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H. RABEZZANA

1,806,548

SHIELDING MEANS FOR IGNITION APPARATUS

Filed Dec. 16, 1929

Welded form secured to shield
ignition cable to give
water-tight joint with 55

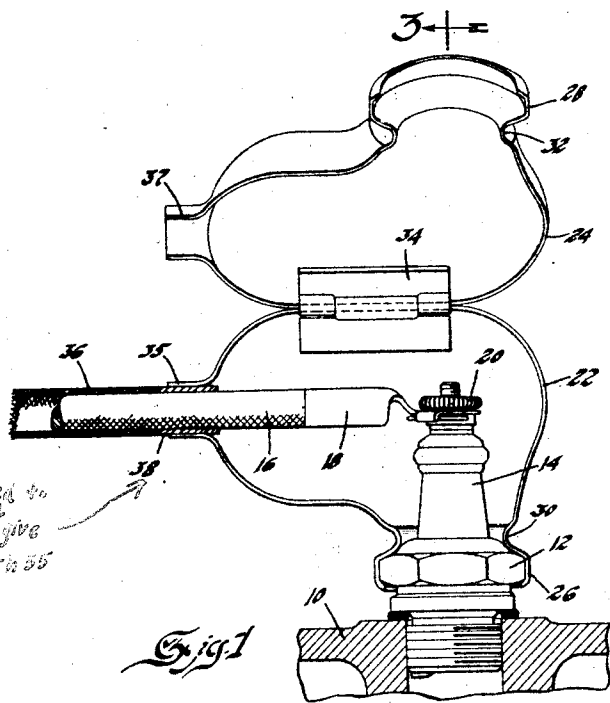


Fig. 1

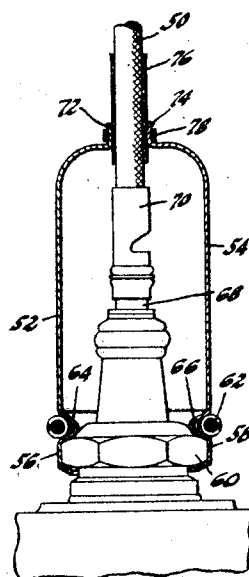


Fig. 5

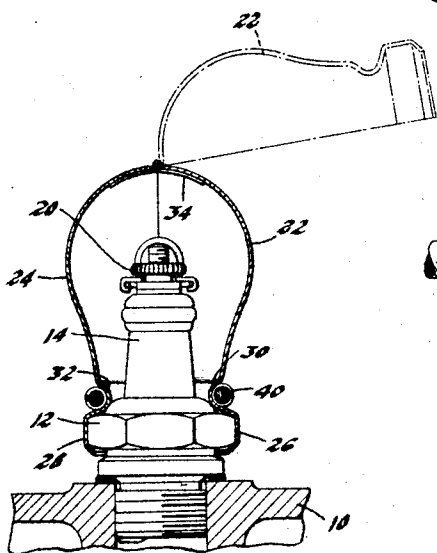


Fig. 3

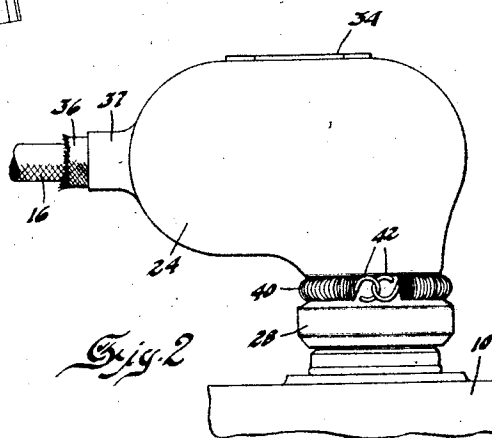


Fig. 2

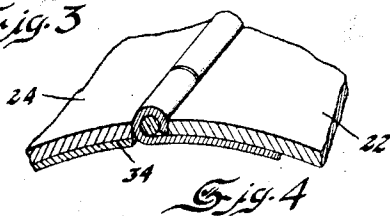


Fig. 4

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SHIELDING MEANS FOR IGNITION APPARATUS

Application filed December 16, 1929. Serial No. 414,445.

This invention relates to shielding means for ignition apparatus, and more particularly to means for preventing the radiation of high frequency electrical energy from the spark
5 plugs and the conductors leading thereto from the distributor. With the rapid increase in the use of radio apparatus on motor vehicles and aircraft, it is very desirable that the ignition mechanism be properly shielded in order
10 to prevent the radiation of electrical energy which would otherwise tend to interfere with the operation of the radio equipment.

It is, therefore, an object of this invention to provide shielding means for the spark
15 plugs and the ignition cable connected thereto, which will be simple in construction, and which will require no changes in the shape or construction of the spark plug or the cable, and is so devised that the terminal of the
20 spark plug may be rendered accessible in order to connect or disconnect the cable therefrom.

Other objects and advantages will be apparent upon referring to the specification and
25 accompanying drawings, in which:

Figure 1 is a fragmentary vertical section through the spark plug opening of an internal combustion engine, showing my improved
30 shielding means associated with the spark plug and its conductor, with one-half of the casing shown swung up to permit the attachment of the conductor to the spark plug.

Figure 2 is a view corresponding somewhat to Figure 1 but showing the casing in closed
35 position.

Figure 3 is a section taken on the line 3—3 of Figure 1.

Figure 4 is a fragmentary perspective view showing the hinge construction for pivotally
40 connecting the two parts of the casing together.

Figure 5 is a view corresponding to Figure 1 but showing modified form of casing.

The reference numeral 10 indicates a portion of an internal combustion engine into
45 which is threaded a conventional type of spark plug comprised of a metal shell 12 and an insulator member 14. An insulated conductor 16 leads from the distributor (not
50 shown) to the spark plug and is connected to

the latter by means of a connector 18 which is secured to the spark plug terminal 20 in any suitable manner.

In order to prevent the radiation of the high frequency electrical energy passing
55 through the conductor 16 and the spark plug, I have constructed a metal casing formed of two stamping members 22 and 24 which are identical in shape. The lower portions 26 and 28 of each of these stampings are formed
60 to a shape which will permit them to fit around that portion of the shell 12 which is adapted to be engaged by a wrench, and just above this portion grooves 30 and 32 are formed. The stampings 22 and 24 are pivotally
65 connected to each other at their upper ends in any suitable manner such as by means of a hinge member 34. The opposite ends of the stampings 35 and 37 are formed to a comparatively small diameter in order to fit
70 firmly against a metallic sheath 36 which surrounds the conductor 16 and which may or may not be provided with a ferrule 38, secured to the end of the sheath for the purpose of
75 providing better electrical contact between the latter and the stampings 22 and 24. The opposite end of the sheath 36 is preferably connected to a metallic shield which encases the distributor mechanism and which is grounded to the engine.
80

In Figure 1, the casing is shown in open position, in order to permit the attachment of the connector 18 to the terminal 20. After this attachment has been made, the stamping
85 24 is swung down into position in contact with the spark plug shell 12 and is held in this position by means of a tension spring 40 which fits into the grooves 30 and 32. It will be readily seen that the action of this spring
90 will serve not only to hold the two parts of the casing tightly against the shell but will also serve to force them into contact with the metallic sheath 36 or the ferrule 38 in case the latter is provided. The spring 40 may be of
95 the endless type or may have hooks 42 formed on each end which may be interengaged after the spring has been placed in position in the grooves 30 and 32.

It will be readily seen that since the stamp-
100

ings 22 and 24 are pressed into contact with the spark plug shell 12, which in turn is grounded to the engine, and also into engagement with the metallic sheath 36, that it will be impossible for any radiation of electrical energy to occur since such radiation will be intercepted by the stampings 22 and 24 and will be grounded by being conducted into the engine and thence into the chassis frame.

In Figure 5 is shown a slightly different type of casing designed for use in connection with an installation wherein the conductor 50 approaches the spark plug from a vertical position. In this form, the casing is composed of two semi-circular stampings 52 and 54, the lower ends 56 and 58 of which are shaped to fit over the spark plug shell 60, and a coil spring 62 fits into depressions 64 and 66 formed in the stampings and serves to hold the latter in intimate engagement with the shell 60. The conductor 50 is connected to the spark plug terminal 68 by means of a connector 70. The upper ends 72 and 74 of the stampings 52 and 54 are reduced in diameter and are held in close contact with a metallic sheath 76 which surrounds the conductor 50, by means of a ring 78 which may be welded or otherwise secured to the stamping 52. In assembling this casing in position, the stamping 52 is placed in position against the spark plug shell and the conductor 50 is passed through the ring 78 and connected to the terminal 68. The portion 74 of the stamping 54 is then slipped in place under the ring 78 and the lower end 58 is placed against the spark plug shell 60. The coil spring 62 is then slipped over the ends of the stampings 52 and 54 into the grooves 64 and 66, thereby holding the lower ends of the stampings against the shell 60 and the upper ends against the metallic sheath 76. Obviously the ring 78 may be dispensed with and the hinge construction shown in Figure 1 may be used if desired.

It will thus be seen that I have provided a shielding means which may be very cheaply produced since it is principally composed of stampings, and which will require no changes in shape or construction of either the spark plug or the conductor. Thus it may be used in connection with the conventional types of spark plugs and conductors, and consequently may be readily fitted to engines now in use. By constructing the casing in two parts which are movable relative to each other, it may be readily opened in order to permit the attachment to or removal from the spark plug of the conductor, or to permit inspection of the upper end of the spark plug.

It is thought from the foregoing, taken in connection with the accompanying drawings, that the construction and operation of the device will be apparent to those skilled in the art, and that various changes in size, shape, and proportion and details of construction

may be made without departing from the spirit and scope of the appended claims.

I claim:

1. A device for shielding a spark plug to prevent the radiation of electrical energy therefrom comprising a casing formed of complementary sections, and means for pivotally connecting said sections to each other.

2. A device for shielding a spark plug to prevent the radiation of electrical energy therefrom comprising a casing formed of complementary sections, and resilient means adapted to hold said sections in contact with each other.

3. A device for shielding a spark plug to prevent the radiation of electrical energy therefrom comprising a casing formed of complementary sections, and means adapted to hold said sections in contact with each other and in position upon the spark plug.

4. A device for shielding a spark plug to prevent the radiation of electrical energy therefrom comprising a casing formed of complementary sections, means for pivotally connecting said sections to each other, and means adapted to hold said sections in closed position in contact with each other.

5. A device for shielding a spark plug to prevent the radiation of electrical energy therefrom comprising a casing formed of complementary sections, means pivotally connecting said sections to each other, and means adapted to hold said sections in contact with each other and in position upon the spark plug.

6. In combination with a spark plug including a metal shell, and a shielded conductor therefor, a device for preventing radiation of electrical energy therefrom comprising a casing formed of complementary sections, and means adapted to hold said sections in contact with each other and in contact with the shell and the shielded conductor.

In testimony whereof I affix my signature.

HECTOR RABEZANA.