

Description

AIR GUIDED FILTER FOR INTERNAL COMBUSTION ENGINE

5 Technical Field of Invention

The present invention relates to air filter used for an internal combustion engine, particularly air filter provided with air guide which directs and air flowing
10 uniformly passes through the filter.

Background of Invention

Nowadays, the internal combustion engine is designed
15 to have a high performance such as a high power resulted in a better combustion. Such better combustion will thus produce an optimal power and unharmed combustion residue to the environment.

Internal combustion engine at present is of ample use
20 for driving means in agriculture engines, industrial devices and electric generators.

Environmental factor and optimality of fuel per unit power consumed by the internal combustion engine will be improved as well when combustion of mixed fuel and air in
25 the internal combustion chamber can be improved. Improved combustion mixture of air and fuel can be achieved when air to be mixed with fuel has met certain condition.

One among the ways to improve the combustion is fuel and air mixture quality in an internal combustion chamber
30 prior to combustion must be homogeneously mixed and dispersed in the internal combustion chamber. The improvement cited above can be economically achieved by merely substituting the air filter of the engine for an air filter having been equipped with an air guide, not by redesigning the whole
35 construction of the engine.

Summary of the Invention

Based on the reasons disclosed earlier, it is designed a device which can improve the combustion quality of air and fuel mixture in an internal combustion engine. The device is integrally arranged with an air filter and is called as air guided filter.

The object of invention is to improve internal combustion engine performance without changing basic construction of the engine. The improvement encompasses only the action of changing the existing air filter with air filter according to the present invention. By using the air filter equipped with an air guide, the air flowing into combustion chamber stays clean since it has been filtered and guided in such a way that quality of the air and fuel mixed will be better. The combustion in the internal combustion chamber will thus be improved.

20

Brief explanation of the drawings

Further detail of invention can be obtained from the following description aided by the enclosed drawings.

25

Figure 1A illustrates top view of an air filter on which an air guide is attached on the outer part of filter paper with the two ends of the air guide are bound by a supporting ring.

30

Figure 1B illustrates cross-sectional view of air filter shown in Figure 1A.

Figure 2A illustrates top view of an on which an air guide is attached on the inner part of the air filter with the two ends of the air guide are bound by supporting ring.

35

Figure 2B illustrates cross-sectional view of air filter as in Figure 2A;

Figure 3A is a top view of air filter having air guide when fixed in the inner filter paper forming elevation angle with supported ring.

Figure 3B illustrates cross-sectional view of air filter as in Figure 3A;

Figures 4A and 4B illustrates shape and direction of uniform holes of air guide according to the present invention;

Figure 5 illustrates an air guide that is attached to air filter having square shape not cylindrical as generally made; and

Figure 6 illustrates diagrammatically position of air filter in the internal combustion engine according to the present invention.

Disclosure of Invention

Referring to Figures 1A and 1B, air guide (5) can be placed on the outer part of inner part of air filter (1) or, on Figure 2, on the inner part of air filter (1). Air guide (5) of air filter (1) is placed parallel to the corrugated filter paper (6) with upper and lower portions thereof are attached on filter support ring (4). Air guide (5) can be placed in the inner part of filter (as shown in Figures 2A and 2B), or on the outer part of the air filter (Figure 1A and 1B) depending upon the required design of the air filter.

With air guide (5) attached to air filter (5) at present, air flowing into manifold (2) will be in the same direction. When air guide (5) is elevated with certain elevation angle (8), air flowing into the filter will be guided as well as rotated. Rotated air will create mixing effect when mixed with fuel such that the mixtures will be uniform. The mixtures of air and fuel uniformly mixed when combusted in combustion chamber, will create an improved combustion, for which it will sequentially increase internal combustion engine performance.

Air guiding (5) according to the present invention, can be made from materials such as metal plate or other materials formed halves cones cross-section holes (7) in the face. As shown in Figure 4; measurement and space between

pores are made uniform at the face of air guide (5). Shape of halves cones cross-section (7) will force air to form grooves, and direction of holes will define air flows direction. When the holes are in the same direction and uniform, the grooves formed will be in the same direction and uniform such that air flowing into air channel (2) will be in the same direction and uniform. Direction of the grooves are defined by direction of the holes and also elevation angle (8) of air guide (5) with respect to support ring (4) of air filter (1), since support ring (4) of air filter (1) generally forms rectangular with air channel (2).

Since air guide (5) can be made of materials relatively rigid in air filter, it can strengthen construction of air filter (1) as well as function as air guide.

Air guide (5) can be placed in varieties shapes of air filter (1) of internal combustion engine, for example air guide (5) as shown in Figure 5, can be placed in air filter (1) which has square shape having certain elevation angle to the face of air filter (1). Such installed variations do not decrease function and advantage of air guide (5) of said air filter (5).

Figure 6 shows diagram of position of air filter (1) in the internal combustion engine, which is placed before manifold (2) and combustion chamber (3) of the engine.



Claim

1. An air guide filter for internal combustion engine, characterized by the existence of:

5 an air guide (5) placed parallel with corrugated filter plate (6) with upper and lower portions are attached by support ring (4) of air filter;

10 a half-cone cross-section holes (7) on the whole surface of air guide (5) with uniform measurement and space;

when placed with certain elevation angle (8) with respect to support ring (4) of air filter, an air guidance (5) on the air flow that will make the air flow into one direction and a turbulence that will agitate the air and fuel mixtures in combustion chamber (3) of the engine and improve the combustion;

15 installment variation on air filter (1) according to the design of the air filter (1).

**AMENDED CLAIMS**

[received by the International Bureau on 16 March 2001 (16.03.01);
original claim 1 replaced by amended claim 1 (1 page)]

Air guiding filter for internal combustion engine adapted without necessarily altering the internal combustion engine's basic construction, characterized by an air guide (5) in the form of a metal or other material sheet provided with holes whose transversal cross-sections being of semiconal shape (7), uniform size and equivalent spaces on the entire surface thereof, the air guide (5) is placed in the inner part or in the outer part of the air filter depending upon the design of the required air filter (1), or placed parallel with corrugated filter body (6) whose upper and lower portions are attached by supporting ring (4) of the air filter, for filtering, rotating, agitating and guiding properly the air into combustion chamber so as to increase the quality of the air-fuel mixture combusted within the internal combustion chamber owing to the clearerness of the air to be mixed, particularly when the air guide (5) is placed at a specified elevation angle (8) and or attack angle with respect to the supporting ring (4) of the air filter.

20