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File Number: T 82/91 - 3.4.1

Application No.: 84 904 000.1

Publication No.: 0 162 066

Title of invention: Ignition device for reciprocating internal combustion engine

Classification: H01T 13/54

DECISION
of 19 March 1993

Applicant: Bakker, Albert

Headword:

EPC Articles 54, 56
Rules 67, 86(3)

Keyword: "Novelty of main request (no)" - "Inventive step in auxiliary request (no)" - "Reimbursement of appeal fee (no)"



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Boards of Appeal

Chambres de recours

Case Number : T 82/91 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 19 March 1993

Appellant : Bakker, Albert
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Representative : 't Jong, Bastiaan Jacobus
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Decision under appeal : Decision of the Examining Division of the
European Patent Office dated 20 March 1990
refusing European patent application
No. 84 904 000.1 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : G.D. Paterson
Members : U. Himmler
Y. van Henden

Summary of Facts and Submissions

- I. This European patent application No. 84 904 000.1 (publication No. WO 85/02066) was refused by a decision of the Examining Division dated 20 March 1990.
- II. During the procedure before the Examining Division, the Applicant filed an amended main claim on 3 April 1989, in response to an objection that the previous main claim lacked novelty over document D3 (GB-A- 29 947). In a communication accompanying a summons to oral proceedings, both dated 8 September 1989, the Examining Division objected that such amended main claim still lacks novelty over document D3.

During oral proceedings held on 30 November 1989, a further amended claim was first filed as a new main request (enclosure C to the minutes of the oral proceedings), and subsequently a further amended claim (enclosure D to the minutes) was filed as the main and sole request.

III. The decision was based on:

- Claim 1 as filed during the oral proceedings on 30 November 1989 (enclosure D to the minutes of the oral proceedings)
- Claims 2 to 6 as filed with letter of 10 July 1989 - pages 1, 2 and 3 of the description as filed during the oral proceedings on 30 November 1989
- page 3, line 5 to page 5 of the description as originally filed
- drawings as originally filed.

The reason for the refusal of the application was that the subject-matter of Claim 1 of the main and sole request filed during oral proceedings on 30 November 1989 as

enclosure D did not involve an inventive step having regard to document D3.

IV. An appeal was lodged against the said decision on 21 May 1990 and the Statement of Grounds of Appeal was filed on 16 July 1990. Simultaneously the Appellant "principally" requested (main request) to grant a patent on the basis of:

- Claim 1 as filed 4 April 1989
- Claims 2 to 6 as filed 19 July 1988
- description pages 1, 2 and 3 as filed 17 November 1989
- description page 3, line 5 to page 5 as originally filed
- drawings as originally filed.

Alternatively the Appellant requested (auxiliary request) to grant a patent with the documents as recited above, but with:

- Claim 1 according to the enclosure C filed during oral proceedings on 30 November 1989.

V. Further the Appellant requested the reimbursement of the appeal fee because the decision of the Examining Division was subject to a procedural violation.

VI. In support of his requests the Appellant argued essentially as follows:

(A) The Examining Division came to a wrong decision because the relevance of the document D3 (GB-A-29 947) was assessed incorrectly.

(a) The female thread of the combustion space cylinder of D3 cannot be considered as a spark-

plug screw hole because the diameter of this screw hole is not small compared with the diameter of the cylinder.

- (b) Whereas the present invention relates to a modern combustion engine, document D3 reflects the state of the art seventy five years before the priority date of the application. Therefore, this state of the art is completely obsolete when compared with the technique used at the priority date of the application.
 - (c) Modern combustion engines for every day use have a specific power of 50 kW/l at a maximum RPM of 6000, whereas in 1909 a specific power of only about 5 kW/l at 1000 to 1500 RPM was the state of the art.
 - (d) Modern combustion engines use new materials, e.g. improved fuels, and work with extensively developed control of the combustion process.
 - (e) Consequently, the person skilled in the art would not consider such an old document as D3. For illustration of the state of the art at the date of document D3 the Appellant filed copies of the chapter "Motor Car Classes" of the "Illustrierte Technische Wörterbücher" of 1910. This was intended as giving evidence that a man skilled in the art would consider document D3 only from a historical point of view.
 - (f) But even if document D3 had been presented to the man skilled in the art without any indication of its publication date, he would have discarded it in view of the obsolete construction of a combustion engine having side valves or sleeve valves.
- (B) Reimbursement of the appeal fee is requested because, following the filing of a new main request during

oral proceedings, the Examining Division raised a new objection against this new main request, namely the objection of lack of inventive step based upon document D3, whereas up to this point, in particular in the communication annexed to the summons for oral proceedings, the only objection had been lack of novelty (against the previous main request). This change in the argumentation of the Examining Division could not have been anticipated by the representative and the Examining Division should have granted an adjournment of the oral proceedings to another day, as requested by the representative of the applicant. Thus the applicant was deprived of the possibility to adequately refute the freshly raised objection. There was therefore a substantial procedural violation which justifies the reimbursement of the appeal fee.

VI. The independent Claim 1 according to the main request reads as follows:

"1. Reciprocating internal combustion engine comprising at least one combustion chamber (4) and an ignition device, comprising a spark-plug member and a pre-chamber member (8,15,30) having a screwthreaded part engaging in a spark-plug-screw hole (6) in a wall (5) of the combustion chamber (4), said member (8,15,30) enclosing a pre-combustion chamber (10) and having an end wall provided with at least one orifice (11,18,32) with a smaller cross-section than the pre-chamber (10,16,26) and forming a communication opening between the combustion chamber (4) and the pre-combustion chamber (10,16,26), the spark-plug-electrodes (9,21,22) being exposed in the pre-chamber (10,16,26), characterized in that the end wall (12,17,23,31) is fixed relative to the screwthreaded part and extends continuously between the end of this part, such that the outer surface of the end wall (12,17,23,31)

is substantially flush with the combustion chamber wall (5)."

The independent Claim 1 according to the auxiliary request is distinguished from Claim 1 according to the main request by inserting into the main request, after the words "characterized in that",

"the engine is of the type comprising at least one cylinder, a separate cylinder head mounted thereon, a piston reciprocatingly movable in said cylinder, the combustion chamber (4) being defined between an upper surface of the piston and an opposing surface of the cylinder head forming said wall (5) of the combustion chamber (4) and in that".

Claim 2 is dependent on Claim 1 and relates to a particular embodiment of the subject-matter according to Claim 1.

Claims 3 to 6 refer to the pre-chamber member according to Claim 1 or 2 and to particular embodiments thereof.

Reasons for the Decision

1. The Appellant requested the cancellation of the decision of the Examining Division which was based on a Claim 1 different in wording from the claims of the present main and auxiliary requests. However, the present claims had been considered by the Examining Division in the communication annexed to the summons for oral proceedings as well as at the beginning of the oral proceedings (main request) and further during the oral proceedings (auxiliary request); cf. minutes of the oral proceedings

including the annex A. Claim 1 of the main request had been found to lack novelty, and Claim 1 of the auxiliary request had been found to lack inventive step.

2. Novelty of Claim 1 according to the main request

With respect to novelty, document D3 as a whole essentially teaches the subject-matter of the present application and "reveals the content of the invention's subject-matter to the skilled person in a technical teaching" (T 198/84, published in the OJ EPO, 1985, pages 209 to 216, No. 4 of the Reasons of the Decision).

In particular, document D3 discloses according to the wording of Claim 1 a reciprocating internal combustion engine (see the title of D3) comprising at least one combustion chamber (reference sign a in Figure 4) and an ignition device, comprising a spark-plug member (x) and a pre-chamber member having a screwthreaded part (this thread is clearly identifiable as a male thread of the pre-chamber member which encloses the so called "firing chamber" b in Figure 4 of D3) engaging in a spark-plug screw hole in a wall of the combustion chamber (i.e. the female thread in the "combustion space" cylinder corresponding to the male thread of the firing chamber in Figure 4), said member enclosing a pre-combustion chamber (called "firing chamber" b) and having an end wall provided with at least one orifice (passages c) with a smaller cross-section than the pre-chamber (this fact is clearly derivable from Figure 4) and forming a communication opening between the combustion chamber and the pre-combustion chamber, the spark-plug electrodes being exposed in the pre-chamber (to be recognised in Figure 4) whereby the end wall is fixed relative to the screwthreaded part [of the pre-chamber member] (the end wall which separates the firing chamber b from the

combustion space a forms an integral part of the ignition device which comprises the spark-plug x and the pre-chamber member screwed in the combustion cylinder with its male thread) and extends continuously between the end of this part (this can be seen clearly in Figure 4) such that the outer surface (that is the surface of the end wall which shows into the combustion space) of the end wall is substantially flush with the combustion chamber wall (what is evidently the case for the embodiment of Figure 4 of D3).

Accordingly, in the Board's judgment the disclosure of document D3 comprises all features of Claim 1 of the main request.

The Appellant's argument that the female thread of the combustion space cylinder of D3 is not a spark-plug screw hole (according to paragraph V(A)(a) above) cannot be accepted because Claim 1 does not contain any feature, e.g. the ratio of the diameter of the screw hole to the diameter of the combustion space cylinder, by which the spark-plug screw hole of Claim 1 is distinguished from the known screw hole.

Therefore, in the Board's judgment, the subject-matter of Claim 1 of the main request lacks novelty.

3. Inventive step of Claim 1 according to the auxiliary request

- 3.1 As the novelty of the subject-matter of the auxiliary Claim 1 had not been contested, the question to be decided is whether this subject-matter involves an inventive step in comparison with the disclosure of document D3. Document D3, the most relevant prior art, discloses a combustion engine and has the same object as the present application,

i.e. providing a better combustion in the working cylinder by achieving a better ignition of the charge in said cylinder; cf. page 1, lines 27 to 28 of D3 on the one hand and page 1, lines 14 to 23 of the present application on the other hand.

Bearing in mind the above finding of lack of novelty of Claim 1 of the main request, the following additional features of Claim 1 of the auxiliary request are also known from document D3:

- that the engine is of the type comprising at least one cylinder,
- that a piston is reciprocatingly movable in said cylinder,
- that the combustion chamber is defined between an upper surface of the piston and an opposing surface forming said wall of the combustion chamber.

3.2 Consequently, the subject-matter of Claim 1 is distinguished from this state of the art only by the feature that

a separate cylinder head is mounted on the cylinder.

Therefore, the objective problem underlying Claim 1 is to provide an internal combustion engine as known from D3 having the combustion space accessible from the top.

It is clearly within the common general knowledge of a person skilled in the art to provide a detachable cylinder head in order to have easy access to the combustion space from the top of the cylinder. It is only on the basis of this common general knowledge that the particular feature of a separate cylinder head could have been included in the claim without offending against Article 123(2) EPC, as

this feature is not disclosed in the description and is derivable only from the drawings by using such common general knowledge. In the Board's judgment, this feature does not involve an inventive step as required by Article 56 EPC.

- 3.3 The arguments put forward by the Appellant cannot justify a different result, because these arguments are not reflected in technical features of the independent Claim 1:

As far as the Appellant relies on the fact that D3 refers to an obsolete technique (paragraph V(A)(b), (c), (d)), the Board cannot recognise any feature - with the exception of the separate cylinder head - by which the subject-matter of Claim 1 is distinguished from this obsolete technique. Claim 1 does not indicate any specific power or RPM of the combustion engine, nor does the claim contain any instructions concerning the fuel to be used or concerning the control system for achieving an optimisation of the combustion process.

The Board also cannot follow the argument of the Appellant referred to in paragraph V(A)(f), that the skilled person would not have taken into account the teaching of such an obsolete construction of a combustion engine having side valves or sleeve valves. As the original object of the present application was not directed to the charge of the combustion cylinder, nor to an increase of the RPM of the engine, i.e. processes in which the valves are involved, but referred to an improvement of the ignition process for which document D3 apparently gives valuable features applicable in modern combustion engines, in the Board's judgment the skilled person would not have discarded this document, even if he had known the very early publication date.

This assessment of the Board as to the lack of inventiveness of the subject-matter of Claim 1 is not affected by the copies of the "Illustrierte Technische Wörterbücher". These pages only demonstrate the design of car bodies at that time, but do not refer to details of combustion engines of these cars and not at all to the ignition of these combustion engines.

4. For the above reasons, in the Board's judgment the subject-matter of Claim 1 of the main request is not new and the subject-matter of Claim 1 of the auxiliary request does not involve an inventive step. Therefore, neither request is allowable pursuant to Article 52(1) EPC in connection with Articles 54(2) and 56 EPC.
5. Claims 2 to 6 refer to particular embodiments of the invention as defined in Claim 1 and they must fall because of their dependence on Claim 1.
6. Request for reimbursement of the appeal fee because of a procedural violation.

As explained in paragraph II above, during the course of the oral proceedings before the Examining Division the Appellant filed two further requests (enclosures C and D) in order to meet the objection of lack of novelty against the previous main claim under consideration, enclosure D becoming the main and sole request. As held by the Examining Division in its decision, Claim 1 of enclosure D includes one technical feature which is not disclosed in document D3 (namely that there is a separate cylinder head mounted on the cylinder).

The admissibility of further requests filed by an Applicant in proceedings before the Examining Divisions (and especially in oral proceedings before the Examining

Divisions) is always a matter of discretion under Rule 86(3) EPC.

In the present case, the Examining Division explained in its communication dated 8 September 1989 that the main claim of the then current main request lacked novelty. There was ample opportunity to file a new main request in response to such objection before the oral proceedings took place on 30 November 1989, and the Examining Division might then have been able to raise the objection of lack of inventive step in a communication before the oral hearing.

In general, if an Applicant wishes to have new requests admitted into the procedure before the Examining Divisions in the exercise of discretion under Rule 86(3) EPC, which requests are only filed at a late stage in such procedure, for example shortly before or during oral proceedings, the Applicant must be prepared to deal at short notice with further objections which may arise out of such new requests.

In the present case, having regard to what is stated above, in the Board's view it is clear that the Appellant ought to have been in a position to deal with the objection of lack of inventive step against the claims in enclosures C and D at the oral hearing on 30 November 1989. In the Board's judgment there was clearly no procedural violation by the Examining Division, and there is clearly no basis for refunding the appeal fee under Rule 67 EPC.

Order

For these reasons, it is decided that:

1. The appeal is dismissed.
2. The reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

M. Beer

G.D. Paterson