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(54) An exhaust gas duct component

(57) The invention relates to an exhaust gas duct component used to guide the exhaust gas emissions. The exhaust gas duct component comprises of an input channel (10), an output channel (12). An electronic component (16) which needs to be protected from any liquid entering through the output channel (12), can be placed in or in front of the input channel (10) upstream of the exhaust gas duct component. The input channel (10) is in a shape consisting of a first part (20), and a second part (22), the second part (22) bent downwards. The output channel (12) is placed closer to the bottom of the duct and the input channel (10) is placed at a higher level compared to the output channel (12), i.e. the horizontal part of the input channel (10) is at a conveniently higher level compared to the output channel (12).

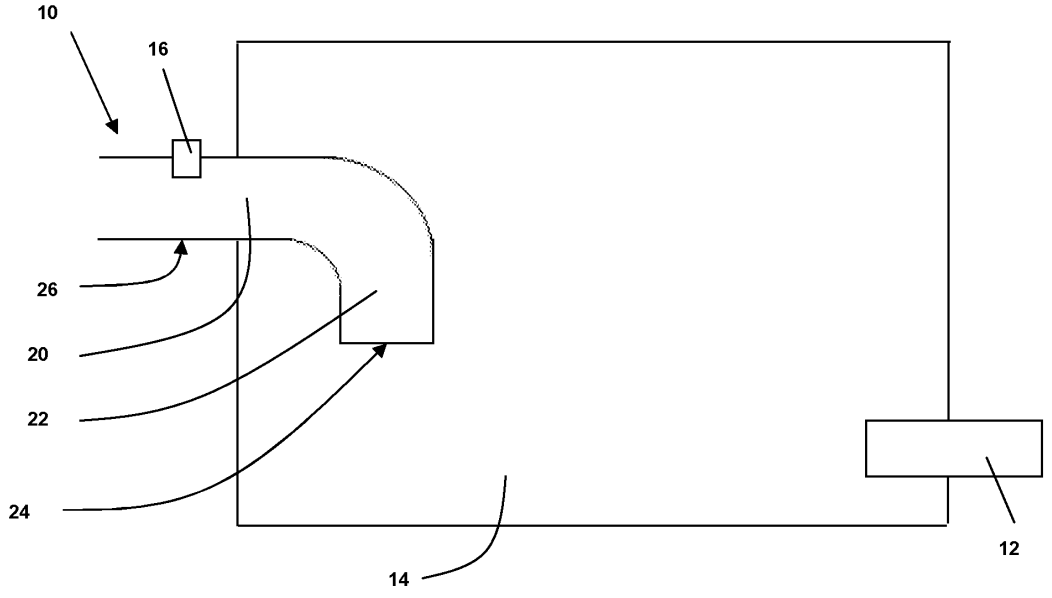

Fig. 1

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Description

Prior Art

[0001] The invention relates to an exhaust gas duct component used to guide the exhaust gas emissions.

[0002] There are different types of exhaust gas duct components available as state of the art.

[0003] The disadvantage of the exhaust gas duct components known in the state of the art, is they are not capable of protecting any electronic component installed upstream in the exhaust gas channel, from contact with liquid possibly entering the exhaust gas channel when the vehicle is moving through water. When the water from outside enters the exhaust gas channel, the water may come into contact with any electronic component positioned in the exhaust gas channel. The water coming in contact with the electronic component placed in the exhaust gas channel may damage the electronic component.

[0004] For example, a sensor positioned in the exhaust gas channel will be at a high temperature when the vehicle is running. When the sensor comes in contact with water the sensor will get damaged.

[0005] The invention proposes an advantageous solution for the disadvantage encountered above.

Advantages of the invention

[0006] The device according to the independent patent claim has the below mentioned advantages:

[0007] The exhaust gas duct component proposed in the invention has an input channel and an output channel. The input channel has two parts, a first part and a second part joined together with a non zero angle between them. The input channel is formed in such a way that the liquid possibly entering through the output channel will not reach easily an electronic component located upstream of exhaust gas duct component.

[0008] Further improvements and/or advantages are realised by the features of the dependent patent claims.

[0009] The exhaust gas duct component has a simple design not deviating much from the components available as state of the art.

[0010] The output channel can be placed advantageously close to the bottom of the duct component so that any water collected in the duct component will flow out automatically when the water level outside is lower than the level of the output channel.

Brief descriptions of the drawings

[0011]

Figure 1 shows a schematic of an exhaust gas duct component according to a first embodiment

Figure 2 a schematic of an exhaust gas duct component when the vehicle is moving through water

Figure 3 shows a schematic of an exhaust gas duct component according to a second embodiment

Description of the embodiments

[0012] The figure 1 shows a schematic of an exhaust gas duct component. The exhaust gas duct component shown in the figure forms a part of an exhaust gas channel. The exhaust gas channel may consist of a plurality of mufflers, plurality of pipes connecting the mufflers with each other and to the engine. The exhaust gas channel receives the exhaust gases from the engine and guides it to the outside of the vehicle. The mufflers in the exhaust gas channel reduce the noise created by the exhaust gases. The figure 1 shows only a part of an exhaust gas channel.

[0013] The exhaust gas duct component shown in the Figure 1 comprises an input channel 10, an output channel 12 and a joining enclosure 14 which encloses a part of the input channel 10 and a part of the output channel 12. The joining enclosure 14 which may be a muffler has a bigger volume compared to the input channel 10 and the output channel 12.

[0014] An electronic component 16 which needs to be protected from any liquid entering through the output channel 12, is placed in front or in the input channel 10 upstream of the exhaust gas duct component.

[0015] The input channel 10 consists of a first part 20 and a second part 22, both parts joined together. The second part 22 is referred as stand pipe. Part of the first part 20 is inside the joining enclosure 14 and part of it is outside the joining enclosure 14. The stand pipe 22 is completely inside the joining enclosure 14.

[0016] The input channel 10 is positioned in the joining enclosure 14 in such a way that the stand pipe 22 is pointing downwards and the opening part 24 of the stand pipe 22 is below the bottom wall 26 of the first part 20.

[0017] The output channel 12 is placed closer to the bottom of the joining enclosure 14 and the input channel 10 is placed at a higher level compared the output channel 12, i.e. the first part 20 of the input channel 10 is at a conveniently higher level compared to the output channel 12.

[0018] Figure 2 shows the functioning of the exhaust gas duct component when the vehicle enters an area filled with liquid, which may be water. The water enters the exhaust gas duct component through the output channel 12. The water entering the exhaust gas duct component will not immediately reach the electronic component 16 because the input channel 10 is at a higher position compared to the output channel 12. But if the water keeps entering through the output channel 12, the water level in the exhaust gas duct component keeps rising. When the water level rises to a level 34, the open-

ing 24 of the stand pipe 22 of the input channel 10 is submerged in water. Now the water level in the input channel will not rise further because the exhaust gases shown with an arrow 30 entering the exhaust gas duct component through the input channel 10 will be at a higher pressure than the water rushing in through the output channel 12. The exhaust gases 30 entering the exhaust gas duct component will keep pushing down the water in the stand pipe 22 of the input channel 10 as shown with an arrow 32. This will result in a portion of the water to be pushed out of the exhaust gas duct component through the output channel 12.

[0019] When the water is collected in the joining enclosure 14 and when the vehicle is moving, the water will move in the form of waves inside the joining enclosure 14. The height 18 represents the height of the waves the exhaust gas duct component will withstand before the electronic component 16 comes in contact with the water in the exhaust gas duct component.

[0020] When the water level 38 outside of the vehicle recedes below the level of the output channel 12, the water collected in the exhaust duct component will start flowing out of the exhaust gas duct component through the output channel 12. A little amount of water which may be still left in the exhaust gas duct component will evaporate because of the high temperature of the exhaust gases.

[0021] Figure 3 shows another embodiment of the invention. Figure 3 has all the components same as in Fig 1 except the shape of the input channel 10. Her the input channel has the first part 20 joined to the second part 22 with a pipe at an angle to both first part 20 and second part 22.

[0022] In different embodiments of the invention, the input channel 10 may have different shapes, consisting of a first part, a stand pipe slanting downwards at an angle, both parts joined together by a part which is convenient to be formed inside the joining enclosure.

Claims

1. An Exhaust gas duct component for exhaust gas, comprising an input channel (10), an output channel (12) and a joining enclosure (14), which can be arranged in an exhaust gas duct, down stream of a liquid sensitive component (16), **characterized in that,**
   the input channel (10) has a first part (20) and a second part (22) wherein the second part (22) is positioned inside the joining enclosure (14) and wherein the second part (22) has a direction with a non zero angle relative to the direction of the first part (20), so that a liquid possibly entering the joining enclosure (14) from the output channel (12) can be prevented from reaching the liquid sensitive component. (16).

2. An Exhaust gas duct component according to claim 1 wherein the joining enclosure (14) is a muffler.

3. An Exhaust gas duct component according to claim 1 or 2 wherein the second part (22) of the input channel (10) is formed as a stand pipe and joined to the first part (20).

4. An Exhaust gas duct component according to one of the preceding claims wherein the first part (20) of the input channel (10) is placed horizontally.

5. An Exhaust gas duct component according to one of the preceding claims wherein the second part (22) is slanting downwards.

6. An Exhaust gas duct component according to one of the preceding claims wherein the opening (24) of the second part (22) is at a level below a bottom wall (26) of the first part (20) of the input channel.

7. An Exhaust gas duct component according to one of the preceding claims wherein the first part (20) is partly exposed out side the joining enclosure (14).

8. An Exhaust gas duct component according to one of the preceding claims wherein the second part (22) has at least a minimum height (18) which can avoid waves of the liquid possibly created inside the joining enclosure (14) by movement of the vehicle, from reaching the first part (20).

9. An Exhaust gas duct component according to one of the preceding claims wherein the output channel (12) is placed horizontally.

10. An Exhaust gas duct component according to one of the preceding claims wherein at least the first part (20) of the input channel (10) is placed at a higher level relative to the output channel (12).

11. An Exhaust gas duct component according to one of the preceding claims wherein the output channel (12) is placed close to the bottom of the joining enclosure (14) so that if any liquid is collected in the joining enclosure (14), the liquid will flow out through the output channel (12) when the level of the liquid outside of the exhaust duct component is lower than inside of the joining enclosure.

12. An Exhaust gas duct component according to one of the preceding claims wherein the liquid sensitive component (16) is an electronic component, e.g. a sensor, especially an electrically heated sensor.

13. An exhaust gas channel comprising a liquid sensitive component, e.g. an electronic component and an exhaust gas duct component according to one of the

preceding claims arranged downstream of the liquid sensitive component.

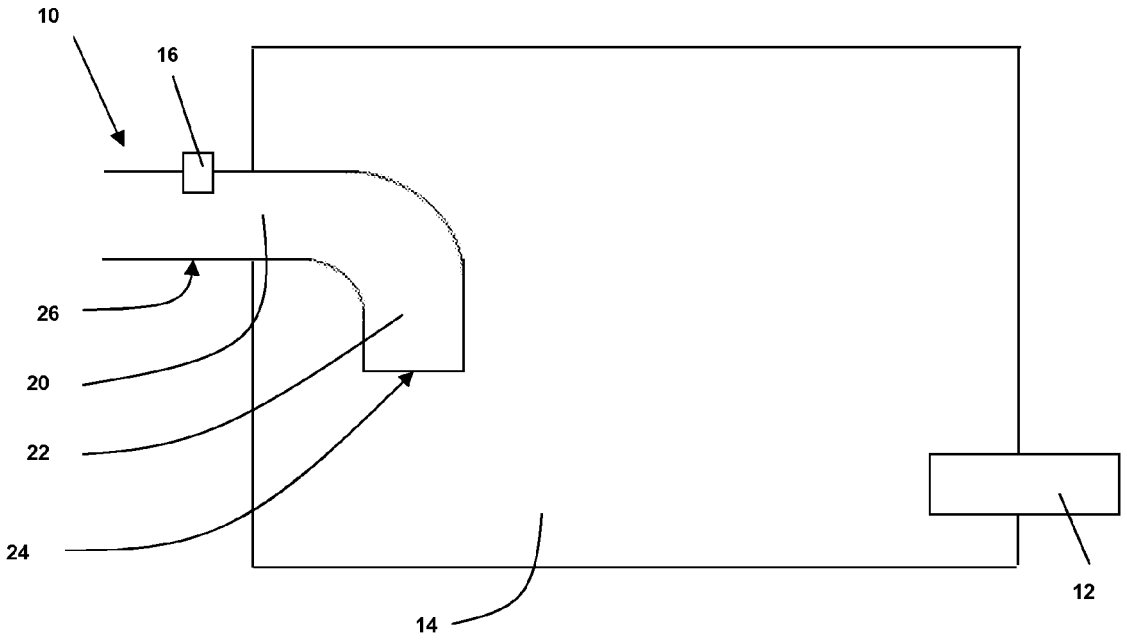

Fig. 1

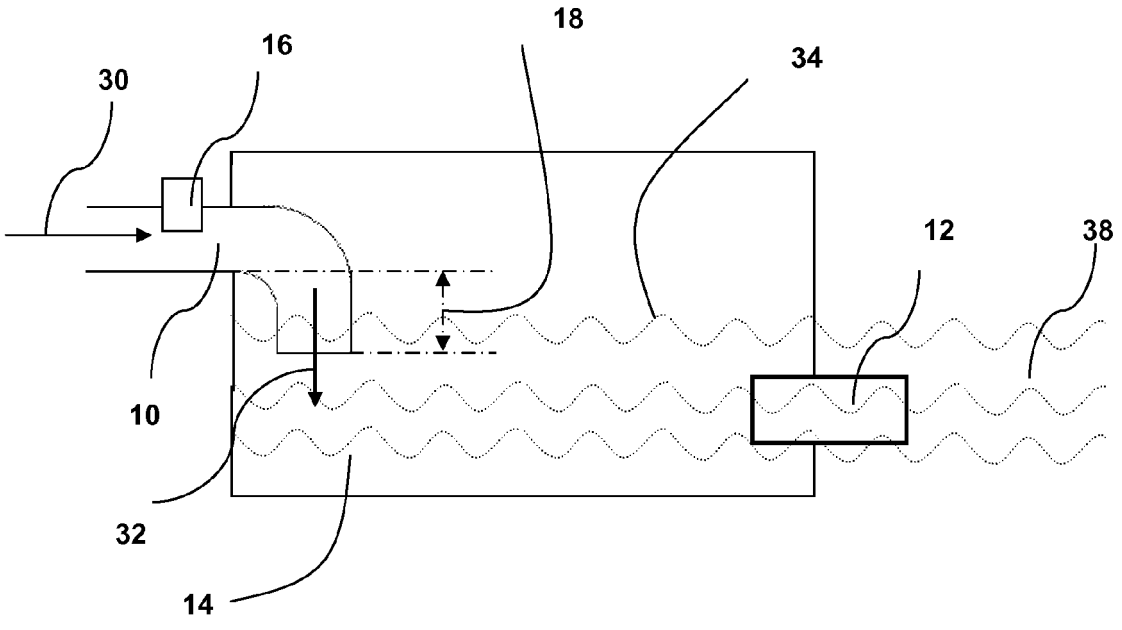

Fig. 2

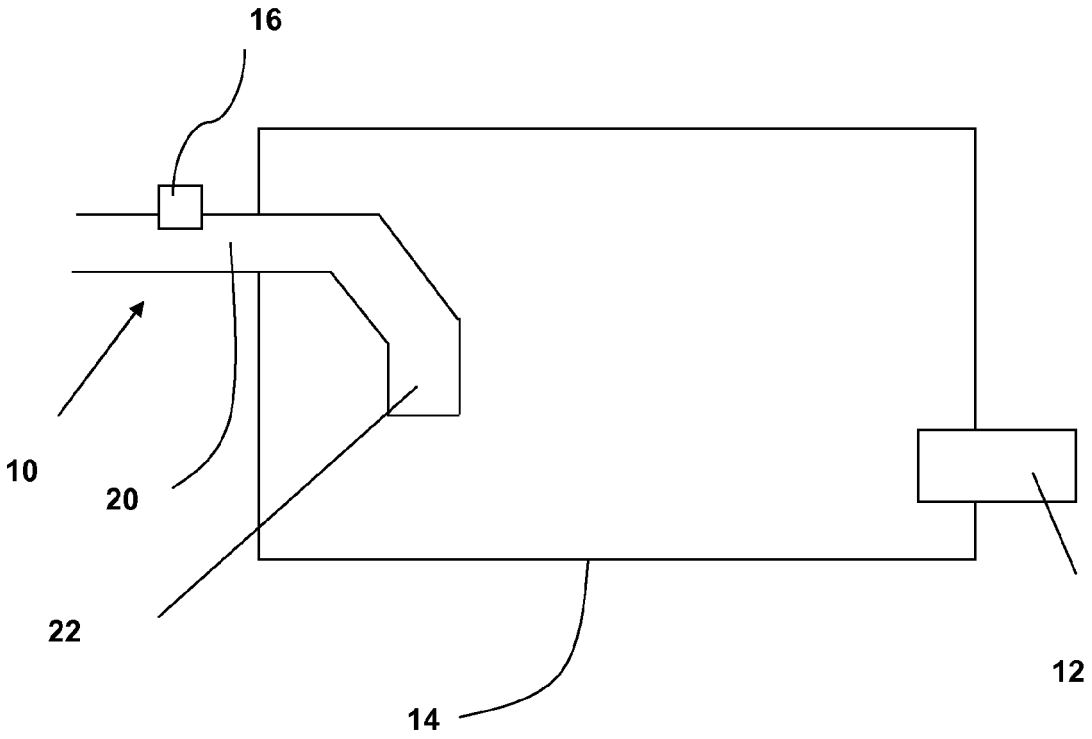

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 08 10 2520

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	US 2 498 979 A (BOURNE ROLAND B) 28 February 1950 (1950-02-28) * column 4, line 28 - column 4, line 51; figure 5 *	1-7,9	INV. F01N7/12
X	US 4 184 566 A (BAKER KENNETH R [US] ET AL) 22 January 1980 (1980-01-22) * column 2, line 21 - column 2, line 61; figure 2 *	1-4,7, 9-11	
X	US 1 065 707 A (NICOLAS W. MONTGOMERY) 24 June 1913 (1913-06-24) * page 1, line 55 - page 1, line 106; figure 1 *	1,2,4,7, 10,11	

TECHNICAL FIELDS SEARCHED (IPC)

F01N

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 August 2008	Tatus, Walter

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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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13-08-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2498979 A	28-02-1950	NONE	
US 4184566 A	22-01-1980	NONE	
US 1065707 A		NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82