United States Patent

[11] 3,581,259

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[21] Appl. No. **877,890**
[22] Filed **Nov. 19, 1969**
[45] Patented **May 25, 1971**

[54] **QUICKLY-REMOVABLE IGNITION COIL INSTALLATION FOR AUTOMOBILE THEFT PREVENTION**
8 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **336/90,** 336/92, 336/107, 336/192
[51] **Int. Cl.** **H01f 27/02**
[50] **Field of Search** 336/90, 92, 105, 107, 192

[56] **References Cited**

UNITED STATES PATENTS

2,100,721	11/1937	Parsons	336/107X
2,178,687	11/1939	Hartzell et al.	336/92X

Primary Examiner—Thomas J. Kozma
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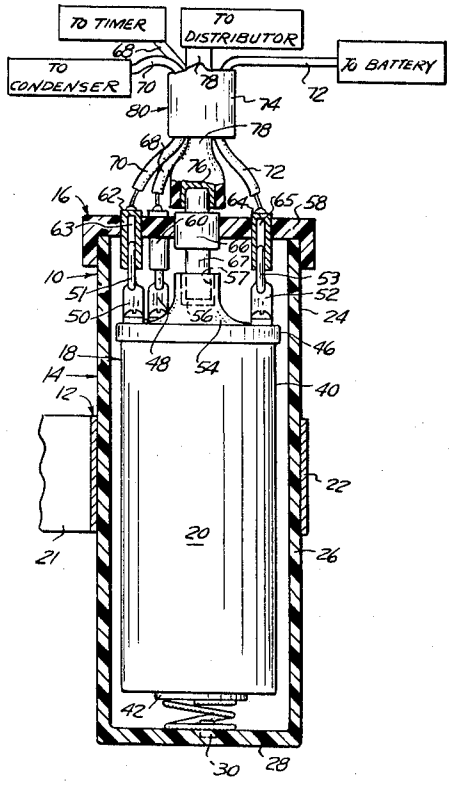
ABSTRACT: An ignition coil receptacle adapted to be mounted near an automobile engine has a removable cover containing first, second and third low-tension terminals and a single high-tension terminal detachable engageable respectively with first, second and third correspondingly located low-tension electrodes and a single high-tension electrode mounted in the end cap of an automobile ignition induction coil removably mounted in the receptacle. One end of the primary winding of the coil is connected as usual to one end of the secondary winding thereof and their common junction is connected to the first low-tension electrode which in turn is connected directly to the second low-tension electrode. The opposite end of the primary winding is connected to the third low-tension electrode whereas the opposite end of the secondary winding is connected to the single high-tension electrode. The first, second and third low-tension cover terminals are connected to first, second and third low-tension cables and the single high-tension cover terminal to a high-tension cable, all of these cables being contained within a flexible tubular casing. The first low-tension cable leads to a conventional timer, the opposite pole of which is grounded. The interconnected second low-tension cable is connected to one side of the conventional coil condenser, the opposite side of which is grounded to the engine. The third low-tension cable leads to one terminal of a conventional storage battery, the opposite terminal of which is grounded to the automobile frame. The single high-tension cable is connected to the rotor of the conventional distributor, the fixed poles of which are connected to the central electrode of the spark plug whose casings are grounded to the engine. Upon leaving the automobile, the driver pulls outward upon the receptacle cover, thereby withdrawing the coil and cover as a unit from the receptacle. He then pulls the cover terminals and coil electrodes apart from one another to separate them, replaces the cover upon the receptacle, and carries the ignition coil away with him, thereby preventing theft of the automobile.



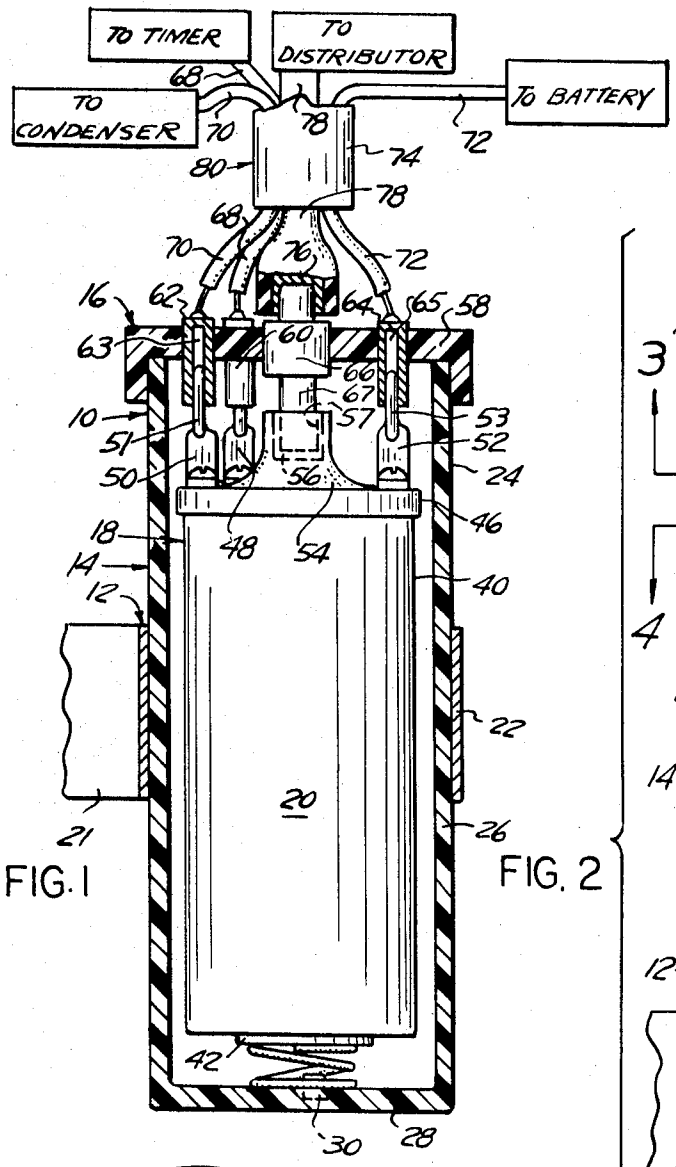


FIG. 1

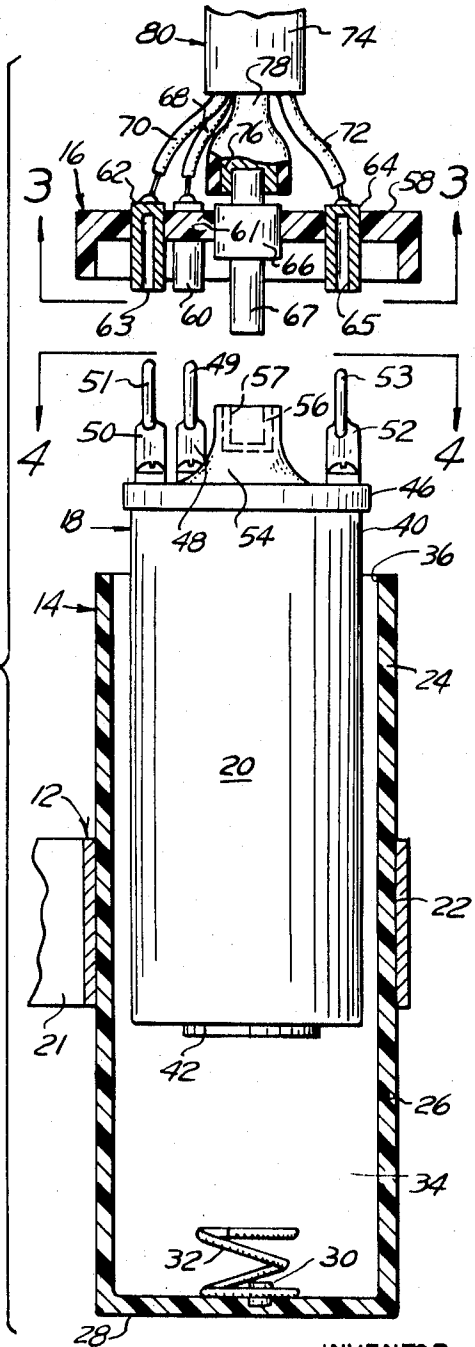


FIG. 2

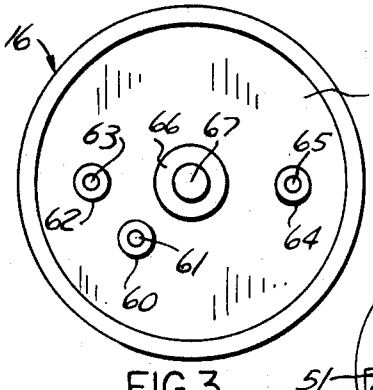


FIG. 3

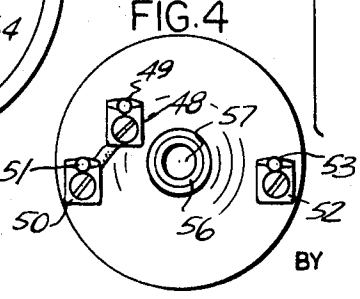


FIG. 4

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QUICKLY-REMOVABLE IGNITION COIL INSTALLATION FOR AUTOMOBILE THEFT PREVENTION

In the drawings:

FIG. 1 is a central vertical section through a quickly removable ignition coil installation, according to the invention, with the parts in their working positions;

FIG. 2 is an exploded central vertical section similar to FIG. 1 but with the component parts separated from one another prior to removal of the ignition coil;

FIG. 3 is a bottom plan view of the receptacle cover unit looking upward in the direction of the line 3–3 in FIG. 2; and

FIG. 4 is a top plan view of the ignition coil unit looking downward in the direction of the line 4–4 in FIG. 2.

Referring to the drawing in detail, FIGS. 1 and 2 show a quickly removable ignition coil installation, generally designated 10, for automobile theft prevention according to one form of the invention, as consisting generally of a holder 12 attachable to an automobile engine or to a part of the automobile adjacent thereto, such as the engine compartment bulkhead, an ignition induction coil receptacle 14 held by the holder 12, a flanged receptacle cover unit 16 adapted to fit over the outer end of the receptacle unit 14, and an ignition coil unit 18 adapted to be removably mounted in the receptacle unit 14 in detachable engagement with the cover unit 16 and containing an ignition induction coil 20. The holder 12 is illustrated in the form of a bracket with an attaching arm 21 terminating at its outer end in a bore or socket 22 adapted to snugly fit and hold the receptacle unit 14.

The receptacle unit 14 consists of a cup-shaped receptacle 24 having a generally cylindrical sidewall 26 and closed at its lower end by a bottom wall 28. Secured as at 30 to the bottom wall 28 is a compression coil spring 32. The receptacle 24 has a compartment 34 therein with a top opening 36. The receptacle 24 is preferably made of synthetic plastic or other insulating material.

The ignition coil unit 18 includes a casing 40 of insulating material such as synthetic plastic having at its lower end a spring abutment plate 42. Bolted to the upper end cap 46 of the casing 40 are three L-shaped low-tension plug electrodes 48, 50 and 52 having plug tips 49, 51 and 53 respectively. A boss 54 also of insulating material, such as synthetic plastic projects upward from the end cap 46 and contains a cup-shaped high-tension socket electrode 56 which is connected to one end of the high-tension secondary winding (not shown) of the ignition coil 20 and which contains a socket 57. The opposite end of the high-tension secondary winding is connected to one end of the primary winding thereof and their junction is connected to the first and second plug electrodes 48 and 50. The opposite end of the primary winding is connected to the third plug electrode 52.

The receptacle cover unit 16 includes a cup-shaped cover 58 which fits over the upper end of the receptacle unit 14 and closes the top opening 36 thereof. Secured, as by molding, in the cover 58 in alignment with plug terminals 48, 50 and 52 and the socket electrode 56 are three low-tension socket terminals 60, 62 and 64 with sockets 61, 63 and 65 therein and a central high-tension plug terminal 66 with a plug tip 67 thereon. The sockets 61, 63 and 65 are adapted to mate with the tips 49, 51 and 53 of the low-tension plug electrodes 48, 50 and 52 and the high-tension plug tip 67 with the socket 57 of the high-tension socket electrode 56 respectively. The low-tension electrodes 48, 50 and 52 and their socket terminals 60, 62 and 64 collectively constitute three low-tension separable connectors, whereas the high-tension socket electrode 56 and the high-tension plug terminal 66 collectively constitute a single high-tension separable connector. Connected to the outer ends of the low-tension socket electrodes 60, 62 and 64 are low-tension insulated conductor cables 68, 70 and 72 which enter an elongated tubular flexible insulating casing 74. The upper end of the high-tension plug terminal 66 is secured to one end of a flexible insulated high-tension conductor cable 78 which also enters the flexible insulating casing 74. The insulating casing 74 forms, with the high-tension cable 78 and the three low-tension cables 68, 70 and 72, a composite conductor cable 80 which protects the cables 68, 70 and 72 and 78.

The opposite end of the low-tension conductor cable 72 is connected to a source of electricity, such as a conventional storage battery. The low-tension cable 68 is connected to a conventional timer (not shown) which in turn is grounded, as to the engine. The low-tension cable 70 is connected to one terminal of the coil condenser, its other terminal being grounded to the engine. The high-tension conductor cable 78, on the other hand, is connected at its opposite end to the rotor of a conventional distributor (not shown) and from the stationary circumferentially spaced electrodes thereof high-tension cables run to the spark plugs of the engine, as is well known to those skilled in the internal combustion art.

From FIGS. 3 and 4 it will be evident that different automobiles may be equipped with cover units 16 and coil units 18 having terminals and electrodes irregularly arranged at different locations so that a coil unit 18 from one automobile would not ordinarily fit the cover unit 16 of another automobile. Such variation may be brought about, for example, by placing the low-tension plug electrodes 48, 50 and 52 and the socket terminals 60, 62 and 64 at different angular locations relatively to the center of the socket electrode 56. In this manner, car thefts would be greatly reduced by the difficulty of matching coil units 18 with cover units 16.

In the use of the invention, during the normal operation of the automobile engine, the working parts of the ignition coil device 10 are in the positions shown in FIG. 1 wherein the primary winding of the ignition coil 20 receives low-tension current through the plug electrodes 48 and 52 from the socket terminals 60 and 64 by way of the conventional timer, and discharges high-tension electric current from its secondary winding through the socket electrode 56 and plug terminal 66, causing high-tension current to flow through the high tension cable 78 and thence by way of the conventional distributor to the spark plugs of the engine. The above-mentioned ground connections complete both the low-tension and high-tension circuits. When the operator desires to halt the automobile and leave it, he shuts off the ignition by the conventional ignition switch, raises the hood and lifts the cover unit 16 off the receptacle unit 14, thereby pulling the ignition coil unit 18 upward out of the compartment 34. He then grasps the cover unit 16 in one hand and the ignition coil unit 18 on the other hand and pulls them apart, disconnecting the low-tension plug tips 49, 51 and 53 from their respective sockets 61, 63 and 65, at the same time separating the plug tip 67 of the high-tension terminal 66 from the socket 57 of the high-tension socket electrode 56 (FIG. 2). He then places the now separated ignition coil units 18 in his coat pocket, briefcase or other convenient carrying means, replaces the cover unit 16 upon the upper end of the receptacle unit 14, closes the hood and leaves the automobile.

A prospective thief attempting to start the automobile engine will be foiled by the absence of the ignition coil unit 18 and any attempts to wire around the ignition switch by the jumper cables usually employed by car thieves will be useless.

When the operator returns to his automobile, he reverses the above described series of steps by raising the hood, lifting off the cover unit 16, inserting the plug tips 49, 51 and 53 in the sockets 61, 63 and 65 and the plug tip 67 in the socket 57. He then lowers the now interconnected or coupled cover and ignition coil units 16 and 18 into their places shown in FIG. 1 with the ignition coil unit 18 disposed within the compartment 34 and the cover unit closing the open upper end 36 of the casing unit 14, whereupon the engine is ready to be started by inserting and turning the ignition key.

I claim:

1. A quickly removable ignition coil installation for automobile theft prevention, comprising

an ignition coil receptacle having a compartment therein and an access opening at the top thereof,

a receptacle cover detachably engaging the top of said receptacle,

an ignition induction coil removably mounted in said receptacle and having a casing with an end cap thereon and containing conventional low-tension and high-tension primary and secondary windings respectively,

and a plurality of separable electrical connectors disposed between said cover and said cap in interconnecting relationship therewith,

each of said connectors including a pair of separable interengaging components with one component of each pair mounted on said cover and the other component thereof mounted on said cap,

the cover-mounted components and the corresponding cap mounted components being disposed in correspondingly located positions on said cover and cap respectively,

the windings of said ignition coil being electrically connected to said cap-mounted components,

said cover-mounted components comprising terminals adapted to be permanently connected to the conventional low-tension and high-tension circuits of the ignition system of the automobile.

2. A quickly removable ignition coil installation, according to claim 1, wherein one component of each pair thereof has a plug portion thereon and the other component of each pair has a socket portion removably receiving said plug portion.

3. A quickly removable ignition coil installation, according to claim 1, wherein said connectors are disposed in irregular but corresponding positions on said cover and cap respectively.

4. A quckly removable ignition coil installation, according to claim 1, wherein an expansible resilient element is disposed in said receptacle in upwardly urging engagement with said ignition induction coil.

5. A quickly removable ignition coil installation, according to claim 1, wherein one of said connectors is disposed centrally between said cap and cover and the other connectors are spaced outwardly away from said centrally disposed connector.

6. A quickly removable ignition coil installation, according to claim 5, wherein the high-tension winding is connected to said centrally disposed connector.

7. A quickly removable ignition coil installation, according to claim 6, wherein the low-tension winding is connected to said outwardly spaced connectors.

8. A quickly removable ignition coil installation, according to claim 5, wherein said other connectors are disposed near the margins of said cap and cover respectively.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,581,259 Dated May 25, 1971

Inventor(s) ERNEST BURNSIDE

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [72] the name of the inventor should read -- Ernest Burnside --.

Signed and sealed this 15th day of May 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334.