Dec. 20, 1960 T. A. ZALESAK 2,965,779

SPARK INTENSIFIER FOR SPARK PLUGS

Filed Aug. 5, 1959

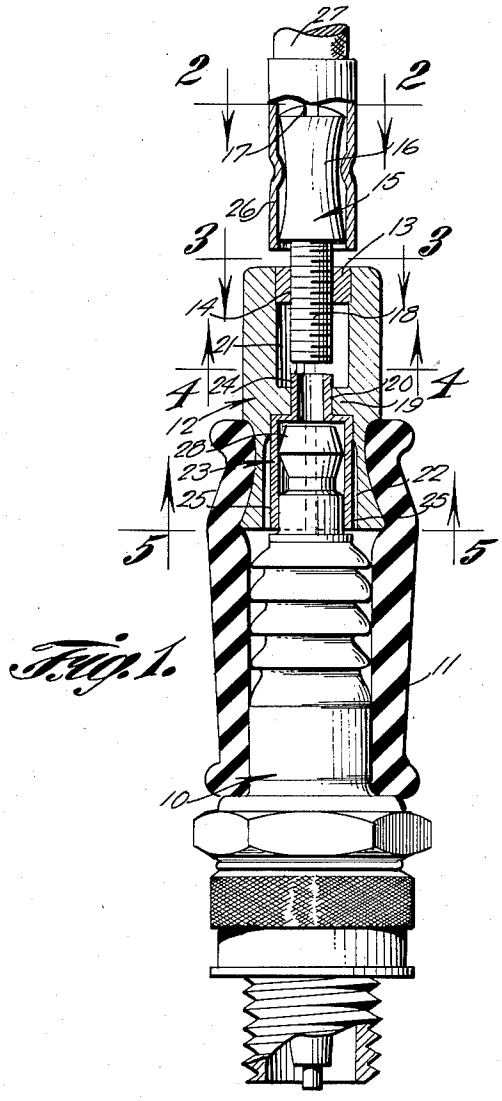


Fig. 1.

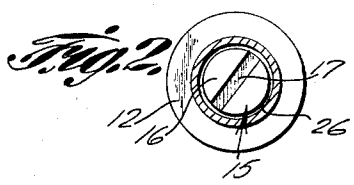


Fig. 2.

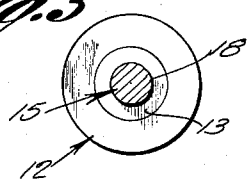


Fig. 3

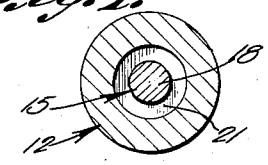


Fig. 4.

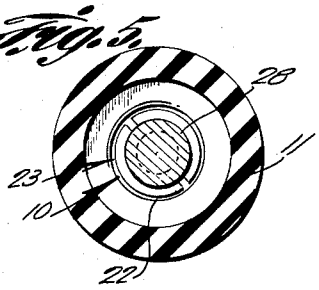


Fig. 5.

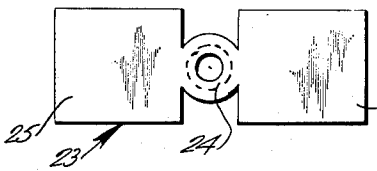


Fig. 6.

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SPARK INTENSIFIER FOR SPARK PLUGS

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3 Claims. (Cl. 313—51)

This invention relates to a spark plug adapter for an internal combustion engine, and more particularly to an adapter for use with the spark plugs.

The object of the invention is to provide an adapter for use with a spark plug wherein intensity, size, force of the spark will be effectively increased.

Another object of the invention is to provide an adapter which will provide a means for regulating or controlling the spark before it enters the plug so that the spark will fire through oil or carbon deposits and the present invention will eliminate the necessity of making spark plug adjustments.

A further object of the invention is to provide a spark plug adapter which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawing, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a longitudinal sectional view with parts broken away and in section, of the present invention.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 1.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Figure 5 is a sectional view taken on line 5—5 of Figure 1.

Figure 6 is a view illustrating the clip before it is formed.

Referring in detail to the drawing, the numeral 10 indicates a conventional spark plug, and according to the present invention a nipple 11 is mounted on the upper portion of the spark plug 10, Figure 1. The numeral 12 indicates a body member which has its lower portion arranged in engagement with the upper end of the nipple 11, and mounted in the upper end of the body member 12 is an internally threaded bushing 13. The bushing 13 is internally threaded as indicated by the numeral 14. The numeral 15 indicates an electrode which includes an enlarged head 16 on its upper end, and the head 16 is provided with a kerf or slot 17 therein whereby the electrode 15 can be rotated by means of a tool such as a screwdriver. A threaded shank 18 depends from the head 16, and the shank 18 is arranged in threaded engagement with the threaded portion 14 of the bushing 13.

The body member 12 is provided with an intermediate inner shoulder 19 which has a central opening 20 therein, and arranged above and below the shoulder 19 in the body member 12 are upper and lower chambers 21 and 22 for a purpose to be later described.

There is further provided a clip which is indicated generally by the numeral 23, and the clip 23 includes an upper stem 24 which extends through the opening 20 in the shoulder 19, and as shown in Figure 1 for example,

there is a gap or space between the upper end of the stem 24 and the lower end of the shank 18. The clip 23 further includes a lower portion 25 which is seated in the lower chamber 22. In Figure 6 the clip 23 is shown before it is bent or formed to provide a finished member which is shown in Figure 1.

The numeral 26 indicates a member or clamp which is arranged in engagement with the head 16 on the electrode 15, and a conductor 27 is connected to the member 26.

The portion 25 of the clip 23 engages the member 28 on the upper end of the spark plug 10.

From the foregoing, it is apparent that there has been provided a spark plug adapter which is especially suitable for use in regulating or controlling the intensity or force of the spark from the plug such as the plug 10. In use with the parts arranged as shown in Figure 1, it will be seen that there is a gap provided between the shank 18 and the stem 24 for the spark to jump across, and this distance or gap size can be regulated by inserting a tool such as a screwdriver in the slot 17, after the member 26 has been removed from the head 15. Then, the electrode 15 can be adjusted so that the gap or distance between the members 18 and 24 is at the desired position and then the member 26 can be repositioned on the head 15 so that it will be seen that the adapter of the present invention is adjustable since the electrode 15 can be adjusted or regulated in order to adjust the effectiveness of the spark. This provides a highly advantageous arrangement since the intensity or force of the spark can be readily controlled or regulated as desired. The nipple 11 helps prevent moisture, foreign matter or the like from entering the interior of the device and the clip 23 in addition to providing the stem 24 also provides an anchoring means between the body member 12 and the upper end 28 of the spark plug.

The present invention has a minimum number of working parts and will not readily get out of order even though subjected to rough useage. The head 16 receives the spark plug clip 26 and lock nuts are not necessary or required. The shank 18 is flat on the bottom as for example as shown in Figure 1. The member 23 has a dual purpose, namely it functions as a secondary electrode and it also secures the spark plug clip in place. The parts will not accidentally shake loose or work loose even though the vehicle engine or other engine is subjected to vibrations, as for example when a vehicle is jolted due to traveling over uneven roads. The device will not short out when driving in rainy weather and frost or the like will not interfere with the operation thereof. The clip 23 has its portion 25 which grips the spark plug neck securely and it cannot come loose except manually. The portion 24 functions as a secondary electrode and shorting out is prevented due to the insulated skirt on the body of the adapter as well as the protection afforded by the rubber nipple 11. This rubber nipple 11 also takes the shock out of the jolts and bumps and absorbs the vibrations of the engine. The adjustments which are made on the electrode 15 can be measured by counting the number of turns that are screwed in or out according to the threaded sizes. The present invention is simple in construction, rugged and highly useful and has a minimum number of parts.

The electrode 15 is the main electrode and its construction includes the head 15 as well as the threaded shank 18 which is flat on its bottom. The bushing 13 may be made of a suitable material which is strong and threadedly receives the shank 18, and the bushing 13 may be press fitted into the upper end of the member 12. The secondary electrode may consist of a rivet like member which serves to secure the spark plug trip

to the adapter. The molded rubber nipple **11** fits snugly over the lower end of the adapter and the upper end of the spark plug.

The adapter of the present invention provides a means for adjusting the spark and is especially useful for spark plugs of engines and it will increase the intensity, size and force of the spark before it enters the plug and discharges with such force that it will fire through oil or carbon deposits and for the life of the plug will eliminate the necessity of making plug adjustments. It will also eliminate the necessity of the side electrode on any spark plug that it is used on since the spark can be adjusted to jump from the electrode to the side of the plug skirt. In the use of the adapter of the present invention it makes any plug a lifetime plug for the life of the engine in which it is used. It will have no effect on the coils, condenser, or points because it is on the discharge side of the distributor and makes starting easier and increases gasoline mileage and adds power to the motor.

To install, it is only necessary to pull the wire from the spark plug and snap the adapter on the top of the plug and then snap the wire on top of the adapter. Adjustments are made by turning the electrode **15** in or out so as to increase or decrease the gap between the members **18** and **24**. The member **15** screws in or out to make the necessary adjustments. The bushing **13** may be suitably fastened to the member **12**, and the member **12** may be made of suitable material such as suitable poreclain type of material, Bakelite or other heat proof material. The chamber **21** constitues the gap chamber for the spark and the gap between the members **18** and **24** can be adjusted as previously described.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

1. In a device of the character described, a body member, an internally threaded bushing mounted in the upper end of said body member, an electrode including an enlarged head on its upper end provided with a slot therein, a threaded shank depending from said head and threadedly engaging said bushing, there being a shoulder in said body member intermediate the ends thereof, said shoulder being provided with a central opening therein, there being upper and lower chambers in said body member on opposite sides of said shoulder, a clip in the lower portion seated in said lower chamber, said clip further including an upper stem extending through the opening in said shoulder, there being a gap between said stem and shank.

2. In a spark plug adapter, a body member, an internally threaded bushing mounted in the upper end of said body member, an adjustable electrode including an enlarged head on its upper end provided with a slot therein, a threaded shank depending from said head and threadedly engaging said bushing, there being a shoulder in said body member intermediate the ends thereof, said shoulder being provided with a central opening therein, there being upper and lower chambers in said body member on opposite sides of said shoulder, a clip having an enlarged lower portion seated in said lower chamber, said clip further including a reduced upper stem extending through the opening in said shoulder, there being a gap between said stem and shank.

3. In a spark plug adapter, a body member, internally threaded means mounted in the upper end of said body member, an adjustable electrode including an enlarged head on its upper end, a threaded shank depending from said head and threadedly engaging said means, there being a shoulder in said body member intermediate the ends thereof, said shoulder being provided with a central opening therein, there being upper and lower chambers in said body member on opposite sides of said shoulder, a clip in the lower portion seated in said lower chamber, said clip further including an upper stem extending through the opening in said shoulder, there being a gap between said stem and shank.

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