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**Datasheet for the decision
of 27 November 2013**

Case Number: T 0491/12 - 3.2.06

Application Number: 06824567.9

Publication Number: 1963631

IPC: F01M13/04, B01D45/14

Language of the proceedings: EN

Title of invention:

A DEVICE FOR CLEANING CRANK CASE GASES

Patent Proprietor:

3Nine AB

Opponent:

Alfa Laval Corporate AB

Headword:

Relevant legal provisions:

EPC Art. 123

EPC 1973 Art. 54(1), 56, 84

Keyword:

Claims - clarity (yes)

Amendments - added subject-matter (no)

Novelty - (yes)

Inventive step - (no)

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 0491/12 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 27 November 2013

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 3 January 2012 rejecting the opposition filed against European patent No. 1963631 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman: W. Sekretaruk
Members: M. Hannam
G. Kadner

Summary of Facts and Submissions

- I. An appeal was filed by the opponent against the decision of the opposition division rejecting the opposition to European patent No. 1 963 631. The appellant invoked grounds of opposition under Article 100(a) EPC, in particular that the subject-matter of claim 1 lacked novelty (Article 54 EPC) and furthermore failed to involve an inventive step (Article 56 EPC).
- II. The following documents are mentioned in this decision:
- D2 US-A-2004/0003579
D3 SE-C2-519180
D3a translation into English of D3
- III. The Board issued a summons to oral proceedings including a communication containing its provisional opinion, in which it indicated *inter alia* that D3 appeared to deprive the subject-matter of claim 1 of novelty.
- IV. Oral proceedings were held before the Board on 27 November 2013, during which the respondent (proprietor) submitted a new main request. The final requests of the parties were as follows:
The appellant requested that the decision under appeal be set aside and the European patent No. 1 963 631 be revoked.
The respondent requested that the European patent be maintained on the basis of claim 1, filed 27 November 2013.

V. Claim 1 on which the decision is based reads as follows:

'A device for cleaning crankcase gases from an internal combustion engine by means of a centrifugal separator (14), the centrifugal separator comprising: a housing (16), a rotor (22) arranged in the housing (16) and having a plurality of tightly separated separating discs (20), which define a central gas flow shaft (26), which communicates with intervening spaces between the disc elements (20) and with a cavity (60) around the rotor (22) defined by the housing, a drive device (68) for rotation of the rotor (22), an inlet (62) in the housing for crankcase gas, an outlet (38) in the housing for cleaned crankcase gas, and an outlet (80) in the housing for separated oil, characterized in that the housing (16) has an interface surface (19), which is mounted directly on a valve cover (12) of the internal combustion engine (10), and that the gas inlet (62) in the housing has a downstream opening (64), which communicates with a gas inlet chamber (26) in the centrifugal separator, and an upstream opening (66), which is situated in the interface surface and which by way of an opening in the valve cover (12) communicates directly with the crankcase gas in a space defined by the valve cover.'

VI. The arguments of the appellant may be summarised as follows:

Claim 1 lacked clarity (Article 84 EPC) as the valve cover was not defined as a feature of the centrifugal separator. It also included a 'use' feature insofar as the interface surface was defined to be 'mounted directly' on a valve cover.

Claim 1 also failed to meet the requirements of Article 123(2), (3) EPC since the claim as originally filed and as granted defined the housing being designed for direct mounting on a valve cover, whereas the present claim 1 defined the interface surface, as part of the housing, as being mounted directly on a valve cover.

Regarding novelty (Article 54 EPC), D3 disclosed all features of claim 1 including the housing being mounted directly on a valve cover, since it was possible for the housing of D3 to be mounted on a front vertical surface of the valve cover.

Regarding inventive step (Article 56 EPC), starting from D3, the objective technical problem to be solved was to find an alternative mounting location for the separator. The solution to this problem was to be found in D2 which disclosed a cyclone separator on a cylinder head cover which, despite the different separating technique, provided a hint as to alternative mounting locations generally for oil separators.

The problem cited in the patent regarding rapid heating of the separator was not solved by the claimed device since the D3 separator would heat up quicker than a separator mounted on a valve cover. This was due to water cooling of the cylinder head, the valve cover being made of plastic and radiant heat gain being slower than heat transfer from the exhaust gases.

The problem cited in the patent regarding the avoidance of external piping was also not objective, since the separator of D3 also had no external piping feeding gas to the separator from the engine casing.

VII. The arguments of the respondent may be summarised as follows:

Claim 1 was clear (Article 84 EPC) since the wording 'mounted directly on a valve cover' indicated that the valve cover was included in the claimed features of the device.

The requirements of Article 123(2), (3) EPC were met since the interface surface was defined to be part of the housing such that the claim still defined the housing to be mounted to the valve cover.

Claim 1 was novel over D3 since, with the valve cover now being a claimed feature, D3 failed to disclose the housing being mounted directly on a valve cover.

Regarding inventive step, the problem to be solved was to allow quicker heating up of the separator. This could only be achieved in the zone at the valve cover due to its proximity to the combustion in the cylinders. Centrifugal separators located elsewhere on the engine casing were prone to problems with freezing and clogging during start up.

D2 disclosed a cyclone separator which, due to its different operational requirements, would not be considered by the skilled person. It furthermore was not prone to freezing and clogging problems. The problem addressed in D2 concerned using a common oil separator for a variety of engines, thus also unsuited to provide a hint as to how to solve the problem.

Reasons for the Decision

1. Admittance of the main request

1.1 Article 84 EPC 1973

1.1.1 The Board finds that claim 1 meets the requirement of clarity according to Article 84 EPC 1973.

1.1.2 The first features in the characterising portion of claim 1 read:

'the housing has an interface surface, which is mounted directly on a valve cover of the internal combustion engine'.

It follows from these features that, for the interface surface to be mounted directly to a further item, this further item must possess an opposing surface to the interface surface, to which the interface surface can be mounted. It thus follows that such an opposing surface must be present in the scope of the claim, else direct mounting of the interface surface would not be possible. In the claim, this opposing surface is presented by a valve cover to which the interface surface is directly mounted.

Claim 1 thus clearly defines that the valve cover is included in the scope of claim 1.

1.1.3 Regarding the appellant's argument that claim 1 states that the claimed device is merely (suitable) for cleaning crankcase gases from an internal combustion engine and that therefore any part of the engine, such as its valve cover, is not included in its scope, the Board cannot concur with this view. Whilst the internal combustion engine itself is not included in the scope of the claim from the above wording, this does not

exclude further features of the engine being specifically identified as being part of the claimed entity. This applies to the valve cover in the present case, which is identified as the item to which the interface surface of the housing is directly mounted.

1.1.4 Regarding the appellant's argument that the feature of direct mounting defined a use rather than a physical feature of the device, the Board finds otherwise. As identified in point 1.1.2 above, with the valve cover being included in the scope of claim 1, the interface surface being mounted directly on the valve cover defines a physical interrelationship between the valve cover and the interface surface. With the claim being directed to a physical entity, the definition of a physical feature of the entity is thus to be regarded as clearly defined for the reader of the claim.

1.1.5 Claim 1 is thus found to meet the requirements of Article 84 EPC 1973.

1.2 Article 123(2) and (3) EPC

1.2.1 The Board finds that the subject-matter of claim 1 meets the requirements of Article 123(2) and (3) EPC.

1.2.2 The wording of the first features of the characterising portion of claim 1 as granted (and as originally filed) read:

'the housing has an interface surface, which is designed for direct mounting of the housing on a valve cover'

from which it is clear that the interface surface is part of the housing and that it is the interface surface of the housing which allows mounting of the housing to a valve cover.

In the present claim 1, the above features of the characterising portion have been amended to read: 'the housing has an interface surface, which is mounted directly on a valve cover'.

Whilst here the interface surface is stated to be mounted directly to the valve cover, the interface surface is part of the housing. It thus follows that mounting the interface surface on the valve cover directly results in the housing being directly mounted on the valve cover. Thus the physical interrelationship defined between the housing and the valve cover is unchanged between the originally filed and the amended wording.

The Board thus finds that, despite the different wording of claim 1 as granted and in the present request, as identified above, the subject-matter claimed by way of this wording in both claims is unchanged from a technical point of view. It thus follows that claim 1 has a basis in claim 1 as originally filed (Article 123(2) EPC) and that the protection conferred has not been extended (Article 123(3) EPC).

1.3 Therefore the Board exercised its discretion under Article 13(1) of the Rules of Procedure of the Boards of Appeal to admit the newly filed request into the proceedings.

2. Novelty

2.1 The Board finds that the subject-matter of claim 1 meets the requirement of Article 54(1) EPC 1973.

2.2 D3 and its translation into English D3a, particularly the embodiment shown in Fig.2, discloses all features of claim 1 save that 'the housing has an interface surface, which is mounted directly on a valve cover of the internal combustion engine'. On page 6, lines 7-9 of D3a the centrifugal filter is stated to be located on 'a front 11 of the engine block 1` of the combustion engine 1.' Such a 'front of the engine block' cannot be interpreted as the valve cover, such that the above identified feature is not known from D3.

2.3 The Board does not concur with the appellant's argument that the valve cover has, in addition to a top surface, a front, essentially vertical, surface to which the filter in D3 could be mounted. Such an interpretation of the location of the centrifugal filter in D3 is not clearly and unambiguously derivable from the disclosure; such a location is certainly possible, but it is not disclosed in D3, where solely mounting to a front of the engine block is to be found.

2.4 With no further arguments against novelty having been presented, the Board finds that the subject-matter of claim 1 is novel over the cited art (Article 54(1) EPC 1973).

3. Inventive step

3.1 The Board finds that subject-matter of claim 1 does not meet the requirement of Article 56 EPC 1973.

3.2 Starting from D3 as representing a suitable closest prior art, the subject-matter of claim 1 differs therefrom in that
'the housing has an interface surface, which is mounted directly on a valve cover of the internal combustion

engine'.

In view of this differing feature, the objective technical problem may be seen as to find an alternative mounting location for the centrifugal separator.

In trying to solve this problem, the skilled person would refer to document D2, which in the embodiment of Fig. 1, discloses an oil separator located on the cylinder head hood (see [0029]), essentially corresponding to the valve cover of the patent. From this the skilled person would take the teaching of locating the oil separator on the cylinder head i.e. on the valve cover as an appropriate alternative location, in order to modify the arrangement of D3 and thus reach the subject-matter of claim 1 without exercising an inventive step.

- 3.3 The Board finds that the problem to be solved when starting from D3, as argued by the respondent, of positioning the oil separator so as to allow its quicker heating up not to be truly objective. It is not convincing that the claimed mounting of the separator on a valve cover would allow the separator to heat up quicker than when mounted, for example, on the crankcase. As was convincingly argued by the appellant, the cylinder walls and cylinder head, on which the valve cover is located, are typically water cooled and thus, compared to the crankcase, will warm more slowly. A valve cover would furthermore typically be made of plastic, thus shielding an oil separator mounted thereon from both conductive and radiant heat gain. Despite the proximity of the valve cover to the combustion zone in the cylinders, this factor would be expected to be negated by the above mentioned factors regarding the speed at which an oil separator mounted on the valve cover would heat up. It thus follows that

no quicker heating up of the claimed separator would be expected compared to that disclosed in D3 and a problem to be solved based on such a feature cannot be regarded as the objective problem.

In view of the respondent's argument regarding the oil separator heating up more quickly when located on a valve cover not being credible, its arguments regarding problems associated with freezing and blocking of the oil separator are also not convincing. In fact, with the oil separator located on a valve cover not credibly heating up quicker than one located on the crankcase, an improvement in avoiding freezing or blocking of the separator would also not be expected.

A further alleged problem identified by the respondent was that of avoiding external piping for an oil separator. The Board notes, however, that also the oil separator of D3 is mounted without the need for external pipework. This lack of external piping, being present in both D3 and claim 1, can thus not provide the basis for the formulation of an objective technical problem being solved by the invention.

- 3.4 Regarding the respondent's argument that D2 disclosed a cyclone separator which could provide no hint for the positioning of a centrifugal separator, the Board finds differently. Both cyclone separators and centrifugal separators (as disclosed in D2 and D3 respectively) were known at the priority date of the opposed patent for use in separating oil from crankcase gases of internal combustion engines. The skilled person would select the most appropriate separator for the desired application in full knowledge of the at least two options available to him. With this awareness of the at least two options available for oil separation, the

skilled person would not feel compelled to restrict himself to applications of the same separator type when looking for alternative mounting locations, rather he would look at mounting arrangements for both types of separator. In the present case, therefore, this would lead the skilled person to consider the mounting of the centrifugal separator of D3 in the location disclosed for the cyclone separator of D2, this clearly presenting an alternative mounting location.

This view is furthermore supported by the fact that both the cyclone and the centrifugal type separators possess an exhaust gas inlet, an exhaust gas outlet and an oil drain requirement, thus allowing substitution of one with the other without requiring significant re-design or modification of related parts of the device or valve cover.

- 3.5 Regarding the problem addressed in D2, the Board concurs with the respondent insofar as this concerns using a common oil separator for a variety of engines. However, the Board holds that this does not prohibit the skilled person from viewing the mounting location of the oil separator in D2 as providing an appropriate hint as to where the oil separator disclosed in D3 could alternatively be located. Indeed, with the objective problem posed being to find an alternative mounting location, the skilled person would view the mounting on the cylinder head cover disclosed in D2 as providing guidance as to a suitable position for mounting the centrifugal separator of D3, irrespective of the problem posed in D2.
- 3.6 Therefore, for the reasons given above the Board finds the invention not to involve an inventive step (Article 56 EPC 1973).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The European patent is revoked.

The Registrar:

The Chairman:



M. H. A. Patin

W. Sekretaruk

Decision electronically authenticated