BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen
(D) [ ] No distribution

Datasheet for the decision of 21 February 2008

Case Number: T 0053/06 - 3.4.02

Application Number: 97935951.0

Publication Number: 0920606

IPC: G01D 7/00

Language of the proceedings: EN

Title of invention:
Sensor for measuring rotational speed and temperature

Patentee:
VOLVO LASTVAGNAR AB

Opponent:
Volkswagen AG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 100(a), 104(1)
RPBA Art. 16

Keyword:
"Main request: inventive step (no)"
"First to third auxiliary requests: not admitted into the proceedure"
"Non-attendance at oral proceedings: apportionment of costs"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0053/06 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 21 February 2008

Appellant: (Patent Proprietor)
VOLVO LASTVAGNAR AB
S-405 08 Göteborg (SE)

Representative:
Hellbom, Lars Olof
Albihns Stockholm AB
Box 5581
S-114 85 Stockholm (SE)

Respondent: (Opponent)
Volkswagen AG
Brieffach 1770/0
D-38436 Wolfsburg (DE)

Representative:
Geske, Kerstin
Volkswagen AG
Patentabteilung EZP
Postfach 1770
D-38436 Wolfsburg (DE)

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 22 November 2005 revoking European patent No. 0920606 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: A. Klein
Members: M. Stock
C. Rennie-Smith

Summary of Facts and Submissions

I. The appellant and patent proprietor lodged an appeal against the decision of the opposition division revoking European patent number 0 920 606 (application number 97 935 951.0).

II. Opposition was filed against the patent as a whole and based on the ground under Article 100 (a) EPC that the subject-matter of the patent is not new and does not involve an inventive step, see Article 52(1) EPC in connection with Articles 54(1) and 56 EPC, respectively.

The opposition division reasoned that the subject-matter of claim 1 as granted (main request) did not involve an inventive step and that an auxiliary request to maintain the patent in amended form was late filed and inadmissible. Moreover it was stated that the subject-matter of claim 1 according to the auxiliary request did not involve an inventive step.

Reference was made to the following documents:

D1 EP-A-278 554

D2: DE-A-44 31 045

D3: DE-A-31 08 242

D4: GB-A-2 070 776

D5: US-A-4 659 235

D6 & D6a: JP-A-07 259 732 & German translation

D7 & D7a: JP-A-58 062 537 & German translation

D8: US-A-1 454 149

III. With the Grounds of Appeal the appellant requested that the patent be maintained as granted, or that the patent be maintained in amended form on the basis of amended claims according to three auxiliary requests.

Appellant's arguments can be summarised as follows:

D6 describes a compressor in which a combined sensor is used to measure the speed of a shaft in the compressor, and the temperature of a cooling medium which is compressed by the compressor. The sensor is not arranged to measure the temperature of the oil in the compressor. D6 does not describe any other sensor arranged to measure the temperature of the oil. Further, D6 does not describe a rotatable shaft being arranged to splash fluid onto the temperature sensor when the shaft rotates. The invention as defined in claim 1 as granted is therefore new.

Starting from D6, the problem to be solved can be stated as measuring the temperature of the fluid in the casing, and decreasing manufacturing and mounting costs of the casing. D6 does not give any hint of the arrangement of the sensor for measuring the temperature of the oil. Since the sensor in D6 is arranged to measure the cooling medium temperature and there is no relationship between this temperature and the oil temperature, D6 teaches away from arranging the sensor for measuring the temperature of the oil.

D6 only states that certain parts mentioned are lubricated with the oil. Fig. 1 shows the oil in a bottom region of the crankcase. Nothing is said in D6 about the manner in which the oil reaches these parts. In general there are several known solutions for transporting oil in a machinery, including the use of a pump and oil conduits. Thus, there is no disclosure or hint for the skilled person studying D6 that there is an oil mist in the compressor. There is also no indication in D6 concerning the speed of the motion of plate 12. Regarding the motion of plate 12 D6 only suggests that it performs a swinging non-rotational movement. It is nowhere stated that this movement is rapid. Further, D6 does not disclose agitation or splashing of the oil, much less that splashing reaches the sensor.

D8 describes an engine crankcase with fluid, i.e. liquid oil in the lower portion of the crankcase, and cranks moving rapidly and breaking up the oil, creating a mist, the temperature of which is measured by a sensor above the oil level. However, the swing plate of D6 and the cranks of D8 differ fundamentally from each other. The skilled person obtains no information from D6 that the swing plate can be used for a splash system. In particular, it can not be derived from D6 whether such a swing plate, with no rotational movement, is suited to a splash system. The movement of the cranks in D8 is rotational, so that parts thereof will repetitively enter and leave the fluid at the bottom of the crankcase. The movement of the swing plate is different in that the same part thereof is at all times submerged in the oil, and presumably the submerged

parts of the plate in D6 is less rapid than that of an end of a crank in D8. For these reasons, the skilled person would not consider using the swing plate in D6 for a splash system.

Assessing inventive step by using D8 as closest prior art results in the formulation of an artificial and unrealistic technical problem which the skilled person would not have considered. D8 was published in 1923, seventy-three years before the priority date. It is true that combustion engines can not be considered as technology which has been abandoned. Nevertheless, combustion engines do not form the closest prior art in relation to the present invention, which relates to measurements of fluid temperature and rotational speed in a casing. In addition to a combustion engine as such, D8 discloses measuring the temperature of an oil mist created by the rapidly moving cranks and rods in the crankcase. However, nothing indicates that, during this seventy-three year period, any attempt has been made to take this solution of D8, i.e. measuring the temperature of an oil mist created by the rapidly moving cranks and rods, as a basis for further development.

According to the first auxiliary request in the last feature of claim 1 the wording "due to centrifugal force" is added. D6 does not describe a rotatable shaft being arranged to splash fluid due to centrifugal force onto the temperature sensor when the shaft rotates.
A standard way of measuring the temperature of a fluid in a casing is to submerge a sensor in it. However, if the temperature sensor is to form a unit with a rotational speed sensor, this unit can not be submerged.

Measuring the temperature of an oil mist in the casing may not give accurate information about the temperature of the fluid in the lower part of the casing. As an example, in D8 it is desired to measure the oil mist temperature, and the temperature of the liquid at the bottom of the casing is not of interest since it might differ from the mist temperature. By arranging, according to claim 1, the shaft to splash fluid by centrifugal force onto the temperature sensor, an advantageous manner to transport the fluid to the sensor is presented. More specifically, the fluid will reach the sensor in a controlled and rapid manner, and therefore the temperature of the fluid reaching the sensor will correspond closely to the temperature of the fluid in the lower part of the casing.

D6 does not give any hint of arranging the rotatable shaft to splash fluid by centrifugal force onto the temperature sensor. D6 does not disclose any toothed wheel spraying oil. In addition, such an arrangement is not in line with the spirit of D6, which teaches away from arranging the sensor for measuring the temperature of the oil.

D8 mentions splashing of oil onto the temperature sensor in a crankcase. However, the splashing does not take place by centrifugal force. Instead, the splashing takes place in the form of the oil being broken up into a fine spray or mist by the rapidly moving cranks and rods so that the entire crank case is filled with a mist of oil. D8 states that the mist surrounds the bearings, pistons and cylinder walls, and therefore the mist responds more quickly to the engine temperature than the body of oil in the lower portion of the

crankcase. Thus, in D8, the temperature of the fluid is of no concern. D8 is concerned with quick indication responses to engine temperature changes. Therefore, arranging the shaft to splash fluid by centrifugal force onto the temperature sensor would go against the object of D8.

Neither D6 nor D8 disclose a temperature sensor being arranged to measure the temperature of a fluid in a casing, or having a rotatable shaft being arranged to splash fluid by centrifugal force onto the temperature sensor when the shaft rotates. This means that even a hypothetical combination of the two documents will lack these essential features of the invention.

IV. The respondent and opponent has requested dismissal of the appeal. It has mentioned the following documents:

D6b: prior use of the compressor described in D6 (to be filed later)

D9: DE 42 28 988 A1

D10: DE 41 36 142 A1

D11: DE-OS 1 945 460

Respondent's arguments can be summarised as follows:

Versions of claim 1 according to the auxiliary requests 2 and 3 lack clarity in view of the fact that a crankcase of a combustion engine which is covered by the invention according to the description does not comprise a gear wheel indicated in the claims in

accordance with the amendment. This lack of clarity can also be considered as an infringement of Article 123(2) EPC and treated under Article 100(c) EPC.

The subject-matter of claim 1 as granted is anticipated by D6. It was only controversial whether in D6 the rotatable shaft is arranged to splash fluid onto the unit, and whether the temperature sensor in this unit is suitable for measuring the temperature of the fluid. However, it is evident to the skilled person that in D6 there is oil in the casing, the level of oil is lower than the sliding surfaces to be lubricated, a swing plate is moved back and forth in the oil with the rotational speed of the compressor and there is no disclosure of additional measures with respect to the lubrication of the moving surfaces. Therefore the skilled person has no doubt that oil is splashed by the moving swing plate onto the sliding surfaces for lubrication. It is also clear that the oil does not miss the sensor unit which thus measures its temperature even though the purpose of this sensor unit is to measure the temperature of the cooling gas. It goes without saying that in D6 the splashed oil or the oil mist and the cooling gas have alike temperatures. As a conclusion it should be remembered that there was not only disclosure of the known compressor in its idle state but also in operation. The skilled person would recognise without any doubt that the swinging plate moves with high speed in the oil and thus splashes the oil in the entire casing including on the sensor unit 30 with the consequence that the temperature measured is not independent of the temperature of the oil. Therefore claim 1 of the contested patent is

anticipated by D6/D6a or a prior use according to D6b to be filed later.

Since the swing plate moves at high speed, oil is splashed everywhere in the casing including onto the fast rotating wheel from which it is splashed by centrifugal forces onto the sensor unit in the meaning of claim 1 according to the auxiliary request 1.

In case the Board should not consider D6 as prejudicial to the novelty of claim 1, according to the respondent, lack of an inventive step should be investigated. The respondent has offered arguments that the claimed subject-matter according to the main request was obvious from D6 in combination with D8. Additional features according to the auxiliary requests were disclosed in D10 and D11. Moreover combinations of D9 or D8 with D1 or D6 led to the claimed subject-matter.

The respondent also argued lack of sufficiency under Article 100(b) EPC. If the statement of the appellant that in D6 there was no relationship between the temperatures of the cooling medium and the oil were correct, it would not be clear how the teaching of the contested patent ensures that the temperature of the oil and not that of the atmosphere in the casing is determined.

V. In its Notice of Appeal dated 12 January 2006 the appellant requested oral proceedings "in case the board considers not to set the decision aside". In the Grounds of Appeal, dated (mistakenly) 12 January 2005 but in fact filed together with the Notice of Appeal, the request for oral proceedings was repeated in

exactly the same terms, namely "in case the board considers not to set the decision aside". In its reply the respondent also requested oral proceedings as an auxiliary request. Oral proceedings were appointed by a summons to the parties dated 26 October 2007 which was accompanied by a communication expressing the Board's provisional opinion. Neither party filed any written response to the summons or communication but both parties completed and returned the acknowledgments of receipt of the summons.

VI. The Board's provisional opinion, contained in an annex to the summons to oral proceedings as mentioned above, reads as follows:

(a) Claim 1 according to any auxiliary request contains a feature related to "splashing of fluid or oil by centrifugal forces". Subject-matter based on such an amendment has been disregarded by the opposition division, because it was filed too late and did not prima facie involve an inventive step. The Board was inclined not to admit those requests in the proceedings, see Rules of Procedure of the Boards of Appeal, Article 10a(4). However, this matter will be discussed at the oral proceedings.

(b) It is likely that the prior use according to D6b, as announced by the opponent, will not be considered by the Board at this stage of the proceedings, see Rules of Procedure of the Boards of Appeal, Article 10a(4).

(c) It appears that documents D9 to D11 mentioned with respect to the amendment "splashing of fluid or oil by centrifugal forces" would only be considered, if claims amended accordingly were admitted in the procedure, see point 1 above. For amended claims all requirements of the EPC including those of Articles 84 and 123(2) EPC would be considered. In this connection opponent's arguments would also be taken into account. However, insufficiency under Article 83 EPC filed by the opponent before the opposition division and disregarded by it would be a fresh ground for opposition considered in appeal proceedings only with the approval of the appellant, see head note 3 of G 10/91 (OJ 1993, 420).

(d) It appears that the compressor disclosed in D6 comprises a rotatable shaft which splashes oil onto the sensor. This would be implicit from the statement that the different bearings are lubricated by the oil. Since no type of lubrication is mentioned in D6, the skilled person would employ the simplest one, namely splashing oil. Therefore it would appear that D6 discloses all the features defined by claim 1 according to the main request.

(e) The oral proceedings will give the parties an opportunity to present their cases on the above points, in particular novelty and inventive step. In view of the appointment of oral proceedings, it should not be necessary to file any further observations in writing. However, any such observations and/or amended documents are to be

filed promptly, at least one month before the oral proceedings. However, the Board reserves the right to exercise its discretion under Article 114(2) EPC to decide whether facts and evidence mentioned for the first time during the appeal procedure or late amendments are admitted into the proceedings.

VII. The oral proceedings were held as announced on 21 February 2008 and attended by the respondent but not the appellant. The Board delayed the commencement of the oral proceedings by twenty minutes in case the appellant's representative had been delayed and, additionally, the Board's registrar telephoned the representative's firm to inquire if anyone was to attend but obtained no information. At the end of the oral proceedings the respondent made a request for apportionment of costs so that the appellant should bear the respondent's costs of preparation for and attendance at the oral proceedings. The respondent argued that the oral proceedings had been unnecessary and that, if the appellant had made it clear that it would not be attending the oral proceedings, the respondent would not have needed to prepare for and attend those proceedings.

VIII. Versions of claim 1 according to the different requests read as follows:

Main request

1. Sensor arranged with a casing, which is partly filled with a fluid (2) and which comprises a rotatable shaft (3) situated in the casing (1), where the sensor comprises a revolution counter sensor (6) in order

to measure the speed of rotation of the shaft (3), and on the other hand a temperature sensor (7) in order to measure the temperature of the fluid (2), characterized in that the revolution counter sensor (6) and the temperature sensor (7) form a unit (5) which is situated in the casing (1) and above the surface of the fluid (2), and in that the rotatable shaft (3) is arranged to splash fluid onto the temperature sensor (7) when the shaft (3) rotates.

First auxiliary request

1. Sensor arranged with a casing, which is partly filled with a fluid (2) and which comprises a rotatable shaft (3) situated in the casing (1), where the sensor comprises a revolution counter sensor (6) in order to measure the speed of the rotation of the shaft (3), and on the other hand a temperature sensor (7), the revolution counter sensor (6) and the temperature sensor (7) forming a unit (5) which is situated in the casing (1) and above the surface of the fluid (2), characterized in that the temperature sensor is provided in order to measure the temperature of the fluid (2), and in that the rotatable shaft (3) is arranged to splash fluid due to centrifugal force onto the temperature sensor (7) when the shaft (3) rotates.

Second auxiliary request

1. Sensor arranged with a casing, which is partly filled with a fluid (2) and which comprises a rotatable shaft (3) situated in the casing (1), where the sensor comprises a revolution counter sensor (6) in order to measure the speed of the rotation of the shaft (3), and

on the other hand a temperature sensor (7), the revolution counter sensor (6) and the temperature sensor (7) forming a unit (5) which is situated in the casing (1) and above the surface of the fluid (2), characterized in that the temperature sensor is provided in order to measure the temperature of the fluid (2), in that the rotatable shaft (3) is arranged to splash fluid onto the temperature sensor (7) when the shaft (3) rotates, in that the rotatable shaft (3) is provided with a gear wheel (4), and in that the fluid (2) is oil, and when the gear wheel (4) rotates it carries with it the oil, which due to centrifugal force partially leaves the gear wheel and splashes on the unit (5).

Third auxiliary request

1. Sensor arranged with a casing, which is partly filled with a fluid (2) and which comprises a rotatable shaft (3) situated in the casing (1), where the sensor comprises a revolution counter sensor (6) in order to measure the speed of the rotation of the shaft (3), and on the other hand a temperature sensor (7), the revolution counter sensor (6) and the temperature sensor (7) forming a unit (5) which is situated in the casing (1) and above the surface of the fluid (2), characterized in that the temperature sensor is provided in order to measure the temperature of the fluid (2), in that the rotatable shaft (3) is arranged to splash fluid onto the temperature sensor (7) when the shaft (3) rotates, in that the rotatable shaft (3) is provided with a gear wheel (4), in that the fluid (2) is oil, and when the gear wheel (4) rotates it carries with it the oil, which due to centrifugal force

partially leaves the gear wheel and splashes 011 the unit (5), and in that a part of the gear wheel is immersed in the oil.

Reasons for the Decision

1. *Late-filed requests*

The Board does not see that the opposition division was wrong in exercising its discretion not to admit the appellant's requests based on claims containing a feature related to splashing of fluid or oil by centrifugal forces, see point VI(a) above. The appellant has not contradicted this opinion presented by the Board in the annex to the summons to oral proceedings. The Board does also not see that this feature, which is related to the most common way of lubricating rotating parts in a casing, e.g. a gear box, is something which exceeds the knowledge of the skilled person. It is to be noted in this context that in D6, see Figure 1, even the movement of the swinging plate 12 in the oil 0, which is created by the rotation of shaft 4, occurs along a circular arc involving centrifugal forces in the splashing of the oil, which is further splashed onto the sensor 30 by the rotating ring 25 again due to centrifugal forces. Claim 1 of the appellant's second and third auxiliary requests additionally comprises features related to the provision of a gear wheel on the rotatable shaft, but the appellant failed to provide any argument in support of an inventive contribution deriving there from. Therefore the auxiliary requests are not admitted into the proceedings.

2. *Patentability*

Hence the only request to be considered is the appellant's main request. The Board's provisional opinion in its communication was that claim 1 of this request is not novel over document D6 (see point IV(d) above). It was anticipated that this would be the subject of the discussion which was expected to take place at the oral proceedings. However, the appellant was not present at the oral proceedings and did not make further submissions. Therefore, in the absence of any such submissions, there is no reason not to maintain the Board's provisional opinion that D1 discloses all features defined in claim 1 according to the main request. This has the consequence that this subject-matter lacks novelty within the meaning of Article 54(1) and (2) EPC.

3. *Documents D9 to D10 and further objections*

Since the only admissible request is not allowable due to lack of novelty, there is no need to consider further documents, possible prior use (6b) and the possible objections under Articles 83, 84 or 123(2) EPC raised by the respondent. The Board thus concludes that one ground under Article 100(a) EPC, namely lack of novelty, prejudices maintenance of the patent.

4. *Apportionment of Costs*

As regards the apportionment of costs, the respondent made a request for this during the oral proceedings thus complying with Article 16(1) RPBA which requires a

party to request costs. That Article provides, so far as relevant to the present case:

"(1) Subject to Article 104, paragraph 1, EPC, the Board may on request order a party to pay some or all of another party's costs which shall, without limiting the Board's discretion, include those incurred by any…

(c) acts or omissions prejudicing the timely and efficient conduct of oral proceedings;…

(e) abuse of procedure."

Article 104(1) EPC, referred to in Article 16(1) RPBA, contains the general power of the Opposition division to order, for reasons of equity, a different apportionment of costs from the norm in which each party bears its own costs. It is well-established by case-law that, regardless of which party requested oral proceedings and of whether a communication has been sent or not, every party summoned to oral proceedings has an equitable obligation to inform the board as soon as it knows it will not attend the oral proceedings and that, if a party fails both to respond to a communication and to attend oral proceedings, costs may be awarded against it (see generally "Case Law of the Boards of Appeal of the European Patent Office", 5th edition 2006, pages 585 to 587).

In the present case the appellant requested oral proceedings "in case the board considers not to set the decision aside". As soon as it received the Board's summons to oral proceedings and communication of 26 October 2007, the appellant knew not only that oral

proceedings would take place but also that the condition it had itself placed on its own request for oral proceedings had been fulfilled, since the communication clearly indicated that the Board's provisional opinion was that the decision under appeal would not be set aside. However, the appellant neither replied to the communication nor indicated at all, let alone as soon as it knew, that it would not attend oral proceedings. Since the respondent had, in the absence of any submissions from the appellant additional to those in the grounds of appeal, nothing to add to its own case in its reply to the grounds of appeal, the oral proceedings proved to be unnecessary.

Accordingly it is clear that, as a result of the appellant's conduct, the oral proceedings were not only unnecessary but also an inefficient use of the time and effort of both the respondent and the Board. In those circumstances, an apportionment of costs in favour of the respondent is appropriate under Article 16(1)(c) RPBA. Since it is also clear that the appellant could have made its position known well in advance of the date appointed for the oral proceedings, and thereby not only spared the respondent and the Board unnecessary work but also allowed the date for the oral proceedings to be used for another pending appeal, such an apportionment of costs is also appropriate under Article 16(1)(e) RPBA.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

2. The appellant shall bear the costs incurred by the respondent for preparing and attending the oral proceedings.

The Registrar: The Chairman:

M. Kiehl A. G. Klein