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(54) The catalyzed diesel filter - especially for soot

(57) The filter has on one base at least three zones with catalysts A, AB, B, where the first zone with catalyst A is separated from the second zone with catalyst B by a middle zone AB. It is significant that the catalyst of each middle zone AB is a composition of adjacent to the middle zone catalysts of A and B zones.

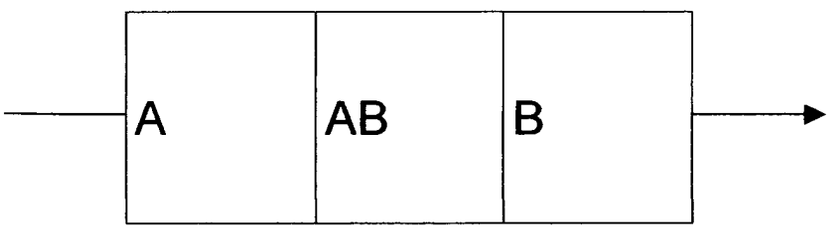

Fig. 1

EP 1 598 535 A1

Description

[0001] The object of this invention is a catalyzed diesel filter, especially for soot, that is used in the automotive industry as an element of the exhaust systems of vehicles driven by combustion engines and it is also used in the power and chemical industry in chimney filters.

[0002] The filter is known from a Polish patent specification no. 173058 and it is intended for anti-soot systems installed in the exhaust systems of vehicles with self-ignition engines.

[0003] The first filter has a ceramic porous filtering structure with formed ducts inside it and an internal heating structure in the form of electrically powered resistance elements placed in some of the ducts.

[0004] The second filter has a ceramic porous filtering structure made of a resistance ceramic that forms internal volumetric heating structure of the filter and is connected to the cables of the electric circuit.

[0005] This filter can also have a supporting structure compound of a set of parallel and alternate oriented pipes. The pipes are plugged on one side and are made of a grid with resistant properties. Their ends are connected to the electric-power circuit and in the space between the pipes there is a high temperature resistant, filtering unwoven cloth.

[0006] A well-known diesel filter that is in use, especially for soot, has a base, which is a part of a profile with high porous structure and a rigid construction made of ceramic material or metal. A highly expanded profile surface is covered with a catalyst carrier layer in the form of zone with only one type of catalyst.

[0007] The essence of the filter, according to the invention, is that on one base the filter has at least three zones with catalysts, where the first zone with a catalyst is separated from the second zone with a catalyst by a middle zone.

[0008] It is beneficial that the catalyst of each middle zone AB is a composition of adjacent to the middle zone catalysts of A and B zones.

[0009] It is also advantageous that the catalytic compounds of each area with the catalyst are inserted in order from the least active to the most active, the direction is compatible with the exhaust gas flow.

[0010] According to this invention, the advantage of this catalyzed diesel filter, especially for soot, is high efficiency in diesel particulates emissions, a significant limitation of carbon monoxide and nitric oxide emission levels and high filter regeneration efficiency. The use of zones allows for an optimal choice of the catalytic activity of particular zones depending on the composition of gases being filtered and it also leads to effective and economic use of catalytic substances. New catalyzed diesel particulates filters show a self-acting functioning, without service as well as the possibility of co-operating with additional exhaust cleaning systems.

[0011] Some examples of complete filters are presented in Figures 1 and 2, which show schemes of diesel filters.

Example 1

[0012] A catalyzed diesel filter, especially for soot has on one base three zones with catalysts A, AB and B. First zone with catalyst A is separated by the middle zone AB from the second zone with the B catalyst. The catalytic compounds of each zone with catalyst A, AB, B are set in order from the least active to the most active, in direction compatible with the exhaust gas flow - Fig. 1.

Example 2

[0013] A catalyzed diesel filter, especially for soot is made in the same way as in the example 1 but with a small difference, that the catalyst of each middle zone AB is a composition of adjacent to the middle zone catalysts of A and B zones - Fig. 1.

Example 3

[0014] A catalyzed diesel filter, especially for soot is made in the same way as in the example 1 but with a difference, that it has on one base five zones with catalyst A, AB, B, BC, C, but the first zone with catalyst A is separated by the first middle zone AB from the second zone with catalyst B. The second zone with catalyst B is separated by the second middle zone BC from the third zone with catalyst C - Fig. 2.

Claims

1. A catalyzed diesel filter, especially for soot has a base covered by a zone with catalyst and it is significant, that on one base it has at least three zones with catalyst (A, AB, B), however the first zone with catalyst (A) is separated from the second zone with catalyst (B) by the middle zone (AB).

2. A filter, according to claim n° 1 where it is significant that the catalyst of each middle zone (AB) is a composition of adjacent to the middle zone catalysts of (A) and (B) zones

3. A filter, according to claims n° 1 or n° 2 where it is significant that the catalytic compounds of each zone with catalyst (A), (B) are set in order from the least active to the most active, in direction compatible with the exhaust gas flow.

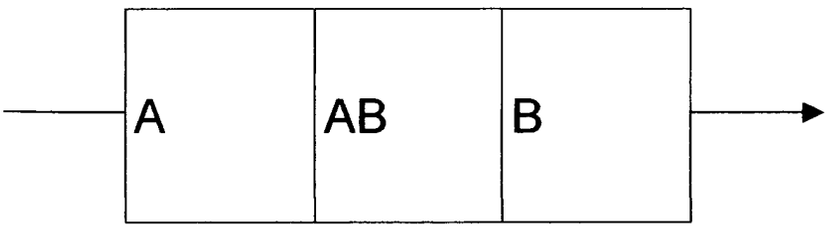

Fig. 1

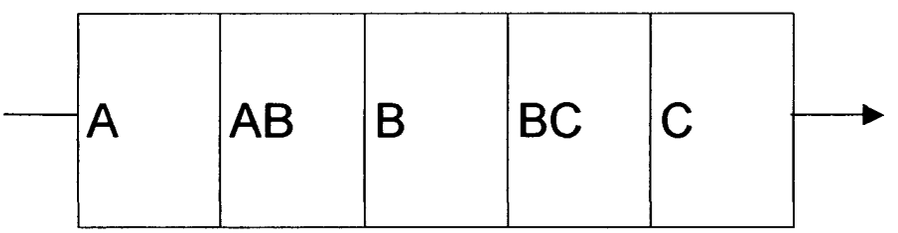

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 04 46 0030

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F01N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Berlin	8 September 2005	Bertram, H

CATEGORY OF CITED DOCUMENTS

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