March 1, 1932. H. RABEZZANA 1,847,899

IGNITION ASSEMBLY

Filed July 17, 1929 2 Sheets-Sheet 1

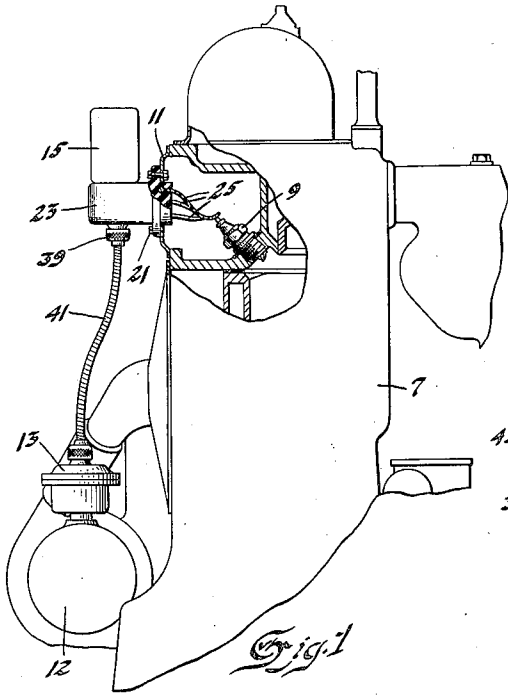


Fig. 1

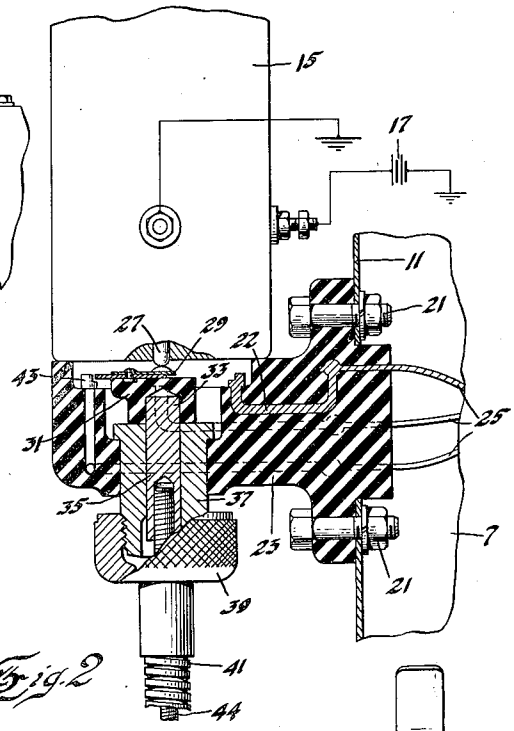


Fig. 2

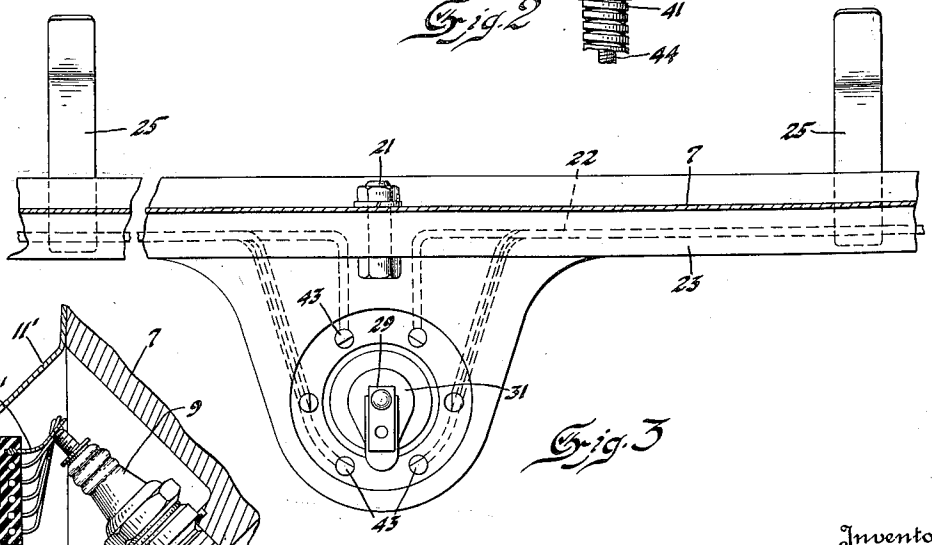


Fig. 3

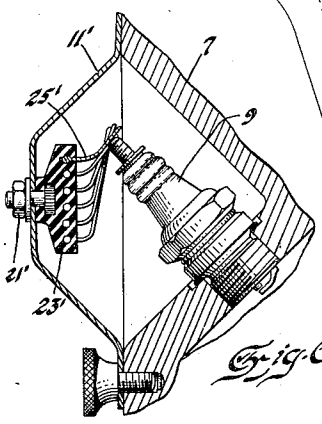


Fig. 6

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March 1, 1932. H. RABEZZANA 1,847,899

IGNITION ASSEMBLY

Filed July 17, 1929 2 Sheets-Sheet 2

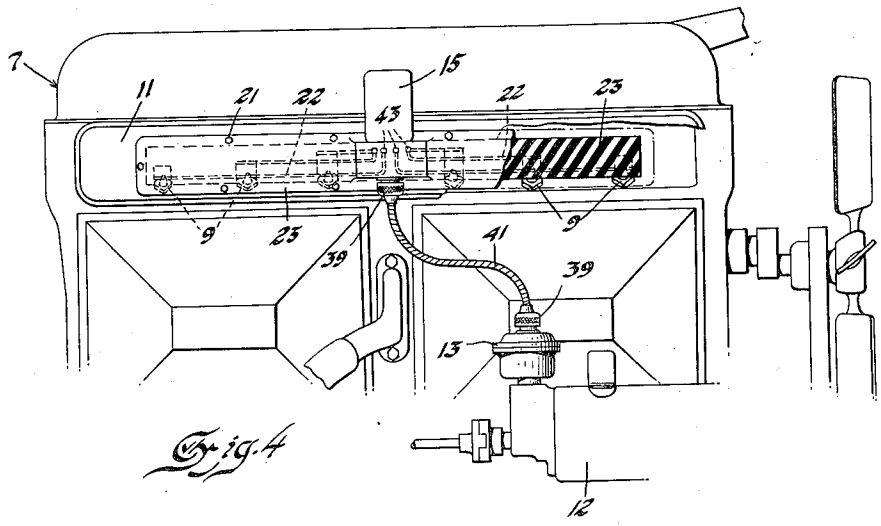


Fig. 4

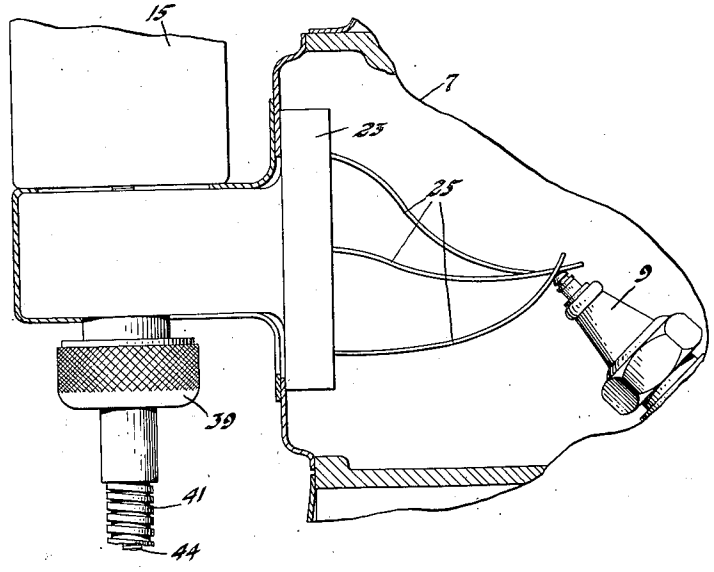


Fig. 5

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UNITED STATES PATENT OFFICE

HECTOR RABEZZANA, OF FLINT, MICHIGAN, ASSIGNOR TO A C SPARK PLUG COMPANY, OF FLINT, MICHIGAN, A COMPANY OF MICHIGAN

IGNITION ASSEMBLY

Application filed July 17, 1929. Serial No. 378,896.

This invention relates to an ignition assembly for use with internal combustion engines.

An object of the invention is to provide an assembly for enclosing the spark plugs, for reducing the length of the high tension leads and thereby reducing the capacity loss of those leads, for shielding the high tension portion of the ignition system, wholly or in part, which shielding is of particular importance in the case of aeroplanes or motor vehicles equipped with radio receiving sets. The invention also aims to improve the appearance of the power plant. Other objects and advantages will be understood from the following description.

In the drawings, Figure 1 is a view in end elevation of an engine equipped with my invention, the view being broken away and partly in section.

Figure 2 is a transverse section, the coil being shown in elevation.

Figure 3 is a top plan view.

Figure 4 is a view in side elevation.

Figure 5 represents a sectional view of a somewhat modified form.

Figure 6 is a transverse sectional view of the further modification.

Referring to Figures 1 to 4, numeral 7 is used to designate the engine as a whole. This may be the engine of a motor vehicle or aeroplane or the engine may be otherwise associated with driven mechanism. At 9 is shown one of the usual series of spark plugs, the spark plug being shown as positioned within the contour of the engine and enclosed by a cover 11. In addition to excluding dust, moisture and oil, this cover shields the spark plugs so that the parts thereof carrying high tension currents cannot transmit electrical energy in a way to interfere with the radio receiving set carried by the vehicle. This cover also shields a part of the high tension leads extending to the spark plugs as will be seen from an inspection of Figure 1. The ignition system employs a generator 12, a contact breaker 13, for the low potential current and a coil 15. The primary coil winding is supplied by a battery, as usual, and represented conventionally by numeral 17. The secondary current of the coil supplies the spark plug leads through a distributor. In accordance with the usual practice a driven shaft operates the breaker device and the distributor, the breaker device and the distributor usually constituting one unit and frequently mounted adjacent the generator. With this conventional arrangement a somewhat long electrical lead extends from the secondary winding of the coil to the distributor and a group of wires extend from the distributor to the several spark plugs. The appearance is far from neat. At present attempts are being made to clean up the appearance of the engine accessories and my improved ignition system goes a long way toward that end. It also keeps out dust, oil and moisture from the parts of this system. It reduces capacity losses and shields the whole secondary system.

In making the improvement the breaker device may be separated from the distributor and it may be as shown in the drawings located adjacent the generator as is commonly done since in this position drive mechanism is accessible. Secured within the cover 11 by fastening means 21 is a bakelite strip 23 extending lengthwise along the engine block. The ignition wires may be in the form of uninsulated wires imbedded in the bakelite strip as shown at 22. From the imbedded wires light springs 25 may extend to make contact with the several spark plugs. If it be desired to omit the bakelite strip, insulated wires, as usual, may be used within the cover and secured thereto. Carried by the cover 11 and mounted on an outward extension of the bakelite strip, when such a strip is used, is the coil 15. A secondary winding of the coil has a terminal 27 engaging a rotatable plate 29 carried by an insulating member 31. This member 31 is mounted on end 33 of a rotor 35 journalled within stem 37. To the stem 37 is secured as by a cap 39 a flexible shaft housing 41. Within this housing is a flexible drive shaft 44 rigidly fixed with the rotor 35. The shaft 44 with its housing 41 is similarly connected to the rotating shaft (not shown) used for operating the breaker device. It will be understood that the power

for rotating shaft 44 may be taken from any convenient part of the driven mechanism of the engine. The several spark plug leads 22 terminate in contact points 43 which are engaged in sequence by rotating member 29, these parts constituting the distributor.

By the arrangement described above, including the location of the coil 15 and the distributor, the high tension system from the coil through the distributor to the plugs is greatly reduced in length with a consequent avoidance of loss of capacity. The major parts of the leads within the cover are shielded whereby interference with radio receiving sets is avoided and the appearance is greatly improved. The collection of leads extending from the distributor to the plugs is done away with. In the act of assembling the cover and the bakelite strip the spring arms 25 firmly contact with the several plugs and no trouble occurs such as is commonly the case due to breaks in the insulation of the leads or misplaced cables. The coil positioned as it is on the bakelite strip serves as a convenient cover for the distributor. In the event that even more complete shielding be desired, the expedient shown in Figure 5 may be adopted. In this form in addition to the features already described the bakelite strip is itself covered with a metallic coating as by plating with copper for example. By this provision a complete shielding of the high tension system is effected.

Figure 6 shows a simplified form in which the invention may be embodied. Here a cover 11′ carries secured thereto a bakelite strip 23′ by fastening means 21′. In this bakelite strip are imbedded high tension leads as before with resilient contact members 25′ for engaging the spark plugs 9. This simple form effectively improves the appearance of the engine and furnishes a ready and convenient way of assembling and removing the high tension system. It also serves efficiently to shield the larger part of the high tension system although the idea is not as fully developed as in the form shown in the other figures.

I claim:

1. In an ignition system for engines, having spark plugs, a cover for said spark plugs, a strip of insulating material supported on said cover, high tension leads imbedded in said strip, and resilient contact members carried by said strip in electrical contact with said leads and positioned to firmly contact said plugs when the cover is placed in position, together with a distributor carried by and within said strip, and means driven by the engine for operating said distributor.

2. An ignition system for multiple cylinder explosive engines comprising a strip of insulating material, high tension leads imbedded therein, resilient spark plug contact members carried thereby, a distributor carried by and within said strip, said distributor having a rotary engine driven part, a coil positioned over said distributor and means to secure said strip in position whereby the several spark plug contact members engage the several spark plugs, said last named means being a cover to enclose the engine spark plugs and the resilient contact members.

3. In an ignition system for engines having spark plugs, a shielding cover for said plugs, a strip of insulating material secured to and within said cover, said strip of insulating material having an extension outside said cover, means to shield said extension, high tension leads embedded in said strip, spark plug contact members carried by said strip in electrical engagement with said leads, a distributor carried by and within said extension, a coil also carried by said extension and positioned adjacent said distributor together with means driven by the engine to operate the distributor.

In testimony whereof I affix my signature.

HECTOR RABEZZANA.