This invention relates to screening devices for spark plugs and has for its object the provision of an improved screening device for spark plugs of the kind which is capable of being fitted to existing plugs.

Accordingly the invention consists of a screening device for spark plugs wherein the screen (or a part thereof) has a means for effecting its quick attachment to or detachment from a spark plug (or to or from a part of the screen temporarily non-detachably associated with a spark plug) and wherein there is disposed within the screen (or the detachable part thereof) an insulator which is capable of movement relatively to the screen (or detachable part thereof) and which is adapted partially to envelop a spark plug and to which insulator the conductor lead may be anchored and wherein spring means is interposed between the insulator and the screen (or the detachable part of the screen with which the insulator is associated) said spring, when the device is in use on a spark plug, serving inter alia to ensure the attachment of the screen (or of the detachable part thereof) to a spark plug (or to the part of the screen temporarily non-detachably associated with the spark plug) and to secure an efficient electrical connection between the conductor lead and a spark plug.

Convenient embodiments of the invention will now be described with particular reference to the accompanying drawings wherein—

Figure 1 is a view partly in elevation, but mainly in vertical section, showing the improved screening device fitted to a spark plug;

Figure 2 is an underside plan of the screening device illustrated in Figure 1;

Figure 3 is a fragmentary view of the lower part of the screening device employed in the construction illustrated in Figures 1 and 2;

Figure 4 is an underside plan of the moveable insulator incorporated in Figures 1 and 2, and

Figure 5 is a similar figure to Figure 1, but illustrating a modified construction.

In the drawings like numerals of reference indicate similar parts in the several views.

Referring first to the construction illustrated in Figures 1 to 4, the screening device therein illustrated comprises two pressed sheet metal parts 6a and 6b, hereinafter called the upper part 6a and the lower part 6b, the said upper and lower parts 6a, 6b being secured together permanently by a rolled joint as illustrated in Figure 1. The upper part 6a is formed with an upstanding neck 6c between which and a ferrule 7 is secured the usual braid covering 8a of the conductor cable 8.

The lower part 6b is formed with an inwardly turned flange 6d having cut therein a hexagonal opening 6e of slightly larger dimensions than the usual hexagonal portion 9a of the spark plug 9 so that the lower end of the said lower part 6b can be passed over the hexagonal portion 9a after a spark plug 9 has been screwed into the cylinder of an internal combustion engine in the known manner. The said inwardly turned flange 6d is also provided intermediate the angles of the hexagonal opening 6e with triangulated depressions 6f so that by passing the lower part 6b over the hexagonal portion 9a and turning the screening device a portion of a turn, the angular portions of the hexagonal portion 9a can be caused to register with and to seat themselves in the said depressions 6f.

A dimple 6g is pressed out of the lower part 6b in order to ensure that the said lower part 6b can only be turned in one direction (see Fig. 3) said dimple 6g in addition serving to locate the hexagonal portion 9a so that it will seat itself naturally into the depressions 6f. Disposed within the interior of the screen composed of the united upper and lower parts 6a and 6b is an insulator 10 of hexagonal shape in cross section as indicated in Fig. 4. This insulator 10 is provided with a central reentrant portion 10a adapted to fit over the upper portion of the plug 9 as shown in Fig. 1. The insulator 10 is also formed with a central bore through which is passed the conductor cable 8. An end of the metallic conducting core 8b of this conductor cable 8 is secured to a button 12 of greater diameter than the central bore in the insulator 10 so that when the button 12 has been secured to the metallic core 8b the conductor cable 8 is anchored to the insulator 10.

The insulator 10 is formed with an external shoulder 10b which serves as an abutment for the lower end of a coil spring 13 the upper end whereof abuts a washer 14 which serves to position a rubber or fibre sealing washer 15 which is adapted to abut an internal shoulder 6f at the upper part 6a of the screen.

The lower part 6b has connection with a strap 16 to which is attached the usual earthing tag 17. It will be appreciated that the coil spring 13 serves to maintain the screen on the spark plug 9 and to secure efficient electrical connection between the core 8b and the central electrode of the said plug 9 and to press the sealing washer 15 into abutment with the shoulder 6f at the upper
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end of the part 6a in order to ensure a weatherproof fitting of the screen to the conductor cable 8. It will also be appreciated that the screening device hereinafter described can readily be attached to or detached from a spark plug as may be required without disturbing the spark plug lead.

In the modification illustrated in Fig. 5 the lower part 6b of the screen is provided with an integral turned flange 6c which has therein a circular hole of lesser diameter than the base 6d of the shell of the plug 8, but of slightly greater diameter than the threaded portion 6e of the said shell so that the threaded portion 6e can be passed through the hole and the turned flange 6c used in place of the usual gasket. The lower part 6b is provided with a pair of oppositely disposed outwardly projecting pins 6f which co-operate with complementary bayonet slots 6g formed in the lower portion of the upper part 6a.

The remainder of the screening device is substantially the same as that illustrated in Figures 1 to 4.

In the modified construction, it will be seen that the lower part 6b is normally temporarily non-detachably associated with the spark plug 9 and that the remainder of the screening device can be removed or fitted as the case may be by disconnecting or connecting the bayonet joint between the two parts.

We claim:

1. A screening device for spark plugs wherein the screen (or a part thereof) has a means for effecting its quick attachment to or detachment from a spark plug (or to or from a part of the screen temporarily non-detachably associated with a spark plug) and wherein there is disposed within the screen (or the detachable part thereof) an insulator which is capable of movement relative to the screen (or detachable part thereof) and which is adapted to envelop a spark plug and to which insulator the conductor lead may be anchored and wherein spring means is interposed between the insulator and the screen (or the detachable part of the screen with which the insulator is associated) said spring, when the device is in use on a spark plug, serving inter alia to ensure the attachment of the screen to a Spark plug and to secure an efficient electrical connection between the conductor lead and a spark plug.

2. A screening device for spark plugs embodying a screen which is provided at one end with an opening for the passage therethrough of the conductor lead and at the other end with a hexagonal opening of slightly greater dimensions than those of the hexagonal portion generally incorporated in a spark plug whereby by passing the end with the hexagonal opening over the said portion and imparting a partial turn to the screen withdrawal of the screen from the hexagonal portion is prevented, an insulator which is movably mounted within the screen and which is adapted partially to envelop a spark plug and to which the conductor lead may be anchored, a sealing means located within the screen at the end through which the conductor lead is passed, and a spring means interposed between the said insulator and sealing means, the spring means when the device is in use on a spark plug serving to ensure the attachment of the screen to a spark plug and to secure an efficient electrical connection between the conductor lead and a spark plug and also to maintain a weather-proof seal between the screen and the conductor lead.

3. A screening device for spark plugs embodying a screen formed in two parts one of which is associated with a spark plug so that it cannot be detached from the spark plug when in use, means such as a pin and bayonet connection permitting of the ready attachment and detachment from the said temporarily non-detachable part of the other part of the screen, an opening in the detachable part for the passage of the conductor lead, an insulator which is movably mounted within the detachable part and which is adapted partially to envelop a spark plug and to which the conductor lead may be anchored, a sealing means located within the detachable part adjacent to the opening through which the conductor lead is passed and a spring means interposed between the said insulator and sealing means, the spring means when the device is in use on a spark plug serving to secure the two parts of the screen together and to ensure an efficient electrical connection between the conductor lead and a spark plug and also to maintain a weather-proof seal between the detachable part of the screen and the conductor lead.

4. A screening device for spark plugs according to claim 2 wherein the hexagonal opening is formed in an inwardly turned flange and wherein triangulated depressions are provided in the portion of the flange intermediate the angles of the hexagonal opening, said depressions serving to accommodate the corners of the hexagonal portion when the screening device is in use.

5. A screening device for spark plugs according to claim 2 wherein means is provided for ensuring a one-way turning movement of the screen when it is being attached to or detached from a spark plug.

6. A screening device for spark plugs according to claim 2 wherein the hexagonal opening is formed in an inwardly turned flange and wherein triangulated depressions are provided in the portion of the flange intermediate the angles of the hexagonal opening, said depressions serving to accommodate the corners of the hexagonal portion when the screening device is in use, and wherein also means is provided for ensuring a one-way turning movement of the screen when it is being attached to or detached from a spark plug.

7. A screening device for spark plugs wherein there is disposed within the screen an insulator which is capable of movement relatively to the screen and which is adapted partially to envelop a spark plug and to which insulator the conductor lead may be anchored and wherein spring means is interposed between the insulator and the screen, said spring means, when the device is in use on a spark plug, serving inter alia, press the insulator into enveloping relation to a spark plug and to secure an efficient electrical connection between the conductor lead and a spark plug.

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