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(54) **A DEGASSING SYSTEM**

ENTGASUNGSSYSTEM

SYSTÈME DE DÉGAZAGE

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Description

Field of the Invention

[0001] The present invention relates to a degassing system which enables to discharge the gas accumulating particularly in internal combustion engine cooling systems.

Background of the Invention

[0002] As the operation time of the internal combustion engines increase, their temperatures rise. Cooling systems are developed in order to maintain the engine at the most suitable operation temperature. The said cooling systems generally carry the heat they receive from the engine to the radiator by means of a coolant. This way, the excessive heat in the engine is transferred to the environment. However, the engine is cold at the initial startup of the engine. The engine should run for a while in order to reach the most suitable operation temperature. If the said cooling system is operational during the time in which the engine reaches from the initial startup to the most suitable operation temperature, the time for the engine to reach the most suitable operation temperature will increase. This in turn will cause engine wear-out, failure to burn the fuel efficiently, and thus increase of both the fuel consumption and the unburned fuel discharged through the exhaust. For this reason, thermostats are used in order to ensure that the cooling system is not operational until the engine reaches the most suitable temperature. If the temperature of the coolant is lower than a predetermined temperature, the thermostat prevents the coolant from going to the radiator. As the temperature of the coolant rises, the thermostat is opened and thus enables the coolant to go to the radiator. Air may be accumulated in the said cooling system from time to time. In this case, efficiency of the cooling system declines.

[0003] Particularly in the engines of heavy commercial vehicles comprising two sleeve-type thermostats, the said thermostats are below the highest coolant level; thus it is not possible to discharge the gases accumulating in the cooling system. Degassing in poppet type thermostats is generally carried out via a discharge valve provided on the thermostat in by-pass positions. For this reason, degassing is carried out more easily in comparison to the sleeve type thermostats.

[0004] International patent document no. WO9713059, an application in the state of the art, discloses a poppet type thermostatic valve which is installed to an internal combustion engine coolant circuit and which controls the flow.

[0005] United States Patent document no. US6045051, an application known in the state of the art, discloses an improved known thermostat cover having certain form.

[0006] United States patent document no.

US4300718, an application in the state of the art, discloses a housing comprised of a poppet type thermostat and degassing passage placed at the cooling system outlet of the engine.

[0007] Japan Patent document no. JP2012026279 (A) an application in the state of the art, discloses the two thermostats close communication holes of a partition in first valves when a temperature of the refrigerant in an upper chamber is less than a predetermined temperature and simultaneously open a second inlet in second valves. While, when the temperature of the refrigerant is the predetermined temperature of higher, the thermostats open the communication holes and simultaneously close the second inlet. The upstream side thermostat is arranged on a predetermined angle position on a circumference relative to a virtual straight line where a central position of an opening start area of the first valve passes through centers of the two communication holes.

Summary of the Invention

[0008] The objective of the present invention is to provide a degassing system according to claim 1, which enables to discharge the gas accumulating particularly in internal combustion engine cooling systems, especially at every position of the thermostat.

Detailed Description of the Invention

[0009] A degassing system developed to fulfill the objective of the present invention is illustrated in the accompanying figures, in which

Figure 1 is a schematic view of the degassing system.

Figure 2 is another view of the degassing system.

[0010] The components in the figures are given reference numbers as follows:

1. Degassing system
2. Body
3. Slot
4. Slot opening
5. Delivery channel
6. Collection chamber
7. Collection channel
8. Discharge channel

[0011] The degassing system (1) of the present invention comprises

- at least one body (2) which is in the form of a cover whose sides are higher than its middle part,
- at least two slots (3), each one of which can cover at least one part of a thermostat, and which preferably rise from the middle part of the body (2) in the same direction with the sides of the body (2),

- at least two slot openings (4), of which there is one provided in each slot (3), and which enable the gases accumulating in the slot (3) to be discharged from the slot (3),
- at least two delivery channels (5), of which there is one provided at each slot opening (4), and which enable to carry the gases arriving at the slot opening (4),
- at least one collection chamber (6) in which the gases carried by the delivery channels (5) accumulate,
- at least one collection channel (7), which is located on the collection chamber (6), and which enables the gases that may have accumulated in the body (2) to be discharged from the body (2) and the said gases to be taken into the collection chamber (6),
- at least one discharge channel (8) which enables the air accumulating in the collection chamber (6) to be discharged.

[0012] The degassing system (1) of the present invention basically comprises at least one body (2) which is in the form of a cover whose sides are higher than its middle part, A tray which is flat in the middle having sides that curve upwards can be given as an example for the form of the body (2). There are at least two slots (3) on the flat part of the body (2), each one of which can cover at least one part of a thermostat. The said slots (3) are preferably circular in compliance with the upper section of the thermostats that will be disposed therein. The said circular shape forms a cylinder by rising from the middle part of the body (2) in the same direction with the sides of the body (2). There are at least two slot openings (4), of which there is one provided in each of the said slots (3) in order to enable the gases accumulating in the slot (3) to be discharged from the slot (3). The said slot openings (4) are connected to at least two delivery channels (5), of which there is one provided at each slot opening (4), and which enable to carry the gases arriving at the said slot openings (4). The degassing system (1) of the present invention comprises at least one collection chamber (6) in which the air carried by the delivery channels (5) accumulate. The degassing system (1) of the present invention also comprises at least one collection channel (7), which is located on the collection chamber (6), and which enables the gases that may have accumulated in the body (2) to be discharged from the body (2) and the said gases to be taken into the collection chamber (6). The collection chamber (6) comprises at least one discharge channel (8) which enables the air accumulating in the chamber to be discharged. The said discharge channel (8) enables the gases; which accumulate in the cooling system, to which the degassing system (1) of the present invention is connected; and which are collected by the degassing system (1); to be discharged from the said cooling system.

[0013] In the preferred embodiment of the invention, the bodies of the thermostats installed in the degassing system (1) of the present invention are positioned at a

higher point than the coolant provided in the cooling system to which the degassing system (1) is connected.

[0014] In the preferred embodiment of the invention, the slot openings (4) enable degassing at the semi-open, fully-open and by-pass positions of the thermostats that are connected to the degassing system (1) of the present invention. In this embodiment, the collection channel (7) enables degassing at the semi-open and by-pass positions of the said thermostats. Thus degassing can be enabled for each position of the said thermostats.

[0015] In the preferred embodiment of the invention, the slot openings (4) and the delivery channels (5) are circular having a diameter of 4 mm. In this embodiment, the discharge channel (8) is circular having a diameter of 1.5 mm. These values are given for the present embodiment; however these values can be different for different embodiments.

Claims

1. A degassing system (1) comprising

- at least one body (2) which is in the form of a cover whose sides are higher than its middle part,
- at least two slots (3), each one of which being adapted for covering at least one part of a thermostat, and which preferably rise from the middle part of the body (2) in the same direction with the sides of the body (2), and **characterized by**
- at least two slot openings (4), of which there is one provided in each slot (3), and which enable the gases accumulating in the slot (3) to be discharged from the slot (3),
- at least two delivery channels (5), of which there is one provided at each slot opening (4), and which enable to carry the gases arriving at the slot opening (4),
- at least one collection chamber (6) in which the gases carried by the delivery channels (5) accumulate,
- at least one collection channel (7), which is located on the collection chamber (6), and which enables the gases that may have accumulated in the body (2) to be discharged from the body (2) and the said gases to be taken into the collection chamber (6),
- at least one discharge channel (8) which enables the air accumulating in the collection chamber (6) to be discharged.

2. A degassing system (1) according to claim 1, **characterized by** the slot openings (4) which are circular having a diameter of 4 mm.

3. A degassing system (1) according to any one of the preceding claims, **characterized by** the delivery

channels (5) which are circular having a diameter of 4 mm.

4. A degassing system (1) according to any one of the preceding claims, **characterized by** the discharge channel (8) which is circular having a diameter of 1.5 mm.

Patentansprüche

1. Entgasungssystem (1) mit

- mindestens einen Körper (2) der in Form eines Deckels, dessen Seiten höher als dessen Mittelteil ist,
- mindestens zwei Schlitz (3), beide für die Bedeckung mindestens einen Teil eines Thermostats adaptiert ist und die vorzugsweise aus dem Mittelteil des Körpers (2) in die gleiche Richtung wie die Seiten des Körpers (2) ansteigen, und **gekennzeichnet durch**
- mindestens zwei Schlitzöffnungen (4), von denen jeweils eine in jedem Schlitz (3) vorgesehen ist, und die die Gasansammlung im Schlitz (3) zur Ablassung vom Schlitz (3) ermöglichen,
- mindestens zwei Lieferungskanäle (5), von denen jeweils einer in jeder Schlitzöffnung (4) vorgesehen ist, und die die Beförderung von Gasen, die im Schlitzöffnung (4) ankommen, ermöglichen,
- mindestens einen Sammelraum (6), in dem die von den Lieferungskanälen (5) beförderten Gase sich ansammeln,
- mindestens einen Sammelkanal (7), der sich auf dem Sammelraum (6) befindet, und der die Ablassung der möglicherweise im Körper (2) angesammelte Gase aus dem Körper (2) und die Aufnahme dieser Gase in einem Sammelraum (6) ermöglicht,
- mindestens einen Ablasskanal (8), der die Ablassung der Luftansammlung im Sammelraum (6) ermöglicht.

2. Entgasungssystem (1) nach Anspruch 1, **gekennzeichnet durch** Schlitzöffnungen (4), die kreisförmig mit einem Durchmesser von 4 mm sind.

3. Entgasungssystem (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** Lieferungskanäle (5) die, kreisförmig mit einem Durchmesser von 4 mm sind.

4. Entgasungssystem (1) nach einem der vorangehenden Ansprüche, **gekennzeichnet durch** den Ablasskanal (8), der kreisförmig mit einem Durchmesser von 1.5 mm ist.

Revendications

1. Système de dégazage (1) comprenant

- au moins un corps (2) qui a la forme d'une couverture dont les côtés sont plus hauts que sa partie médiane,
- au moins deux fentes (3), chacune étant adaptée pour recouvrir au moins une partie d'un thermostat, et qui de préférence s'élèvent de la partie médiane du corps (2) dans le même sens que les côtés du corps (2), et **caractérisé par**
- au moins deux ouvertures de fente (4), dont une est prévue dans chaque fente (3), et qui permettent aux gaz s'accumulant dans la fente (3) d'être évacués de la fente (3),
- au moins deux canaux de distribution (5), dont un est prévu à chaque ouverture de fente (4), et qui permettent de transporter les gaz arrivant à l'ouverture de la fente (4),
- au moins une chambre de collecte (6) dans laquelle s'accumulent les gaz portés par les canaux de distribution (5),
- au moins un canal de collecte (7), qui est situé sur la chambre de collecte (6), et qui permet aux gaz qui se sont accumulés dans le corps (2) d'être évacués du corps (2) et lesdits gaz à prendre dans la chambre de collecte (6),
- au moins un canal de décharge (8) qui permet à l'air qui s'accumule dans la chambre de collecte (6) d'être évacué.

2. Système de dégazage (1) selon la revendication 1, **caractérisé par** les ouvertures de fente (4) qui sont circulaires et ont un diamètre de 4 mm.

3. Système de dégazage (1) selon l'une quelconque des revendications précédentes, **caractérisé par** les canaux de distribution (5) qui sont circulaires et ont un diamètre de 4 mm.

4. Système de dégazage (1) selon l'une quelconque des revendications précédentes, **caractérisé par** le canal de décharge (8) qui est circulaire ayant un diamètre de 1,5 mm.

Figure 1

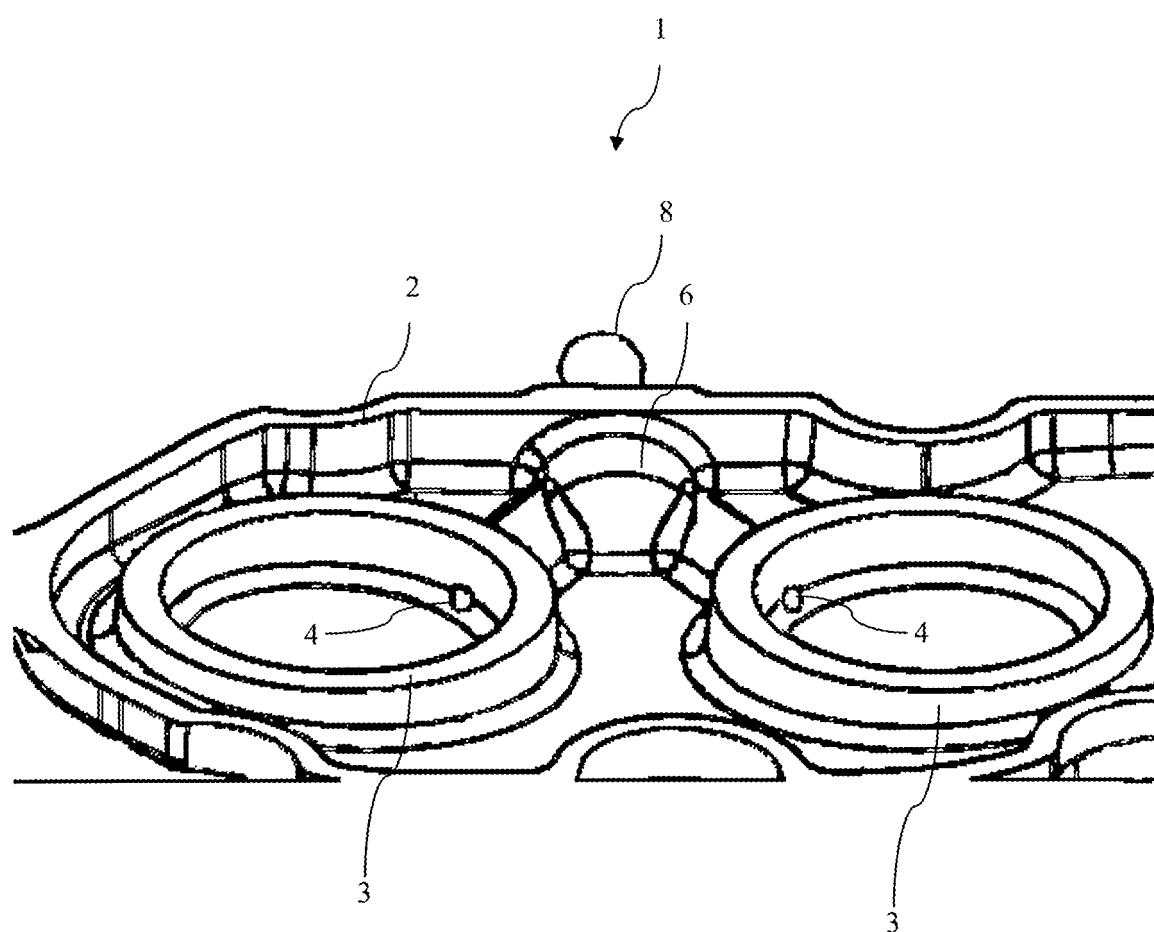
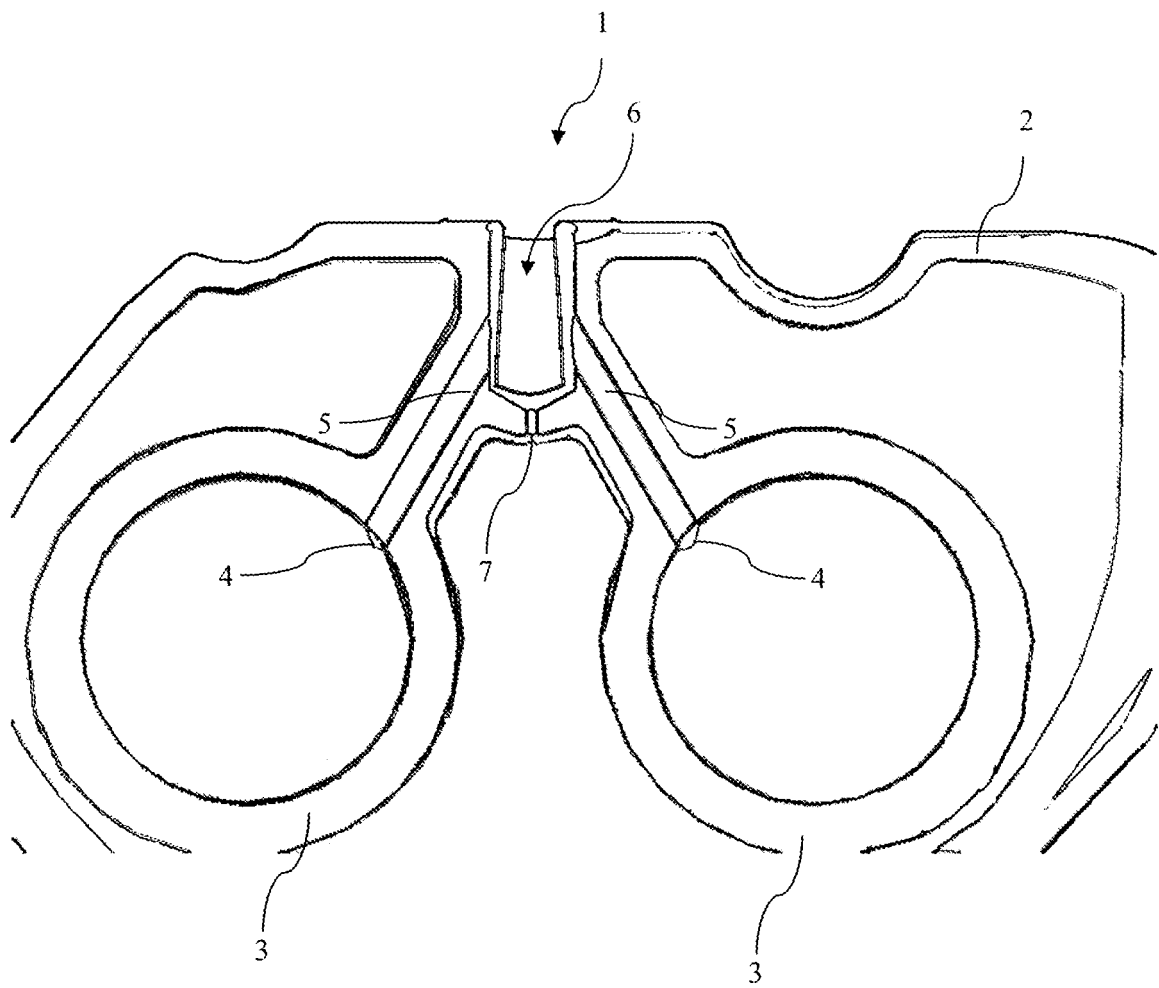


Figure 2



REFERENCES CITED IN THE DESCRIPTION

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