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EUROPEAN PATENT APPLICATION

21 Application number: 86115470.6

51 Int. Cl.⁴: F 02 M 29/02

22 Date of filing: 07.11.86

30 Priority: 07.11.85 PL 256139

43 Date of publication of application:
13.05.87 Bulletin 87/20

84 Designated Contracting States:
DE FR GB

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54 A turbine for mixing a combustion mixture for spark-ignition, internal-combustion engines.

57 The subject of the invention is a turbine for mixing a combustion mixture used for spark-ignition, internal-combustion engines and composed of air or air, fuel and exhaust gas.

The turbine as per the present invention consists of a body 1 with exhaust gas and air jets and an impeller mounted therein, formed from blades 3 and bars 4 secured to hub 2 and being radially spaced thereto. In the body 1 there are nozzles 5 and 6 for supply of air and exhaust gas. Blades 3 are bent on their periphery relative to their plane.

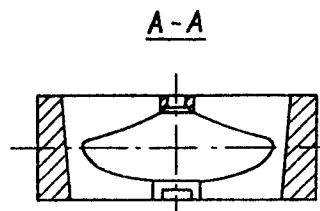


Fig. 2

- 1 -
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A turbine for mixing a combustion

November 7, 1986

mixture for spark-ignition, internal-
-combustion engines

The subject of this present invention is a turbine
5 for mixing a combustion mixture used for spark-
-ignition, internal-combustion engines and con-
-sisting of air and fuel or air, fuel and exhaust
gas. The process involves intimately mixing the
components and atomising and evaporating fuel
10 drops.

Components and assemblies of engine feed systems
are known in the form of immovable and movable
inserts whose aim is to atomise fuel drops and
to facilitate evaporation along the way from
15 the carburettor to the engine cylinders. These
are generally inserts with holes and kerbs, ap-
propriately shaped profiles inserted into the
stream of the mixture, or whirling components
in the form of appropriately shaped impellers
20 driven by the flowing mixture.

A turbine known from Polish Patent Application
No. P-255,444 consists of a body and an impeller
running in bearings and driven with the air and
exhaust gas drawn in through the engine suction
25 manifold.

The essence of the turbine consisting as per this
present invention of a body with exhaust gas
and air jets and an impeller rotatably mounted
therein is that the body has an inner section
30 increasing towards the flow of the mixture and
the impeller ~~is~~ consists of blades secured to

a hub and bars radially spaced relative the hub, the blades being set at an angle varying from 10 to 20° relative the plane passing through the impeller rotation axis and perpendicular to the blade generatrix.

The body mounts jets for delivering air and exhaust gas at an angle varying from 30 to 70° relative the longitudinal axis of the impeller and preferably tangentially to the direction of rotation of the impeller blades. At their periphery from the side of the mixture inlet, the turbine blades are bent at an angle varying from 10 to 90° relative their plane.

The advantage of the turbine as per this present invention is that its construction enables an appropriate mixture to be obtained, which is enhanced by a purposeful combination of blades and bars. The bars break fuel drops and make the mixture finer, whereas the final mixing and homogenisation takes place when the mixture is passing between the impeller blades.

Thanks to additional air being supplied to inside the turbine through an air jet in the turbine body, it is besides possible to again regulate the mixture composition and, when additionally delivering the exhaust gas, use is made of the effect of the gas-dynamic action of the exhaust jet on the mixture for further atomising it and the thermal energy of the exhaust gas for speeding up fuel evaporation in the mixture of air,

fuel and exhaust gas so obtained.

The subject of this present invention is embodied in a drawing where Fig. 1 shows a cross section of the turbine, Fig. 2 shows a longitudinal section along line A-A, Fig. 3 shows a cross section along line B-B, Fig. 4 shows a longitudinal section through the exhaust gas delivering nozzle, Fig. 5 shows a side view of the blade.

Body 1 having an inner section increasing in the direction of the mixture flow has an impeller rotatably mounted therein and consisting of blades 3 and bars 4 secured to hub 2 and radially spaced relative the latter. Blades 3 are set at an angle varying from 10 to 20° relative the plane passing through the impeller rotation axis and perpendicular to the generatrix of blade 3. Inside body 1 there are nozzles 5 and 6 for delivering air and exhaust gas at an angle varying from 30 to 70° relative the longitudinal axis of the impeller and preferably tangentially to the direction of the rotation of impeller blades 3. On the other hand, on their periphery from the side of the mixture inlet blades 3 are bent at an angle varying from 10 to 90° relative their plane.

Patent Claims

1. A turbine for obtaining a combustion mixture for spark-ignition, internal-combustion engines, consisting of a body with exhaust gas and air jets and an impeller rotatably mounted therein, characterised in that body 1 has an inner section increasing in the direction of the mixture flow, whereas the impeller is formed from blades 3 and bars 4 secured to hub 2 and radially spaced relative hub 2, blades 3 being set at an angle varying from 10 to 20° relative the plane passing through the impeller rotation axis and perpendicular to the generatrix of blade /2/.
2. A turbine as per Claim 1, characterised in that jets 5 and 6 for delivering air and exhaust gas are located in body 1 at an angle varying from 30 to 70° relative the longitudinal axis of the impeller and preferably tangentially to the direction of the rotation of impeller blades 3.
3. A turbine as per Claim 1, characterised in that blades 3 are bent at an angle varying from 10 to 90° relative their plane at their periphery from the side of the mixture inlet.

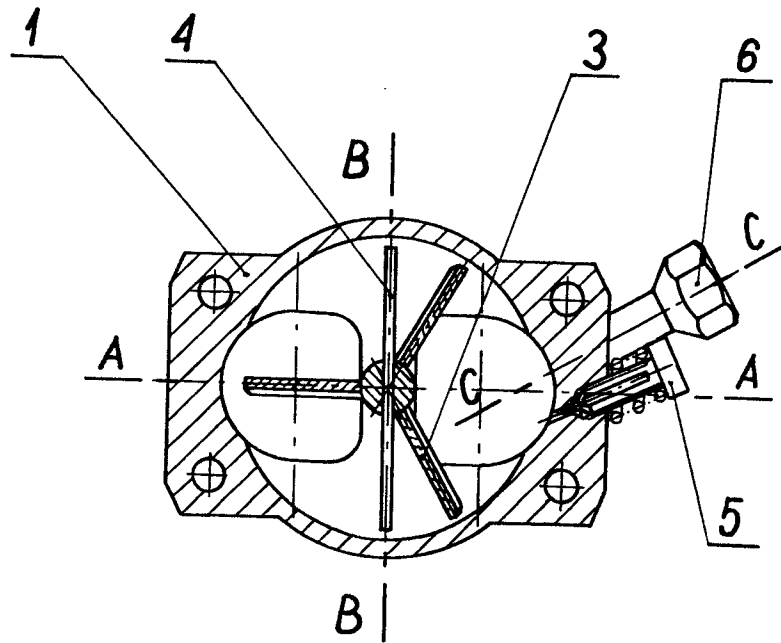


Fig. 1

A - A

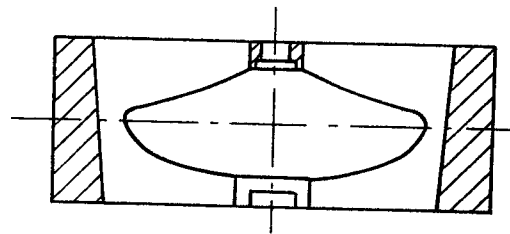


Fig. 2

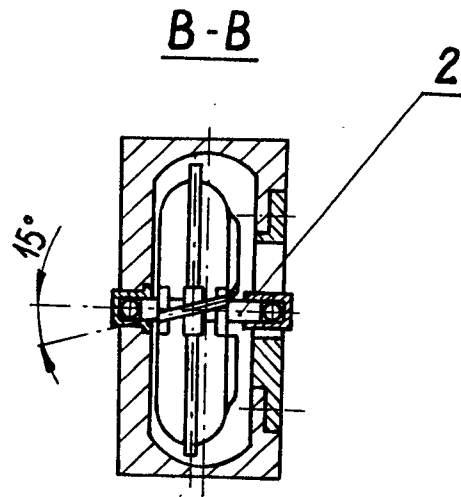


Fig.3

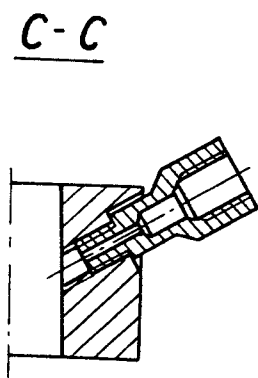


Fig.4

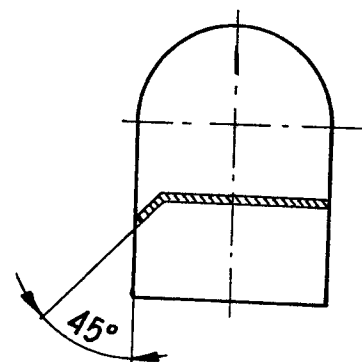


Fig.5