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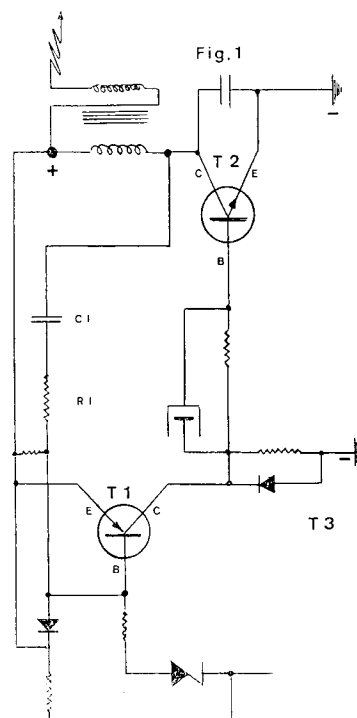
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133
E-28003 Madrid (ES)(54) **ELECTRONIC OSCILATOR EQUIPMENT FOR INTERNAL COMBUSTION ENGINES.**

(57) The disclosed equipment is provided to reduce contaminating gases and to make better use of the consumed energy, and is comprised of an oscillator and power circuit consisting of two transistors and a time constant maintaining the ignition coil in conditions of producing nine sparks in each cylinder during the piston stroke during its working phase. The power transistor T2 conducts when the transistor T1 biases through the breaker, fig.3 is closed or the T3 is conducting, upon interrupting the circuit to the ground, and an inverse wave is produced which biases T1, and the cycle is repeated.



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Scope of the invention

This present invention refers to an electronic oscillator equipment for the ignition of petrol engines which has been specially conceived to increase the yield of the engine with lower consumption and a very considerable reduction of the toxic gases which emanate from an imperfect combustion.

Background of the Invention

As known, an ignition is produced in petrol engines by the flying of a spark by means of a sparking plug placed in the inside of the explosion chamber.

In this sense, the solutions known to date consist of a high tension coil, whose primary is feeded by the continuous current of the battery (12 v). This said circuit is cut or interrupted by the action of contacts named contact points, assembled in the inside of a mechanism known as DELCO, which are subjected to approximately a 4 A. intensity. This cut of current is produced in synchronization with the critical moment of maximum compression of each cylinder, so that an over tension is produced (extra break current), which when induced in the secondary winding of the coil, produces a HIGH TENSION current, through which a distributor (pipe and cover of the delco), is conducted to the sparking plugs producing the inflammation of the mixture compressed in the chamber of each cylinder, at the moment of the corresponding cycle.

With this type of ignition, the inflammation of the compressed mixture is instantaneously produced in a 20,8% of its totality, initiating a flame front which propagates to the inside of the cylinder chamber, creating hydrocarbide rich, gas turbulences, which do not reach inflammation point in its totality prior to the opening of the escape valve, escaping to the outside by an escape tube.

With the purpose of partially mitigating these disadvantages, high tension coils have come out in the Market, with greater primary consumption (7 A.) and greater secondary tension. The spark produced is harder, with the creation of the flame front being more intense and increasing by 1% the burnt gases. Since the consumption which the contact points have to bear in the breaker is greater, they deteriorate rapidly.

In order to overcome this disadvantage, the first electronic ignition, including a power transistor to effectuate the breakage of the coil, is born, and it is sent in its base by the classical contact points, though with a great reduction in the intensity with which they have to cope with.

At present, various engine manufacturers replace the breaker of contact points by inductors or

coils placed in the inside of the delco (as many as there are cylinder), which, being in the presence of a rotational magnet, generate an impulse which commands the base of a power transistor, governing the primary of the coil.

In all of the previously indicatd cases, in the inside of the cylinder chamber, only one spark continues to fly.

Description of the invention

The oscillator electronic circuit proposed by the invention, solves in great part, the present problems of atmospheric contamination, energy saving (fuel) and is based on the creation of various fronts of consecutive flames, which in one same period of time (piston stroke), inflames the the compressed mixture NINE TIMES, since nine continuous sparks are produced in each sparking plug, accompanying the piston in its working stroke in 3/4 of its run and inflaming up to 63,2% of the accumulated mixture, versus 28,8 % which is inflamed with one single discharge or spark of the rest of the ignitions.

At first, and on examination of the previous paragraph, it seems that if a sparking plug with one single spark lasts approximately 20.000 kms., with nine, it would last much less, though after the tests performed, it is observed that the opposite is true, since they last more than 50.000 kms. On analizing the electrodes of a sparking plug, we observe that part of the scales which cover it, is decomposition by oxidization of the actual material of the electrodes, which, when hot by the effect of the previous explosion, come in contact with the hydrocarbide rich, gas turbulences producing a chemical reaction which is transformed in oxide. In the case in question, this phenomenon does not occur, since when the gases enter in contact with the electrode, they find the latter with spark and so, inflame, not permitting the said reaction.

It is obvious to point out that to a greater combustion, the services of the engine increase, and that in order to keep the same, an inferior quantity of fuel is required. Likewise, the solid residues are much less (carbon) and gases (carbon monoxide, sulphurs, etc.) which come out through the escape, being able to certify that these decrease 50 % in the most unfavourable cases, compared with those detected in any other engine with another kind of ignition.

Description of the drawings

In order to complete the description carried out, and so as to help to a better understanding of the characteristics of the invention, this present descriptive document a diagram enclosed, which

forms an integral part thereof, and which, with an illustrative and non-limitative character, represents the circuit of the present invention.

Preferred embodiment of the invention

When actuating the contact key we have current in the circuit, on commencement of the engine running and at a specific moment, the closure of the breaker (contact points, figure 3) or (electromagnetic breaker impulse, figure 2), is produced, which causes the direct biasing of the transistor T1, consequently appearing a 12 v.tension in the C collector of this transistor, thus biasing the base B and the emitter E of the transistor T2, which provokes the feeding of the primary winding of the HIGH coil. At the same time, there appears in the collector C of transistor T2, an inverse damping oscillation which transmits through the condensor and the resistance C1 and R1 (time constant) reaching the base B of transistor T1., which it biases, thus initiating a new cycle, which is repeated a series of foreseen times, in this case, nine, during the time which the contact points remain open or in the case of the electromagnetic breaker, the no-conduction time of the transistor T3., when closing by the action of the cam, the oscillator is blocked, since the transistor T1 is directly biased.

It is not considered necessary to make this description more extensive in order that any expert in the art may understand the reach of the invention and of the advantages derived thereof.

The materiales, components, shapes, size and disposition of the elements shall be susceptible to variation, on condition that does not suppose an alteration in the essenciality of the invention.

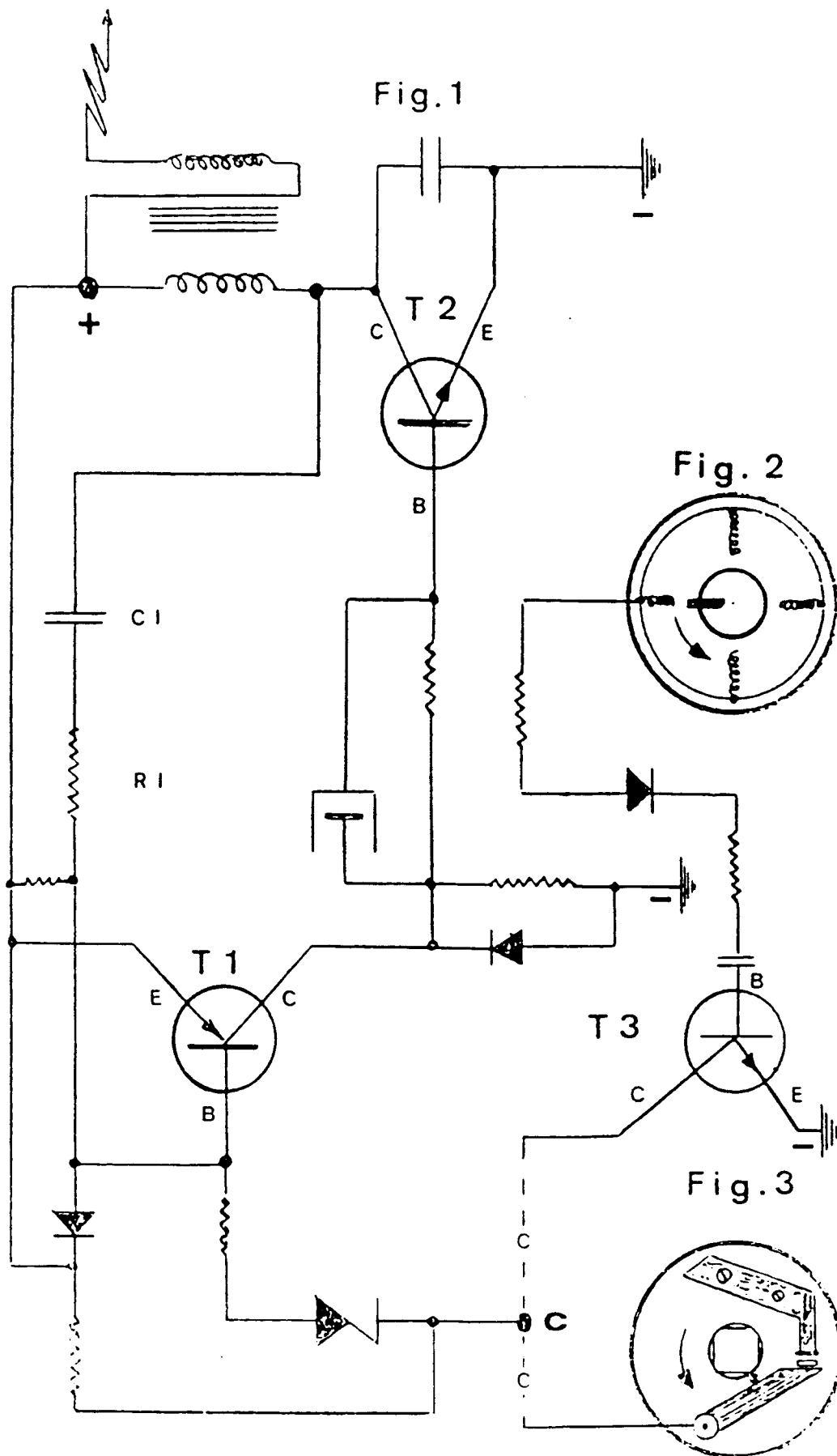
The terms used to describe this document shall always be taken in a broad and non-limitative sense.

Claims

1. Electronic oscillator equipment for internal combustion engines, essentially characterized by consisting of a power transistor which governs the ignition coil.
2. Electronic oscillator equipment for internal combustion engines according to claim 1, characterized in that for the handling of the power transistor, it includes an oscillator transistor, regulated by a time constant comprising a condensor and a resistance.
3. Electronic oscillator equipment for internal combustion engines according to the previous claims, characterized in that for the biasing of

the oscillator transistor, it takes advantage of an inverse oscillating phenomenon produced by the residual wave of the HIGH coil primary extracurrent.

4. Electronic oscillator equipment for internal combustion engines, which may operate with the classical breaker (contact points) or with the electromagnetic circuit which at present are included by some engine manufacturers.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 91/00058

A. CLASSIFICATION OF SUBJECT MATTER		
Int.Cl. ⁵ F 02 P 1/08		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Int.Cl. ⁵ F 02 P		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR, A, 1337608 (PAL-MAGNETON) 5 August 1963, see page 1, line 1, page 4, left-hand column, line 11; figures 1-4 --	1,4
X	FR, A, 1530557 (LOMBARDINI FABBRICA ITALIANA MOTORI) 20 May 1968, see figure 1; page 1, left-hand column, line 22 - page 2, right-hand column, line 4 --	1,4
A	US, A, 3229162 (D.C. LOUDON) 11 January 1966, see the whole document --	1
A	US, A, 3504373 (STRELOW) 31 March 1970, see the whole document -- ./.	1,2,4
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 16 April 1992 (16.04.92)		Date of mailing of the international search report 20 May 1992 (20.05.92)
Name and mailing address of the ISA/ EUROPEAN PATENT OFFICE Facsimile No.		Authorized officer Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 3963015 (G. HAUBNER et al.) 15 June 1976 --	
A	US, A, 3938491 (B.M. MAZZA) 17 February 1976 -----	