

C. E. SEMPLE, JR.
 SPARK PLUG CONNECTOR AND SWITCH.
 APPLICATION FILED APR. 27, 1911.

1,065,327.

Patented June 17, 1913.

Fig. 3.

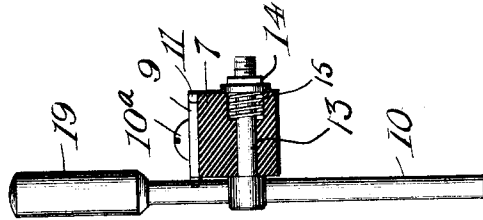


Fig. 2.

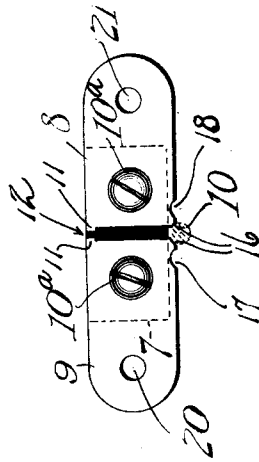
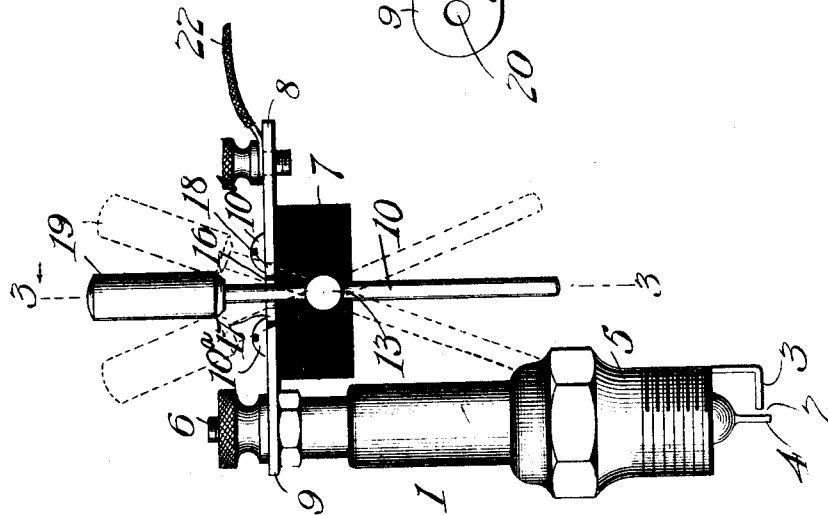


Fig. 1.



Witnesses
T. L. Mockmore
Regina A. Johnston

334

Inventor
Charles E. Semple Jr.
W. C. Carman
 Attorney

UNITED STATES PATENT OFFICE.

CHARLES E. SEMPLE, JR., OF YOUNGSTOWN, OHIO.

SPARK-PLUG CONNECTOR AND SWITCH.

1,065,327.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed April 27, 1911. Serial No. 623,699.

To all whom it may concern:

Be it known that I, CHARLES E. SEMPLE, JR., a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Spark-Plug Connectors and Switches, of which the following is a specification.

This invention relates to the general subject of ignition systems for internal combustion engines, and more particularly to that class of spark plug attachments designed to provide means for locating trouble in the ignition circuit.

To this end the invention contemplates a simple and practical spark plug attachment interposed in the supply circuit connection between the source of electrical supply and the central electrode of the spark plug, said attachment constituting what may be termed a combined spark plug connector and spark plug switch, performing the dual functions of a direct metallic connection between the wiring and the binding post terminal of the spark plug, and as a switch embodying means for short circuiting the current directly from the supply wire connection to the metallic base of the spark plug, whereby the source of ignition trouble may be readily located.

A further object of the invention is to provide a spark plug attachment of the character indicated, that is adaptable to any of the conventional types of spark plugs, and which simply as a metallic spark plug connector is designed to provide an auxiliary spark gap that insures the more accurate and perfect working of the ignition gap of the spark plug.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel combination, construction, and arrangement of parts hereinafter more fully described, illustrated and claimed.

The essential features of the improvements claimed herein are necessarily susceptible to structural modification without departing from the spirit or scope of the invention, but a preferred and practical embodiment is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of an ordinary spark plug having fitted thereto the

improved attachment, the view showing the switch lever moved to each of its several positions. Fig. 2 is a detail top plan view of the attachment showing the switch lever in dotted lines to better expose the several contact seats therefor. Fig. 3 is a sectional view of the attachment on the line 3—3 of Fig. 1, the view omitting the spark plug.

Like references designate corresponding parts in the several figures of the drawings.

As indicated above, the attachment as an entirety is adapted to be applied to any of the conventional types of spark plugs, and in the same way as battery wire connections are usually made. Hence, for illustrative purposes there is shown in Fig. 1 of the drawings a spark plug designated in its entirety by the reference numeral 1 and of any suitable construction, though preferably of the type embodying a spark gap between the spaced sparking points 3 and 4 which are respectively carried by the metallic base part 5 of the plug, and by the central electrode 6, the latter extending through the plug body in the well known manner and formed or provided at its upper end with the binding post terminal. It is upon this binding post terminal of the spark plug that the device of the present invention is mounted, as plainly shown in Fig. 1 of the drawings, so that the said device is interposed in the supply circuit connection between the source of electrical supply and the central electrode of the spark plug.

The improved spark plug attachment, claimed herein comprises an insulating base block 7, a pair of spaced conductor plates 8 and 9, and a pivotally mounted switch lever 10. The base block 7 is made of any suitable insulating material and is of a size to provide a substantial support for the pair of metallic plates 8 and 9 which are arranged in axial alinement upon one side of the block and which may be conveniently secured thereto by means of holding screw 10^a.

The two conductor plates 8 and 9 are arranged so that their inner contiguous ends are disposed in spaced apart relation to provide a gap across which the current will not jump, while at what may be termed opposite corners, the said plates 8 and 9 are formed with small projections 11 constituting sparking points between which lies a

small space or gap that forms an auxiliary spark gap 12 for the electrical circuit.

The switch lever 10 is pivotally supported intermediate its ends by a pivot pin 13 journaled or otherwise suitably mounted in the base block 7 and held thereto by retaining means 14 which include a retracting spring 15 which serves to yieldingly hold the switch lever in engagement with any of the several contact seats 16, 17 and 18 which are provided in one edge of the conductor plates. The seat 16 may be termed an intermediate double contact seat that is formed by beveling or cutting opposite corners of the two plates 8 and 9, while the seat 17 is a notch formed in plate 9, and the seat 18 is a notch formed in plate 8. The upper end of the switch lever 10 is provided with a handle 19 for conveniently swinging the same from one position to the other, and the lower end of the switch lever is adapted to be moved into and out of contact with the base part 5 of the plug.

The plate 9 is provided at one end with a binding post hole 20 to fit over the binding post terminal of the spark plug, and the other plate 8 is provided with suitable means such as a binding nut or screw 21 for the attachment thereto of the supply wire 22 of the electrical circuit.

When the switch lever 10 is centered as shown in Fig. 1 of the drawings, the same engages the double seat 16, thus metallicity connecting the two plates 8 and 9 and establishing a complete and direct metallic circuit through said plates from the source of electrical supply to the spark plug, which is the normal working circuit. When the switch lever 10 is thrown into the seat 17 of the plate 9, the circuit is completed by the current jumping the auxiliary spark gap 12, and if it is a mere matter of the sparking points 3 and 4 of the spark plug being somewhat corroded, dirty, or greasy, this auxiliary spring plug gap 12 will keep the sparking circuit working through the plug, when ordinarily it would otherwise fail to work. The third position for the switch lever is the one where it is thrown into the seat 18 of the plate 8 and in this position the lower end of the lever makes direct contact with the metallic base part 5 of the spark plug, thus short circuiting the current from the plate 8 through the engine, and cutting this particular plug out of circuit, which is one of the usual ways of testing each spark plug in

turn on an engine to ascertain which cylinder is not working.

From the foregoing it is thought that the construction and operation of the herein described attachment will be readily apparent without further description, and it will be understood that changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

I claim:

1. A spark plug attachment comprising a pair of spaced insulated conductor plates, 70 and a switch element arranged to metallicity connect the two plates, and also adapted to metallicity connect one of said plates with the spark plug base.

2. A spark plug attachment comprising a pair of spaced insulated conductor plates having an auxiliary spark gap between them, and a switch element arranged to metallicity connect the two plates, and also arranged to singly engage either of the plates 80 to respectively permit the operation of the auxiliary spark gap and to metallicity connect one of the conductor plates with the base of the spark plug.

3. In an attachment for spark plugs, the combination with the spark plug and the central electrode thereof, of a device having conductor plates and a switch element arranged to metallicity connect the plates, and also arranged to short circuit the current directly from the supply wire connection to the base part of the plug.

4. A spark plug attachment comprising an insulating base block, a pair of conductor plates mounted on the base block in spaced relation and having an auxiliary spark gap between them, said plates being also provided at one side with contact seats, and a swinging switch lever having a yielding pivotal support and arranged to separately engage said several seats to provide for metallicity connecting the two plates, for engaging one of the plates to permit the operation of the auxiliary spark gap, and to engage the other plate to metallicity connect the latter with the base of the plug.

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

CHARLES E. SEMPLE, Jr.

Witnesses:

EUGENE LIEBMAN,

AGNES A. JOHNSTON.