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(54) **Fuel saving device**

(57) The invention relates to a device (1) for fuel saving that improves the condition of the fuel before the fuel enters the combustion phase. This improvement is achieved by the induction of out of phase magnetic fields generated by several pairs of opposed magnetic components (5), in which each pair ferromagnetic parts extending from the magnetic components (5) are situated at 90° with respect to another pair. These fields generate changes at a molecular level at the same time as they produce an improvement in disaggregation and ionisation of the fuel subjected to these magnetic fields, improving the quality of the material to bum in combustion and reducing the emission of contaminants and CO_2.

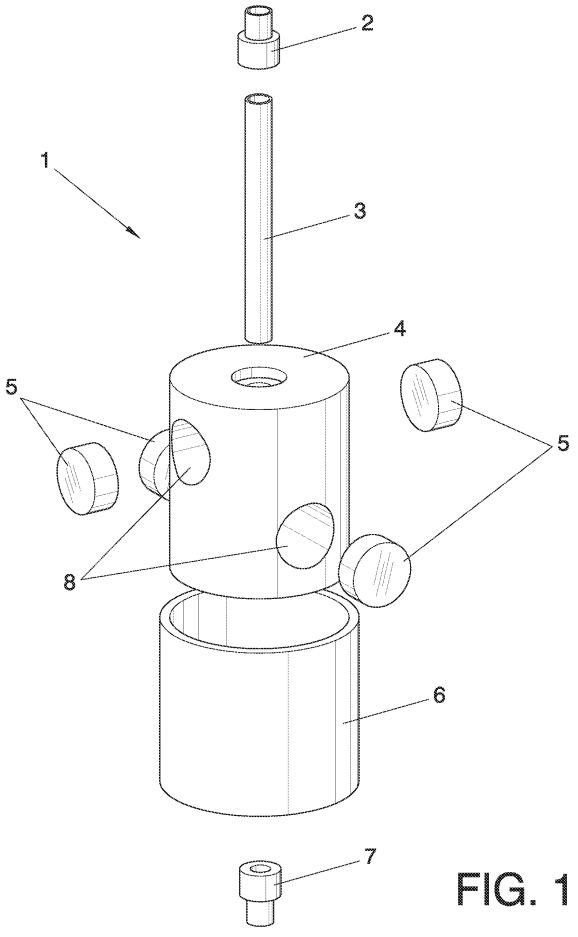

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a device for fuel saving and reducing contamination and CO_2, to be installed in a fuel distribution circuit, achieving a significant reduction of fuel consumption and also an improvement in the levels of contaminants and a reduction of CO_2 emitted.

[0002] The object of the invention is the reduction in fuel consumption and of emission of contaminants by means of this device, which can be used in any combustion process, such as internal combustion motors, boilers, ovens, burners, turbines, etc. that make use of any type of hydrocarbon.

BACKGROUND OF THE INVENTION

[0003] Magnetic devices are known today that cause polarisation phenomena in techniques for treatment of liquids circulating through piping, particularly water or fuel. The purpose of this polarisation is to avoid problems caused in piping, such as the appearance of lime scale in water piping or the appearance of soot in the combustion produced in boilers and internal combustion engines.

[0004] In this latter field, not only is the reduction in the production of soot important but also that the application of appropriately designed magnetic fields for each application may also bring significant reduction in consumption due to the increase in the efficiency of combustion.

[0005] The fuel forms long chains therein that try to group together, hindering correct oxygenation after atomisation. The application of a magnetic field eliminates such groupings, allowing subsequent improvement in the mixing process, which results in higher efficiency.

[0006] Equally, the ionic additives remain polarised by the presence of such a magnetic field, encouraging their mixture and maintaining them in suspension in such a way that their action on the fuel is more effective.

[0007] Among the documents referring to these types of devices, are the following Patents:

- ES9001205, titled: "Dispositivo para mejorar el rendimiento de motores de combustion interna" (Device for improving performance in internal combustion engines).
- ES9001993, on: "Acondicionador magnético de fluido" (Magnetic fluid conditioner).
- ES90304105, Titled: "Tratamiento de hidrocarburo combustible" (Treatment of combustible hydrocarbon).
- ES90305599, titled: "Mejora de la eficiencia de combustión de combustibles" (Improvement in combustion efficiency of fuels).
- ES90901375, Titled: "Aparato para tratar magnética mente un fluido" (apparatus to treat a fluid magnetically).
- ES91114449, on a: "Aparato magnético para el tratamiento de carburantes" (Magnetic apparatus for treatment of fuels).
- ES2153051, titled: "Aparato economizador de combustible" (Apparatus for fuel saving).
- ES2099010, titled: "Economizador de combustible" (Fuel saving device).
- ES2248726, titled: "Dispositivo economizador anticontaminación para combustibles liquidos" (Fuel saving, anticontamination device for combustible liquids).
- ES2241855, titled: "Economizador de combustible perfeccionado" (Improved fuel saving device).

[0008] And also the following Spanish utility models:

- ES1021455, titled: "Dispositivo magnético para el tratamiento de combustibles líquidos de automoción y similares" (Magnetic device for the treatment of liquid fuels for motoring and similar functions).
- ES1021718, of a: "Dispositivo para la purificación del combustible en vehículos a motor" (Device for the purification of fuel in motor vehicles).
- ES1051258, titled: "Economizador de combustible" (fuel saving device).
- ES1049045, titled: "Economizador de combustible perfeccionado" (Improved fuel saving device).
- ES1026296, titled: "Dispositivo economizador de combustible para calderas y motores" (Fuel saving device for boilers and engines).

[0009] These inventions did not achieve a correct disaggregation of the fuel, so their effectiveness was very limited and their use has not been popularised on the market to date.

[0010] Also, a large number of these inventions listed above are only suitable for internal combustion engines, are their use is limited to liquid fuels.

DESCRIPTION OF THE INVENTION

[0011] The fuel saving device and reducer of contaminants and CO2 that is the object of this invention is designed to optimise hydrocarbon combustion processes, such as combustion processes in internal combustion engines, burners in ovens, boilers or turbines.

[0012] The device of the invention proposes to have at least two pairs of magnets that generate two magnetic fields, out of phase by 90°, in which the magnets of the same pair are facing each other and opposite in polarity, which causes the fuel to ionise and disaggregate with higher efficiency. They also give the fuel a rotational movement at a molecular level, which brings about an improvement in the combustion process. This results in a fuel saving at the same time as a reduction in contaminants and CO_2 emitted.

[0013] This improvement in combustion is effective in whatever process the combustion of hydrocarbon is re-

quired, no matter if this be liquid or gaseous, and independently of the type of machine in which the combustion takes place. For example, the device of the invention can be applied in internal combustion engines, ovens, boilers, burners, turbines, etc.

[0014] This device ensures that the fuel improves its properties on reaching the combustion chamber so that it burns satisfactorily. As a consequence of the application of magnetic fields, a molecular reorganisation process takes place and the amount of impurities is reduced. As a consequence of the present invention, fuel qualities are improved to effect a better combustion, thus achieving a large percentage reduction in the amount of fuel required.

[0015] Under the action of the first magnetic field, the molecules of fuel, additives and impurities are reorganised at a molecular level and are caused to align. After passing through the second magnetic field, with an orientation that is different to the first, the reorganisation and aligning are improved and these molecules are also given a rotational movement.

[0016] The magnets of each magnet pair are preferably located perpendicularly to the direction of flow of the fuel and each pair of magnets is preferably located in bore holes made at different planes in a housing. Each magnet of each pair is situated in parallel with the other in such a way that their central axes are also perpendicular to the direction of fuel flow.

[0017] This effect changes the properties of the fuel appreciably, achieving a considerable reduction in fuel consumption as well as an appreciable reduction in contaminants.

[0018] All that described above results in a fuel saving and an improvement in the reduction of contaminant and CO_2 levels emitted.

DESCRIPTION OF THE FIGURES

[0019] In order to complement the description and with the aim of improving understanding the characteristics of the invention, in accordance with a preferred example of practical embodiment thereof, the description is accompanied by a set of figures, which are integral to the description, where for the purposes of illustration and without limiting the scope of the invention, the following are shown:

Figure 1.- Exploded view of the device in isometric perspective.

PREFERRED EMBODIMENT OF THE INVENTION

[0020] A preferred embodiment of the device of the invention (1) is described with reference to the figures.

[0021] In a first preferred embodiment of the invention, the device (1) is installed in internal combustion engines with an injection system.

[0022] In this case, the device (1) is installed just after the fuel pump by means of an input connector (2) and before the injection pump where the output connector (7) is connected. Once the device (1) is connected, the fuel flows through the inside of an interior tube (3) and passes through the area in which this interior tube (3) is surrounded by a housing (4) where the magnet pairs (5) are located in bore holes (8) made in the housing (4). In order to prevent the magnetic components (5) from leaving the housing (4) and to consolidate the device (1), the housing (4) is encased in an external aluminium tube (6). The magnetic components (5) are out of phase by 90° and facing two by two with the poles opposed. The fuel flows through the internal tube (3) and passes through the area of influence of the magnetic field of the magnetic components (5) and ionises and disaggregates.

[0023] The fuel in the internal tube (3) is subjected to the action of the magnetic components (5), causing the fuel to become ionised and disaggregates more effectively. It also causes a molecular change, giving the fuel a rotational movement at a molecular level that results in an improvement in the combustion process and an accompanying reduction in CO_2 emission.

[0024] In another embodiment of the invention, the device (1) is installed in gas burners, ovens, etc. In this case, the device (1) is installed at the entrance of the gas to the burner, as close as possible to the equipment.

[0025] In a third embodiment of the invention, the device (1) is installed in internal combustion engines without an injection system; in this case the device (1) is installed at the entrance to the carburettor.

Claims

1. Device (1) for fuel saving and reducing contaminants and CO_2 comprising:

   - a housing (4) that has at least two pairs of bore holes (8) opposed two by two, and
   - at least one pair of magnetic components (5) located in the bore holes (8) arranged with the central axes perpendicular to the housing (4),

   characterised in that:

   - each pair of magnetic components (5) forms an angle with respect to another pair of magnetic components (5), with each pair of magnetic components (5) being in parallel planes, and each pair of magnetic components (5) generating a magnetic field out of phase with respect to another pair of magnetic components (5).

2. Device (1) for fuel saving and reducing contaminants and CO_2 according to claim 1, **characterised in that** it additionally comprises an input connector (2) arranged coaxially to the housing (4) enabling the entrance of fuel.

3. Device (1) for fuel saving and reducing contaminants and CO_2 according to claim 1, **characterised in that** it additionally comprises an output connector (7) arranged coaxially to the housing (4) enabling the exit of fuel.

4. Device (1) for fuel saving and reducing contaminants and CO2 according to claims 2 and 3, **characterised in that** it additionally comprises an internal tube (3) through which the fuel flows coupled by one end to the input connector (2) and by the other end to the output connector (7).

5. Device (1) for fuel saving and reducing contaminants and CO2 according to claim 1, **characterised in that** it additionally comprises an external tube (6) encasing the assembly comprising the housing (4) and the magnetic components (5).

6. Device (1) for fuel saving and reducing contaminants and CO2 according to claim 1, **characterised in that** the magnetic components (5) comprise: a magnet, an electromagnet or a combination of a magnet with a metallic part.

7. Device (1) for fuel saving and reducing contaminants and CO2 according to claim 1, **characterised in that** the magnetic components (5) of each pair of magnetic components (5) are arranged with the opposite poles facing and the magnetisation axis perpendicular to the axis of the internal tube (3).

8. Device (1) for fuel saving and reducing contaminants and CO2 according to claim 1, **characterised in that** the housing (4) comprises two parts.

9. Device (1) for fuel saving and reducing contaminants and CO2 according to claim 1, **characterised in that** each pair of magnetic components (5) are arranged at an angle of 90° with respect to another pair of magnetic components (5).

10. Device (1) for fuel saving and reducing contaminants and CO2 according to claim 1, **characterised in that** it additionally comprises some parts of ferromagnetic material extending from the magnetic components (5) in the bore holes (8) of the housing (4) for channelling the magnetic flows.

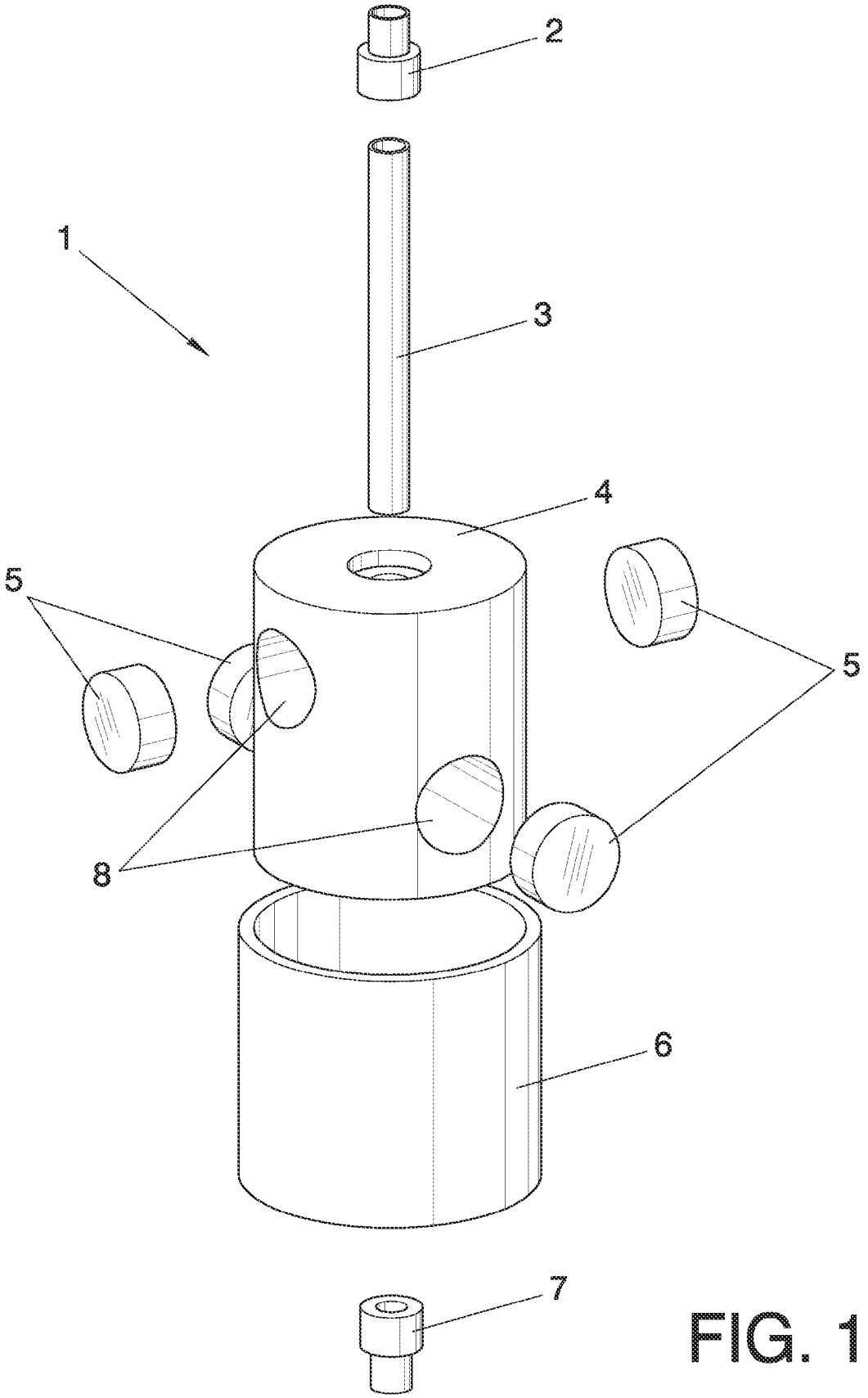

FIG. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 09 15 2611

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 03/021102 A (YUGEN KAISHA PLAN TEC [JP]; TAKENO MITSUNORI [JP]) 13 March 2003 (2003-03-13) * abstract; figures 1-3 *	1-10	INV. F02M27/04
X	DE 94 10 122 U1 (OLSEN SVEN [DE]) 22 September 1994 (1994-09-22) * page 3, line 1 - page 3, line 18; figure 2 *	1-10	
X	US 5 348 050 A (ASHTON THOMAS E [US]) 20 September 1994 (1994-09-20) * column 9, line 39 - column 10, line 60; figures 1-10 *	1-10	
X	DE 102 55 135 A1 (GOETZ ALFRED [DE]) 17 July 2003 (2003-07-17) * paragraph [0042] - paragraph [0049]; figures 1-3 *	1-6,8-10	
A	EP 0 852 291 A (KRINGS JEAN CHARLES HENRY [BE]; VERBIST DANIELLE JEANNINE [BE]; SERVAI) 8 July 1998 (1998-07-08) * column 3, line 4 - column 3, line 59; figures 1-3 *	1	TECHNICAL FIELDS SEARCHED (IPC) F02M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 June 2009	Marsano, Flavio

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 15 2611

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- ES 9001993 **[0007]**
- ES 90304105 **[0007]**
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- ES 2153051 **[0007]**
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- ES 1021455 **[0008]**
- ES 1021718 **[0008]**
- ES 1051258 **[0008]**
- ES 1049045 **[0008]**
- ES 1026296 **[0008]**