plug including an electrode, a metallic tip on the outer end of the electrode having spaced shoulders, a supporting arm of insulation slidably engaged between the shoulders, a swinging metallic lever mounted on the arm, means for connecting the lever with a conductor, and a contact on the lever arranged to engage the tip to connect the electrode in circuit and to lock the arm on the tip.

3. The combination of a spark plug in-

cluding an electrode, and a tip on the outer end of the electrode, said tip including a base, a stem connected with the base and of non-circular cross-section, an enlargement connected with the stem and including a ball, with a combined connector and switch detachably mounted on the spark plug, the same comprising an insulating base member fitting between the base and enlargement of the tip and engaged with the stem thereof, a metallic contact element supported on the said member and arranged to engage the ball of the tip for preventing detachment of the member from the tip and for connecting the electrode in circuit, and a conductor connected with the element.

4. A device of the class described, comprising a tip adapted to be secured to a spark plug electrode, an insulating supporting arm detachably engaging with the tip, a lever mounted on the arm and forming a conductor, spaced spring contacts carried by the lever and movable into and out of engagement with the tip, and means for connecting the lever in circuit with a source of current.

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

GEORGE W. MANVILLE.

Witnesses:

E. J. BARNES,
N. McCoy.