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(54) Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition

(57) The invention refers to a device for breaking up the volume of liquid fuels in order to create uniformity in the molecules of the fuel and obtain a uniform molecular composition. This is achieved by obliging the volume of the fuel to pass through the mess of successive layers of metal beads welded together.

With the help of this device we achieve in an internal combustion engine the increase of its momentum, that the maximum momentum is produced at a smaller number of revolutions and that the width of the maximum momentum is maintained constant for a greater number of revolutions, and also that the increase of the engine's horsepower, a clean combustion, a decrease of squalors and of the engine's noise together with longer life of the engine are obtained.

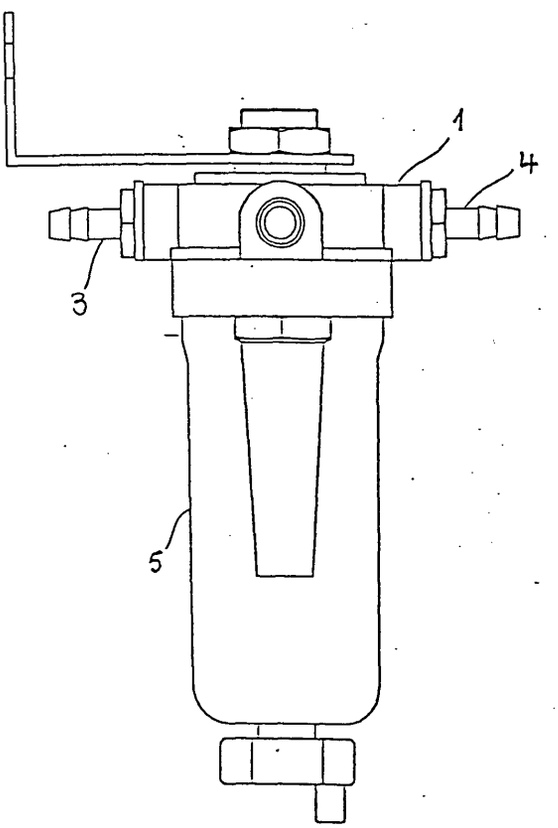

Fig.1

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Description

[0001] The present invention refers to a device for breaking up the volume of liquid fuels in order to achieve uniformity in the fuel molecules, so as to create a uniform molecular composition.

[0002] In an internal-combustion engine (I.C. Engine) with a spraying supply system of gasoline-oil, the spraying (atomization) of the fuel is accomplished through atomizers. The atomized fuel forms a cloudy mass of air and gasoline droplets in the composition chamber.

[0003] Up to now it is attempted the dispersion or spraying rate of the fuel to be proportional to the droplets number, which droplets are formed by a certain quantity of fuel broken up at the injection in the combustion chamber of the engine. It is aimed the number of these droplets, that is the dispersion degree of the fuel, to be as much as possible great, so that the exterior surface presented between fuel and air to be adequate for establishing a perfect combustion.

[0004] If we take a sprayed droplet and examine it concerning its molecular composition, we will find that it consists of oxygen, carbon dioxide, hydrocarbon etc molecules, always in numerically greater quantities than one molecule and not equally spaced between them.

[0005] This dissimilarity concerning the molecular composition and the unequal distances from the oxygen molecules in a sprayed droplet is the main reason why the internal combustion engines present their momentum in accordance with the increase of their revolutions (rpm) and that the maximum of their momentum is reached at a very high number of revolution.

[0006] On the contrary, examining this theoretically, if we manage to put at the center of a sprayed droplet the oxygen molecule and to bring in touch with its perimeter the other molecules, and if we continuously spray to the internal combustion engine such droplets, the exploitation of the fuel would be perfect due to the uniform molecular composition, in relation to the engine efficiency.

[0007] All this is known to the I.C. Engines supply system constructors, who, in order to solve this problem and to approach this theory:

a) Increase the pressure of the atomizers,
b) Increase the number of bores at the end of the atomizers,
c) Change the inclination angles of the bores,
d) Redesign and increase or decrease the intake tubes,
e) Seek to achieve strong turbulence of the fuel before its entrance in the combustion chamber.

[0008] They want the fuel not to be injected as a cylindrical column, but that its droplets be formed as a conically shaped cloud, which guarantees a better contact of the scattered droplets with the air, in other words the constructors try to split the sprayed fuel in more and smaller droplets.

[0009] With the new type of our device for breaking up the volume of liquid fuels, we achieve the aim that the fuel entering the atomizers will consist of uniform molecules and that the droplets sprayed will consist of uniform molecules in correct ratio, so that the best possible combustion is achieved.

[0010] The above and other features and advantages of the present invention will be evident from the following analytical description. The invention will be better understood by referring to the accompanying drawings which depict an embodiment thereof.

[0011] Fig. 1 shows schematically the device.

[0012] Fig.2 shows schematically the support mounting of the device with its retaining screw nut.

[0013] Fig. 3 shows schematically the fuel reservoir and the device mounting with the elastic gasket which acts for their sealing.

[0014] Fig.4 shows the inlet or outlet nipple, with the elastic gasket which is screwed in the thread of the mounting.

[0015] Fig.5 is a cross section of the outlet plug of water-squalors, together with the elastic sealing gasket.

[0016] Fig.6 is another view of the water-squalors outlet plug, with the threaded outlet duct not terminated at the lowest point, so as to achieve an effective clamping-sealing with the fuel reservoir.

[0017] Fig. 7 is a top view of the water-squalors outlet plug.

[0018] Fig.8 is a top view of the device mounting, where three possible inlets and one outlet thereof are depicted.

[0019] Fig.9 shows the cross-sections A-A and B-B of the device mounting.

[0020] Fig.10 shows the vertical layers of the uniformly joined together beads for forming the cone of the breaking up device.

[0021] Referring now to the accompanying figures, we will describe an indicative preferable implementation of the invention. The device is placed as near as possible, near to the spraying system, and the fuel has to pass first through the cleaning filter so as to be absolutely clean for achieving the aims of the invention.

[0022] The device Fig.1 is formed by the mounting (1) in which there are three closed inlets, among which the operator chooses the appropriate one, which will offer the best operation Fig.8, and one open outlet. The three inlets (8), (9), (10) and the outlet (11) of Fig.8 are cross shaped.

[0023] The device mounting is metallic, but it can also be of plastic, and this is not restrictive. In the mounting thread are screwed, through the elastic gaskets (2) Fig. 4, the two inlet (3) and outlet (4) nipples of the device Fig.1. The fuel reservoir (5) Fig. 3 of 250gr. nominal capacity is screwed to the mounting (1) of the device through the elastic gasket (6), for fully sealing the said parts. In the lowest part (7) of the fuel reservoir (5) the outlet plug Fig.5 of water-squalors (12) is screwed, the thread of which contains a duct of removing the refuse,

this duct not covering the whole length of the thread, so as to achieve also, by the elastic gasket, the effective clamping-sealing of the fuel reservoir.

[0024] Inside (13) the device mounting (1), the cone (14) is bolted for breaking up the fuel. It is created by uniform beads (15) of 0,001 to 0,999μ. diameter welded together. As material for making the beads a porous metal (bronze) is used, not excluding the use of plastic, glass and of any other adequate material.

[0025] The beads are welded together in vertical layers, one to 200 or even more, creating thus a closed surface in the shape of a truncated cone (14), cylinder, closed washer, plate, or of any other adequate shape.

[0026] The creation of the layers is accomplished as follows.

[0027] After forming the first bead layer, in every gap produced in the center of four welded together beads a new bead is being welded creating thus a new layer. The same procedure is repeated for the gaps formed by the second layer creating thus the third layer and so on. Continuing doing this, we can form as many layers we wish.

[0028] The device is being placed on the vehicles' body with the help of the support mounting (16) Fig.2 and its retention is assured by the nut in the center of the mounting (1), so that the engineer can start the rotation of the engine in the best way he prefers.

[0029] The device is loaded with fuel coming from the inlet of the metallic mounting, filling up the reservoir (5), and the fuel's volume is forced to pass through the whole mesh of the conically arranged metallic beads mentioned above.

[0030] By passing through the gaps of the first layer, the breaking up of the fuel's volume is achieved. The molecules passing through the gaps of the first layer to continue to the second one have three exit outlets, and the same happens in every layer.

[0031] The molecules passing by the gaps of the layers are being rotated in order to find one of the three exit outlets and, in accordance with their diameter and weight, are being delayed inside the device until they leave the last layer. In this way the molecules are being controlled and at the exit from the device the molecular consistency of the fuel is changed.

[0032] The main advantages obtained with the device during the operation of the engine are:

- Increase of the momentum.
- The maximum momentum is obtained at lower revolutions of the engine, and the width of the maximum momentum is maintained constant for a greater number of revolutions.
- The horse-power of the engine is increased.
- The combustion is clean.
- Squalors are decreased.
- The engine's noise is less.
- The engine's temperature is constant, resulting in less wear and longer life of the engine.

[0033] It must be noted that the description of the invention was made in the way of a non limiting exemplary embodiment. Any change or modification concerning the shapes, dimensions, and materials used for the construction and the assembly, if they do not form a new inventing step are considered to be included within the scope and aims of the present invention.

Claims

1. Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition, **characterized by** that it is consisting of the mounting (1) with three closed intakes, and the engineer can choose to open the one that suits him/her more, and with one open outlet, all of which are cross shaped, where in the mounting thread the two intake (3) and outlet (4) nipples of the device are screwed, and of the fuel reservoir (5), at the lowest point (7) of which the water-squalors outlet plug (12) is being screwed, whose thread has a duct for the exit of the refuse, by that in the interior (13) of the mounting the cone (14) is screwed for obtaining the fuel breaking up, and by that with this device we obtain the result that the fuel channeled to the atomizer will consist of uniform molecules and that the droplets sprayed will have the correct ratio of molecules for achieving the best possible combustion.

2. Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition in accordance with the above claim 1, **characterized by** that this device is placed as near as possible to the spraying system, and by that the fuel has first to pass through the purification system so that it is perfectly clean for attaining the aims of the device.

3. Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition in accordance with the above claim 1, **characterized by** that the device mounting can be of metal, plastic or of any other suitable material, and by that in this mounting the fuel reservoir (5) of indicative capacity of 250gr. is screwed through the elastic gasket (6), for its full sealing.

4. Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition in accordance with the above claim 1, **characterized by** that the thread of the water-squalor (12) outlet plug has a duct not fully covering the length of the thread, so as to obtain an effective clamping-sealing with the fuel reservoir by means of the elastic gasket.

5. Device for breaking up the volume of liquid fuels in

order to achieve a uniform molecular composition in accordance with the above claim 1, **characterized by** that the cone (14) which acts for the breaking up of the fuel is created by uniform beads (15) of 0,001-0,999μ. diameter welded together, and by that as material a porous metal is used, not excluding the use of plastic, glass or of any other adequate material.

6. Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition in accordance with the above claim 1, **characterized by** that the beads for forming the cone are welded together in vertical layers, from one to 200 or even more, producing a closed surface of conical, cylindrical, closed washer, plate or of any other adequate shape, and by that after creating the first bead layer in every gap formed in the center of four welded together beads a new bead is being welded establishing thus a second bead layer, and the same procedure is repeated at the gaps resulting from the beads of the second layer, resulting in a third layer, and so on, creating thus as many layers we wish.

7. Device for breaking up the volume of liquid fuels in order to achieve a uniform molecular composition in accordance with the above claim 1, **characterized by** that the device is loaded with fuel entering from the inlet of the metal mounting and filling the reservoir (5), by that the fuel has to pass through the whole mesh of the metal beads, by that the passage through the gaps of the first layer produces the breaking up of the fuel volume, by that the molecules passing through the gaps of the first layer on their way to the second layer have three exit outlets, and the same happens with every other layer, and by that when the molecules pass through the gaps they are being rotated in order to find one of the three exit outlets and depending on their diameter and weight, they are delayed within the device until they can find the last layer, and in this way the molecules are being controlled and at the exit of the device the molecular composition will have changed.

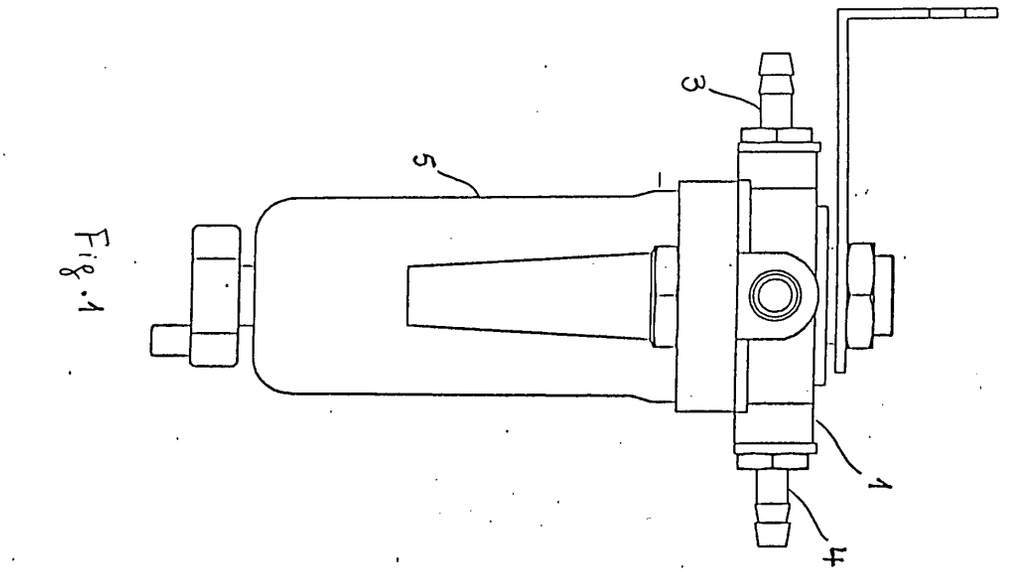


Fig.1

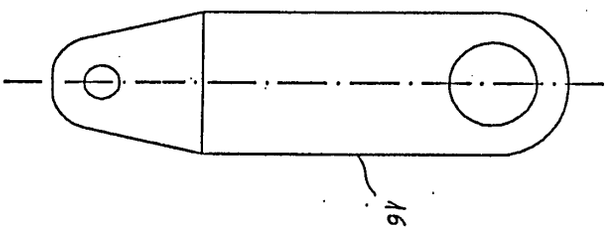
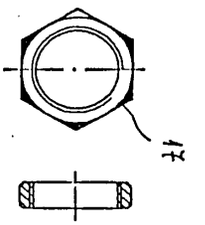


Fig.2



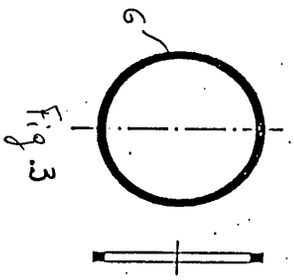
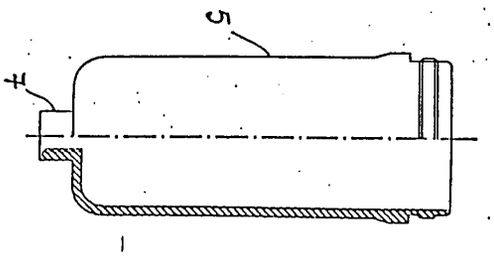
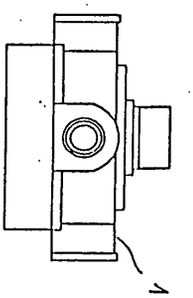


Fig.3





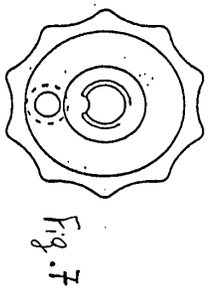


Fig.7

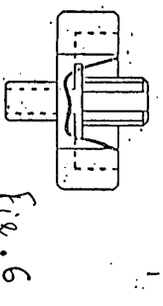


Fig.6

Fig.5

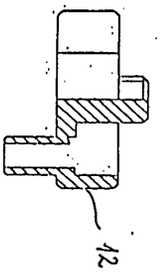
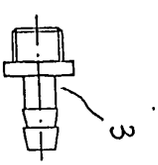


Fig.4



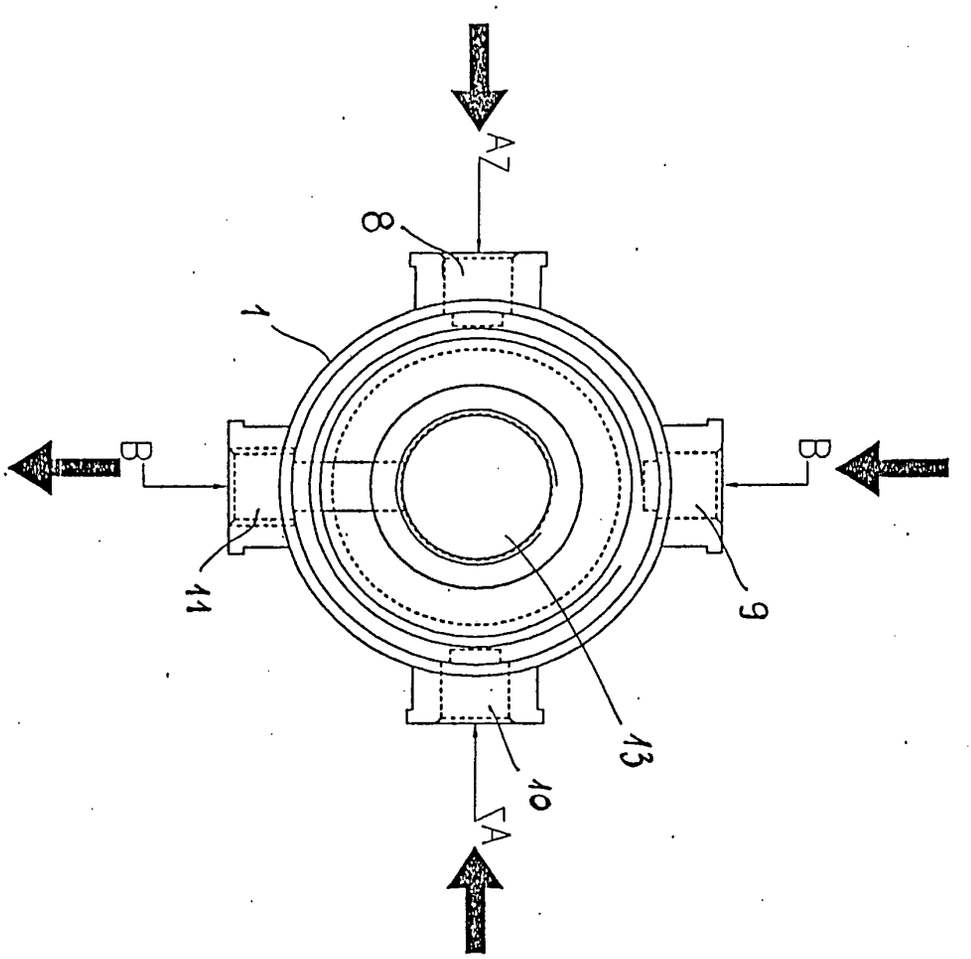


Fig. 8

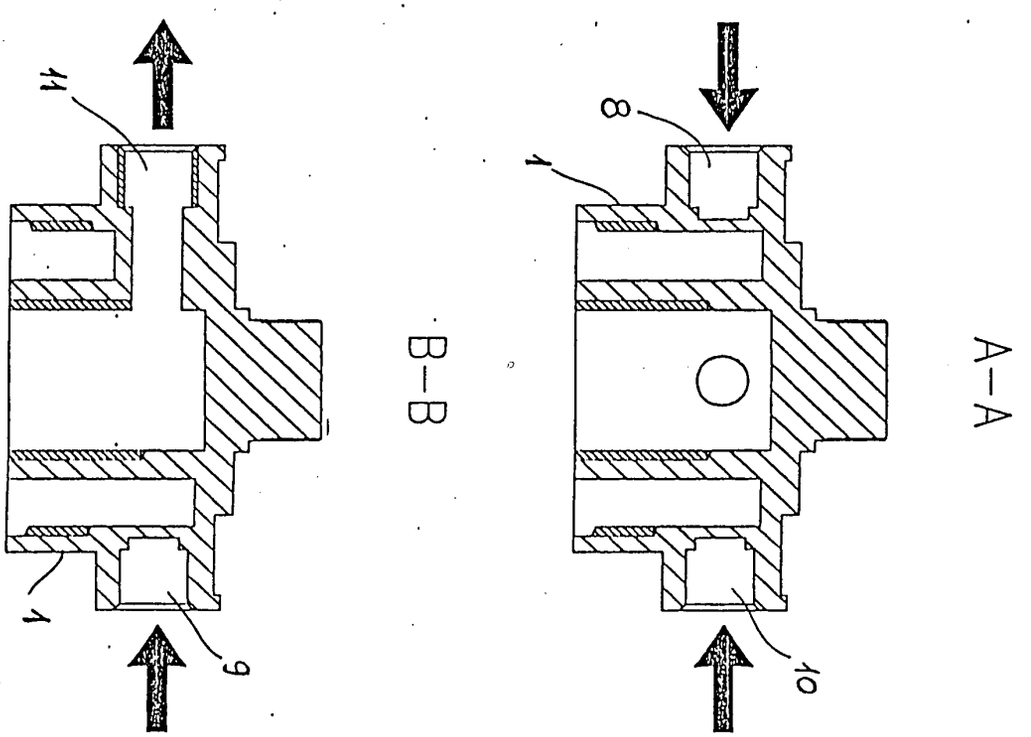
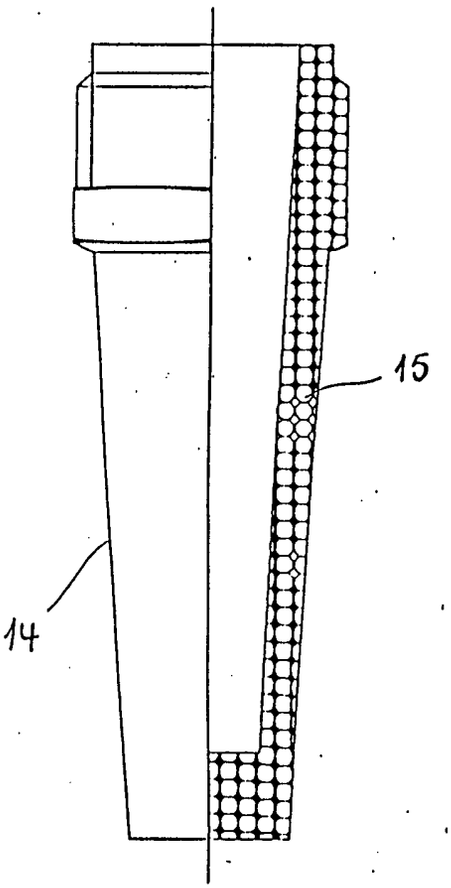


Fig. 9



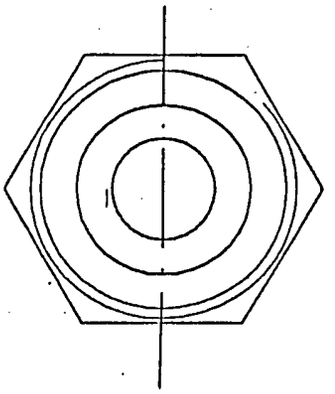


Fig. 10