April 9, 1929. H. F. FREEMAN 1,708,265

MEANS FOR CONTROLLING POWER PLANTS

Filed Feb. 11, 1927 2 Sheets-Sheet 1

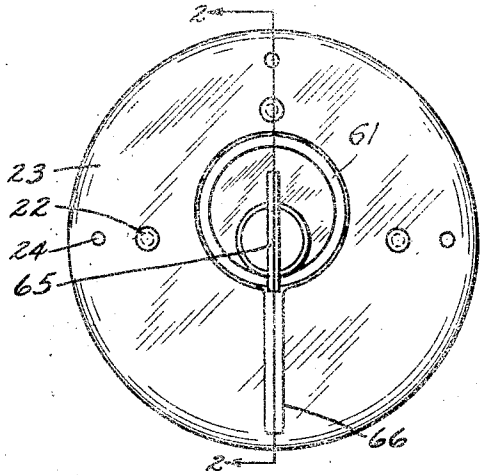


Fig. 1

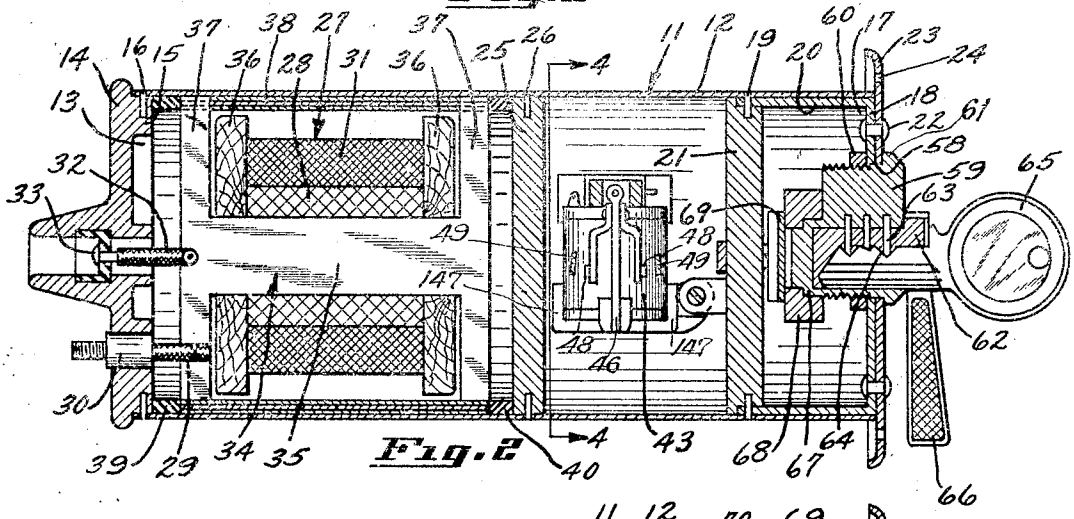


Fig. 2

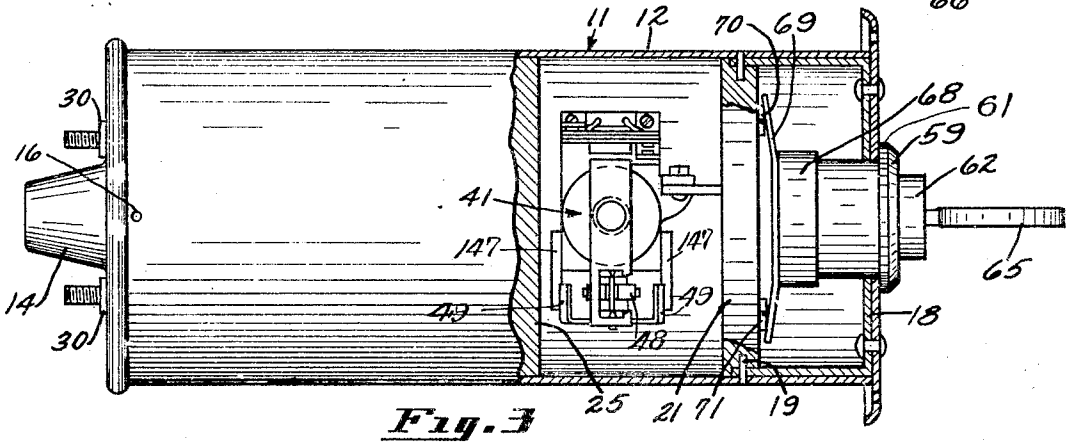


Fig. 3

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MEANS FOR CONTROLLING POWER PLANTS

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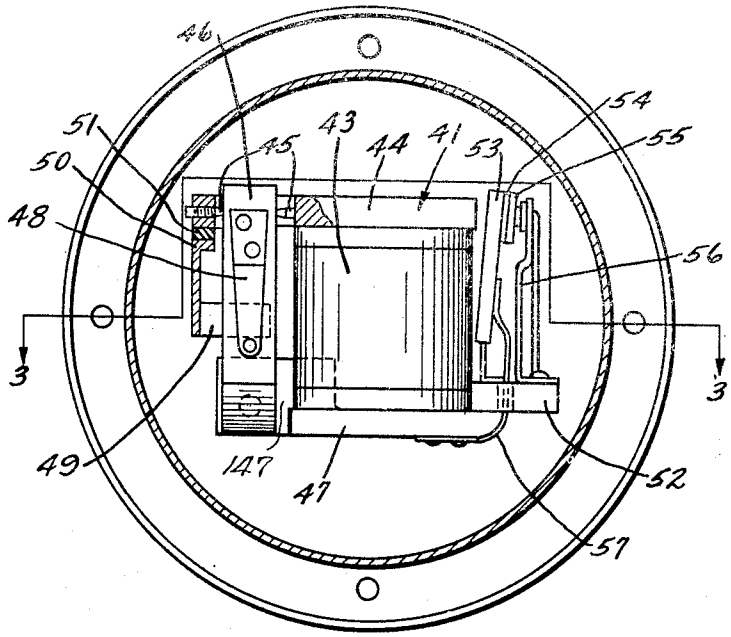


Fig. 4

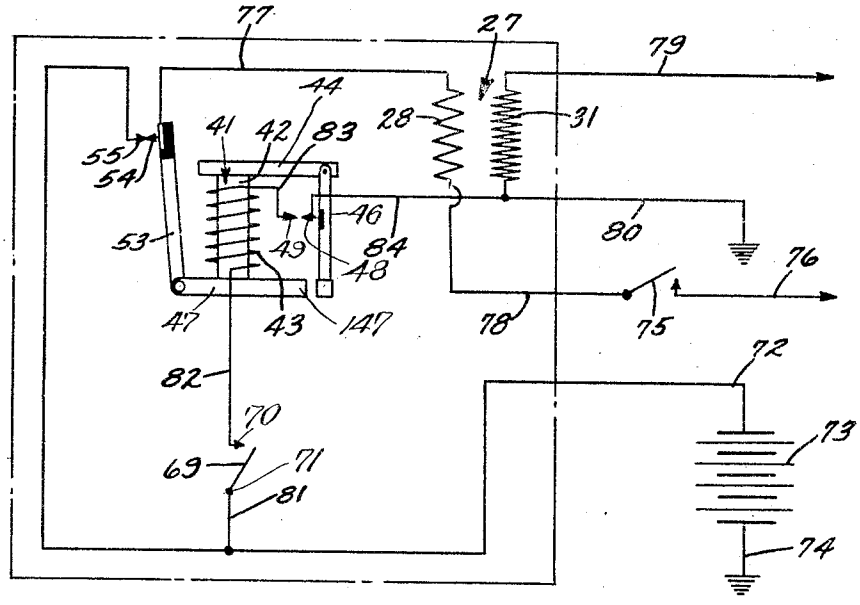


Fig. 5

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Patented Apr. 9, 1929. 1,708,265

UNITED STATES PATENT OFFICE.

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MEANS FOR CONTROLLING POWER PLANTS.

Application filed February 11, 1927. Serial No. 167,563.

My invention relates to means for controlling a power plant, particularly to means for controlling the ignition circuit of an internal combustion engine of an automotive vehicle, and the principal object of my invention is to provide new and improved means of this type. In the drawings accompanying this specification and forming a part of this application I have shown, for purposes of illustration, one form which my invention may assume, and in these drawings:

Figure 1 is a front elevation of this illustrative embodiment of my invention,

Figure 2 is a section on the line 2—2 of Figure 1,

Figure 3 is a fragmentary section taken on the line 3—3 of Figure 4,

Figure 4 is a section on the line 4—4 of Figure 2, while

Figure 5 is a view illustrating the connection of this embodiment of my device into the ignition circuit, the mechanism of Figures 1 through 4 being enclosed within the dot and dash rectangle of Figure 5.

The embodiment of my invention herein shown is entirely contained within a theft-resisting casing 11 which comprises a tubular member 12 closed at its rear end 13 by a terminal plate 14 having a flange 15 extending within the tubular member 12 and secured thereto by means of pins 16, and at the front end 17 by a cup 18 closely fitting within the tubular member 12, secured thereto by means of pins 19 extending through the tubular member 12 and a skirt 20 on the cup 18 into a switch base 21, and carrying by means of rivets 22 a face plate 23 provided with a plurality of apertures 24 for the reception of fastening means by which the entire control means may be secured to the dash board of the automotive vehicle.

Also positioned within the tubular member 12 between the switch base 21 and the terminal plate 13 is an intermediate partition 25 secured in position by pins 26 extending through the tubular member 12 into the partition 25.

Positioned within the tubular member 12 between the terminal plate 14 and the intermediate partition 25 is an ignition coil 27 comprising a primary winding 28 having its ends connected by means of conductors 29 to terminals 30 mounted on the terminal plate 14, a secondary 31 having its ungrounded terminal connected by means of a conductor 32 to a terminal 33 carried centrally of the terminal plate 14 and adapted to receive a conductor leading to the distributor, and a core 34 having a central bar 35 supporting the primary 28 and secondary 31 coiled thereabout between suitable spool ends 36, having transverse end sections 37, and having lateral connecting portions 38 connecting the ends of the transverse sections 37 to complete the magnetic circuit of the core 34, the exterior of the core 34 being the proper diameter to fit snugly within the tubular member 12 to support the ignition coil 27 directly from the tubular member 12 readily removable therefrom when the terminal plate 14 is not in position, and the ignition coil 31 being spaced from both the intermediate partition 25 and the terminal plate 14 by means of annular spacing members 39 and 40 which may be of any suitable material, preferably an insulating material such as reinforced molded bakelite.

Mounted within the tubular member 12 between the intermediate partition 25 and switch base 21 is a pendulum controlled electromagnetic switch comprising a core 41 having its shank 42 surrounded by a suitable winding 43, having its lower pole piece 47 provided with projections 147 the near one of which is omitted in Figure 4 for clarity, having its upper pole piece 44 extended at one end above the space between the lower pole piece projections 147 to carry, between suitable pivot points 45, a pendulum 46 adapted to act as an armature coacting with the lower pole piece projections 147 of the electromagnetic switch 41 and carrying spring contacts 48 adapted to engage, when the pendulum is swung laterally either way against the lower pole piece projections 147, with contacts 49 carried by a contact plate 50 supported from the upper pole piece 44 insulated therefrom by means of a suitable strip of insulation 51. The lower pole piece 47 of the electromagnet 41 is extended at the other end to carry an insulating base 52 forming a pivotal support for a rocking armature 53 cooperating with the adjacent end of the upper pole piece 44 and carrying a contact 54 adapted to engage a stationary contact 55 carried on a support 56 rising from the insulating piece 52, the rocking armature 53 being normally held in retracted position by means of a suitable spring 57.

Mounted within an aperture 58 in the face

plate 23 and cup 18 is a cylinder lock 59 held in position by means of a nut 60 cooperatively engaging the screw threaded surface of the lock casing and acting to clamp the face plate 23 between itself and a flange 61 carried by the lock 59. Rotatably mounted within this lock 59 is a cylinder 62 provided with the usual pin chambers 63 and keyway 64, rotatable by means of the key 65 and also by means of a handle 66 clamped to the cylinder 62, and provided at its inner end with a flat side projection 67 adapted to carry and rotate an insulating disk 68 on which is mounted for rotation therewith a spring switch arm 69 adapted to engage contacts 70 and 71 carried by the switch plate 21.

The device hereinabove described may be connected in circuit in a variety of ways, but I prefer to connect it in the manner shown in Figure 5 wherein the circuit through the primary 28 comprises a conductor 72 leading from a battery 73, grounded by means of a conductor 74, to the contact 55 of the rocking armature circuit closer, a conductor 77 leading from the cooperating contact 54 of the rocking armature circuit closer to one side of the primary 28 of the ignition coil 27, a conductor 78 leading from the other side of the primary 28 of the ignition coil 27 to the normal ignition switch 75, and a conductor 76 leading from the normal ignition switch 75 to the usual primary circuit mechanism, such as an interrupter; wherein the circuit through the secondary 31 comprises a conductor 79 connecting one side of the secondary to the usual secondary circuit apparatus, such as the distributor, and a conductor 80 grounding the other side of the secondary 31; and wherein the circuit through the electromagnetic switch 41 comprises a conductor 81 leading from the battery conductor 72 to the lock switch 69, a conductor 82 leading from the lock switch 69 to one end of the winding 43 of the electromagnetic switch 41, a conductor 83 leading from the other side of the winding 43 to the contacts 49 of the pendulum controlled switch, and a conductor 84 leading from the cooperating contacts 48 of the pendulum controlled switch to the conductor 80 grounding the second side of the secondary 31 of the coil 27.

From the above description it will be obvious to those skilled in the art that so long as the lock switch 69 is in open position the electromagnetic switch 41 cannot be energized, the rocking armature 53 remains in retracted position, contacts 54 and 55 remain in engagement, and the circuit through the primary 28 of the ignition coil 27 is controlled entirely in the usual way by the normal ignition switch 75, the parts being then in the normal running position in which they are placed by insertion of the key 65 in the lock 59 and rotation of the lock switch 69 out of contact with the terminals 70 and 71; that upon leaving the vehicle the operator will rotate the lock switch 69 into position closing the circuit between the terminals 70 and 71, and will then withdraw the key 65 to leave the lock switch 69 locked in this position; that this in itself will not interrupt the ignition circuit because of the gap in the circuit of electromagnetic switch 41 present between the contacts controlled by the pendulum actuated circuit closer; that because of this the engine may be left either running or stopped depending on the position of the normal ignition switch 75; but that actuation of the vehicle in any substantial manner will then cause the pendulum 46 to bring the contacts 48 and 59 into engagement to close the circuit through the winding 43 of the electromagnetic switch 41 to hold the pendulum 46 attracted to the lower pole piece 47 maintaining the contacts 48 and 49 in engagement, and maintaining the circuit energized to hold the pendulum in this maintaining position, and that simultaneously the rocking armature 53 will be attracted, and held in attracted position, to separate the contacts 54 and 55 and hold the contacts 54 and 55 separated, and thus open the ignition circuit, and hold the ignition circuit open until the electromagnet switch 41 has been de-energized by opening of the circuit through the winding 43 by rotation of the lock switch 69 by insertion and rotation of the proper key 65.

It will therefore be obvious to those skilled in the art that the embodiment of my invention herein shown and described provides means for locking the vehicle against unauthorized operation, either with the engine running or with the engine stopped, depending on the position of the normal ignition switch, by preventing operation of the engine as soon as the vehicle is disturbed to any substantial extent.

It will therefore be obvious to those skilled in the art that the embodiment of my invention herein shown and described accomplished at least the principal object of my invention. At the same time it will also be obvious to those skilled in the art that the particular embodiment of my invention herein shown and described may be variously changed and modified without departing from the spirit of my invention or sacrificing the advantages thereof, and therefore it will be understood that the disclosure herein is illustrative only, and that my invention is not limited thereto.

I claim:

1. In a power plant for an automotive vehicle, a unit comprising: a theft-resisting casing closed at one end; an element essential for the operation of said power plant, receivable through the second end of said casing into position within said casing supported from said casing; lock-controlled control means mounted in said casing between said

element and said one end and settable in condition restricting the functioning of said element to permit functioning of said element but only under predetermined conditions; closure means for said second end for preventing access through said second end; and connections, for connecting said unit in said power plant, accessible exteriorly of said unit.

2. In a power plant for an automotive vehicle, a unit comprising: a theft-resisting casing closed at one end; an element essential for the operation of said power plant, receivable through the second end of said casing into position within said casing supported from said casing; lock-controlled control means mounted in said casing between said element and said one end and settable in condition restricting the functioning of said element to permit functioning of said element but only while said vehicle is substantially at rest; closure means for said second end for preventing access through said second end; and connections, for connecting said unit in said power plant, accessible exteriorly of said unit.

3. In an ignition system for an internal combustion engine of an automotive vehicle, a unit comprising: a theft-resisting casing closed at one end; an element essential in said system for the operation of said engine, receivable through the second end of said casing into position within said casing supported from said casing; lock-controlled switch means mounted in said casing between said element and said one end and connected in controlling relation with said element and settable in condition restricting the functioning of said element to permit functioning of said element but only under predetermined conditions; closure means for said second end for preventing access through said second end; and connections, for connecting said unit in said system, accessible exteriorly of said unit.

4. In an ignition system for an internal combustion engine of an automotive vehicle, a unit comprising: a theft-resisting casing closed at one end; an element essential in said system for the operation of said engine, receivable through the second end of said casing into position within said casing supported from said casing; lock-controlled switch means mounted in said casing between said element and said one end and connected in controlling relation with said element and settable in condition restricting the functioning of said element to permit functioning of said element but only while said vehicle is substantially at rest; closure means for said second end for preventing access through said second end; and connections, for connecting said unit in said system, accessible exteriorly of said unit.

In testimony whereof I hereunto affix my signature.

HADLEY F. FREEMAN.

CERTIFICATE OF CORRECTION.

Patent No. 1,708,265. **Granted April 9, 1929, to**

HADLEY F. FREEMAN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 81, for the numeral "59" read "49"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of July, A. D. 1929.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)

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