Feb. 1, 1955 G. HENRY 2,701,345

IGNITION COIL

Filed March 27, 1951

Fig.1

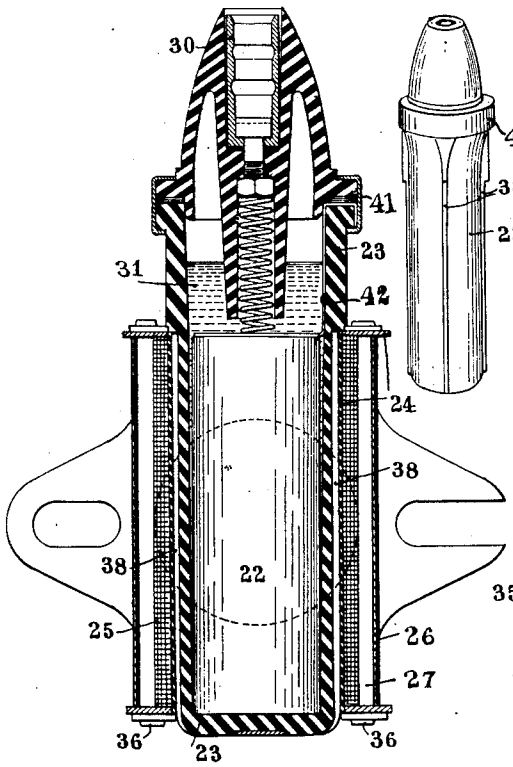


Fig.5

Fig.2

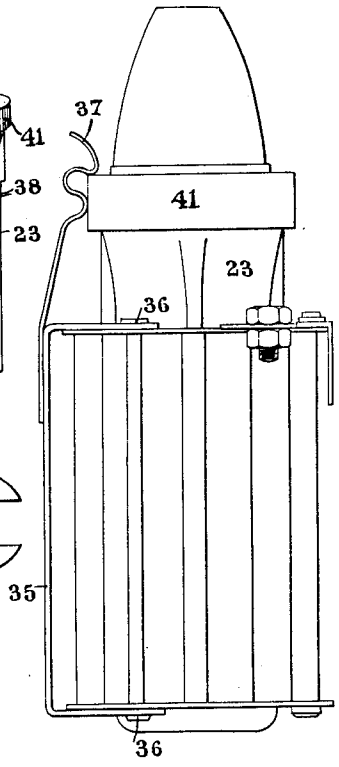


Fig.3

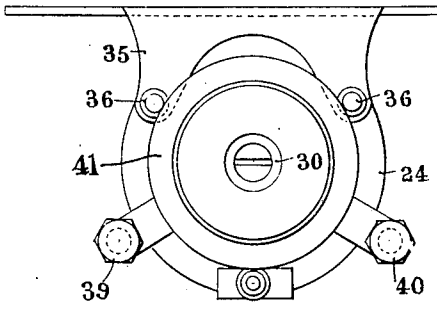
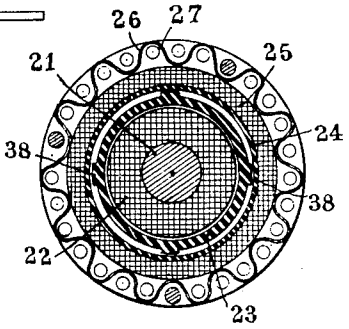


Fig.4



Inventor:
Georges Henry
By: Mudael & Johnson

United States Patent Office

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IGNITION COIL

Georges Henry, La Roche-sur-Yon, France, assignor of one-half to Jean Esswein, La Roche-sur-Yon, France

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Claims priority, application France January 22, 1951

2 Claims. (Cl. 336—67)

One object of my present invention is an improvement to an ignition coil wherein in view of reducing the transmission to the secondary winding of the heat developed by the primary winding, this secondary winding is contained in an insulating casing, surrounded by the primary winding. In order to fix this ignition coil on its support, a fixing bracket is an integral part of the insulating casing, so that when, owing to a damaged secondary winding or for any other cause, it is desired to remove this secondary winding, it becomes necessary to unfasten the fixing bracket from the support, which requires a set of tools and relatively complicated handlings.

The present invention has for its object to palliate this drawback and to permit to instantaneously remove the secondary winding, so that in case of damage to this winding, its replacement by a new one can be effected in a few seconds without any difficulty.

For this purpose, according to my present invention, the bracket for fixing the ignition coil on its support is an integral part of the spool of the primary winding. In this manner, the insulating casing containing the secondary winding is freely removable; it forms a kind of independent cartridge that can be released and removed immediately without having to handle either the fixing bracket or the primary winding.

In order to prevent the insulating casing from oscillating, a spring secured on the fixing bracket for example bears on the insulating casing so as to maintain the latter in a stable position.

In the attached drawing is illustrated, by way of example, an embodiment of a modified ignition coil according to the present invention.

Figure 1 is a vertical section of this ignition coil.

Figure 2 is a side view,

Figure 3 is a plane view,

Figure 4 is a horizontal section of the coil without its bracket,

Figure 5 is a perspective view at a smaller scale of the cartridge forming the secondary winding.

Around an axial magnetic core **21** (Fig. 4) is wound a secondary winding **22** contained within an insulating tubular casing **23** which is removably engaged in an insulating tubular member or spool **24**. The insulating casing **23** and the members contained therein form a separate removable cartridge (see Fig. 5) which can be taken out from the spool **24** without using any tool. Around the insulating spool **24** is wound the primary winding **25**. This winding **25** is surrounded by a corrugated sheet **26** of magnetic iron, leaving between itself and the winding a plurality of passageways **27** for the cooling air. This sheet metal **26** acts furthermore as an external flux conductive member closing the magnetic circuit from one end to the other of the axial core **21**, thereby lowering the reluctance of said magnetic circuit. The high-tension terminal is constituted by a socket **30** whilst the primary winding can be connected to the source of low-voltage current through terminals **39** and **40**.

A bracket **35**, adapted to fix the ignition coil on its support, is rigidly secured by means of bolts **36** to the spool **24** carrying the primary winding.

In order that the casing **23** should be fixedly retained, a resilient conductive member **37** secured on the bracket **35** is in pressing engagement with the upper face of conductive ring **41** provided on a shoulder of the casing **23** so as to maintain this casing in a stable position and to prevent thus any oscillation of said casing.

Resilient conductive member **37** serves also as a means for connecting, through the aforesaid conductive ring **41** and a conductor **42**, the secondary winding contained in the casing to the earth.

Owing to this arrangement, to remove the casing **23** with its secondary winding **22**, it is sufficient to remove the high-tension wire inserted in the socket **30**, whereafter the casing **23**, retained only by the readily released resilient conductive member **37**, is removed. The replacement of a faulty secondary winding with another in good condition is thus a very simple and quick operation. It is therefore sufficient for a driver to have with him as a spare part a cartridge constituting an emergency secondary winding.

In addition, this arrangement has the advantage of permitting to a driver, after stopping, to remove without any difficulty the casing **23** with its secondary winding **22**, thus prohibiting the re-starting of the car and preventing therefore the theft of the car.

The insulating casing **23** will be advantageously provided with external ribs **38**, longitudinal for example, in order to ensure a circulation of air between the primary and the secondary.

The form of embodiment and constructional details described hereinabove have been given only by way of example, and modifications may be brought thereto without departing from the scope of the invention.

What I claim as new is:

1. An ignition coil comprising a bracket adapted to be fixed on a support; a tubular insulating member secured to said bracket; primary winding means wound on said tubular member; a cartridge partially extending into said tubular member and in removable fitting engagement therewith, said cartridge including an elongated insulating casing having a shoulder portion outside of said tubular member, electrically conductive means mounted on said shoulder portion, an axial magnetic core within said casing, a secondary winding within said casing wound around said core, a high-tension terminal mounted in said casing and connected to an end of said secondary winding, and means connecting the other end of said secondary winding to said electrically conductive means; and a resilient conductive member mounted on said bracket and in slidable engagement with said cartridge, said resilient member engaging said electrically conductive means mounted on said shoulder portion of said casing when said cartridge is in position in said tubular member, securely locking the same in place.

2. An ignition coil comprising a conductive bracket adapted to be fixed to a support; a tubular insulating member mounted on said bracket; a primary winding wound on said tubular member; a cartridge partially extending into said tubular member and in removable fitting engagement therewith, said cartridge including an elongated insulating casing formed with an annular shoulder on a portion thereof outside of said tubular member, an annular conductive ring coaxially mounted on said shoulder, an axial magnetic core within said casing, a secondary winding within said casing wound around said core, a high-tension terminal mounted in said casing connected to an end of said secondary winding, and means connecting the other end of said secondary winding to said annular ring; and a resilient conductive member mounted on said bracket and in slidable engagement with said cartridge, said resilient conductive member engaging said annular ring on said shoulder when said cartridge is in position in said tubular member, securely locking said cartridge in place.

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