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File Number: W 30/92 - 3.4.2

Application No.: PCT/US 91/09280

Publication No.:

Title of invention: Engine Misfire, Knock or Roughness detection method and apparatus

Classification: G01M 15/00, G01L 23/22

D E C I S I O N
of 20 January 1993

Applicant: Sensortech, L.P.

Proprietor of the patent:

Opponent:

Headword:

PCT Article 17(3)(a); Rules 13.1 and 40.1

Keyword: "Lack of unity "a priori" - inadequate reasons"



Case Number : W 30/92 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 20 January 1993

Appellant :
(Proprietor of the patent)

Sensortech, L.P.
1608 North Fourth Street
Fairfield, Iowa 52556 (US)

Representative :

BEL, SELTZER, PARK & GIBSON
Att. Mr M.S. Bigel et al.
PO Brawer 34009
Charlotte, NC 28234 (US)

Subject of this decision:

Protest according to Rule 40.2(c) of the Patent
Cooperation Treaty made by the applicant against
the invitation (payment of additional fee) of the
European Patent Office (branch at The Hague)
dated 12 May 1992.

Composition of the Board:

Chairman : E. Turrini
Members : W.W. Hofmann
L. Mancini

Summary of Facts and Submissions

I. Following the filing of this international application, the EPO, acting as International Searching Authority (ISA), issued an invitation pursuant to Article 17(3)(a) and Rule 40.1 PCT to pay two additional search fees.

II. The statement of the ISA accompanying this invitation is as follows:

- "1. Claims 1-60, 65, 66-68, 69-70, 71-100, 102:
Detecting abnormal combustion by monitoring torque.
- 2. Claims 61-64, 116-119, 120-123, 124-131, 132-135, 136-143, 144-150:
Method and apparatus for detecting torque in a rotating shaft.
- 3. Claims 101, 103-115:
Engine with magnetostrictive sensor in bearing.

Claims 1-60: Method for detecting an abnormal combustion event in an internal combustion engine, using torsional stress related signals

Claims 61-64: Method for detecting a torque producing event in a power transmitting member, using torsional stress related signals

Claim 65: Method for detecting an abnormal combustion event in an internal combustion engine, using a magnetostrictive torque sensor

Claims 66-68: Method as in claim 65 with in addition a speed fluctuation sensor for detecting an abnormal combustion event over a first range and using the torque sensor in a second range

Claims 69-70: Method as in claim 65 with in addition a drive compensation for the magnetostrictive sensor

Claims 71-100: Apparatus for detecting an abnormal combustion event in an internal combustion engine, according to the method of claim 1

Claims 101, 103-115:

Internal combustion engine provided with a magnetostrictive sensor positioned in a bearing of the power transmitting member, and sensor processing means for obtaining a torsional stress value produced by operation of the engine

Claim 102: Apparatus for detecting an abnormal combustion event in an internal combustion engine, using a magnetostrictive sensor with means for suppressing electromagnetic interference

Claims 116-119, 120-123:

Apparatus for detecting a variation in torque in a rotating power transmitting member using a magnetostrictive sensor

Claims 124-131, 132-135:

Method for detecting torsional stress in a rotating power transmitting member

Claims 136-143, 144-150:

Apparatus according to the method of claim 124 and 132."

III. The Applicant paid one of the two additional search fees and indicated that it was for searching additional "invention" 2, corresponding to Claims 61 to 64, 116 to 119, 120 to 123, 124 to 131, 132 to 135, 136 to 143 and 144 to 150. He paid the additional search fee under protest and argued in particular that the claims of "invention" 1 and "invention" 2 contained the same elements and steps, except that "invention" 2 contained a preamble which was a "superset" of that of "invention" 1. In particular, "invention" 1 related to a method (or

apparatus) for detecting an abnormal combustion event such as misfire, knock or roughness, in an internal combustion engine which produces a series of combustion events and which is coupled to a power transmitting member.

"Invention" 2 related to a method (and apparatus) for detecting a torque producing event in a power transmitting member which experiences a series of torque producing events. An internal combustion engine was one type of power transmitting member which experienced a series of torque producing events. For example, the steps of Claims 1 and 61 were identical, except that Claim 1 related to a particular torque producer (an internal combustion engine) whereas Claim 61 related to any torque producer. Thus, the preamble of Claim 61 was the "superset" of that of Claim 1. Therefore, unity of invention should be present.

The Applicant agreed that "invention" 3 lacked unity with regard to the other "inventions", but elected not to pay the corresponding additional search fee.

Reasons for the Decision

1. The protest conforms with the formal requirements of Rule 40.2(c) PCT and is, therefore, admissible.
2. The Applicant has not paid the second additional fee (and his protest did not refer to the invitation to pay this fee). Therefore, the fact that the ISA's invitation also mentions a third group of claims (Claims 101, and 103 to 115), is not here at issue, and the Board will confine its considerations to the first two groups of claims and to the ISA's invitation to pay the first additional search fee.

3. According to Rule 40.1 PCT, the invitation to pay additional fees shall specify the reasons for which the international application is not considered as complying with the requirement of unity of invention.

The invitation of the ISA was only accompanied by a list of three groups of claims, numbered 1., 2. and 3., each group being provided with a short indication of its main subject-matter, and by a further list of 11 subgroups of claims corresponding to the various independent claims and the claims appended to them, also provided with a short indication of the subject-matter of each subgroup.

It is evident that the three numbered groups are meant to represent the three non-unitary inventions seen by the ISA.

However, no reason is given why the claims are assorted into groups in the indicated way and why the subjects of these groups are not considered to be so linked as to form a single general inventive concept (Rule 13.1 PCT). The list of 11 subgroups also does not indicate any relationships or non-relationships between the listed subjects. It is well established in the decisions of the Boards of the EPO (W 04/85 - OJ EPO 1987, 63; W 07/86 - OJ EPO 1987, 67; W 09/86 - OJ EPO 1987, 459) that, except for particularly straightforward cases, the mere enumeration of the claimed subject-matter is not sufficient to make the reasons of the ISA obvious.

4. As regards the first two groups of claims (which are the only ones at issue, see paragraph 2. above), the present case is not so straightforward that the sole indication of the subject-matter of the two groups of claims would make it evident that they relate to non-unitary inventions. On the contrary, as the Applicant has pointed out, the following relationship exists, taking Claims 1 and 61 as

examples (the other claims showing similar relationships): Claim 1 relates to a method for detecting an abnormal combustion event in an internal combustion engine which is coupled to a power transmitting member. Claim 61 relates to a method for detecting a torque producing event in a power transmitting member. Both methods have in common that two signals related to the torsional stress in the power transmitting member, caused by two events, are produced. Since an internal combustion engine is a special type of those machines which comprise a power transmitting member, the method according to Claim 61 is more general, and the subject-matter of Claim 1 has the character of an application of the method according to Claim 61 (with all of its features) to an internal combustion engine.

The common problem for both "inventions" according to the groups of claims indicated by the ISA appears to be to detect torque producing events nearly instantaneously (cf. page 7, line 21 of the description).

As shown above, no reason is evident why these two groups of claims identified by the ISA should not be linked by a single general inventive concept, and the ISA has not presented any reasoning in this respect.

5. Since in connection with the indication of the different groups of claims the ISA has not mentioned any prior art document, it must be assumed that the objection was intended to be based on non-unity "a priori". In view of the fact that in a protest case the only opportunity for an Applicant to present his comments is as an answer to the reasons given by the ISA, the Board must therefore confine its considerations to the question of unity "a priori" and, in general, to the question whether those reasons which were given by the ISA, justify the invitation to pay an additional search fee.

6. In the absence of any detailed reasons, the Board is not in a position to confirm that the invitation to pay the first additional search fee was correctly issued. The objection in the invitation lacks the necessary substantiation, and therefore violates the obligation to specify reasons, laid down in Rule 40.1 PCT.

Consequently, the invitation of the ISA to pay the first additional fee is not legally effective.

7. Complete and final considerations regarding the question whether lack of unity exists - be it "a priori" or "a posteriori" - must be reserved for a possible later examination of the international application.

Order

For these reasons, it is decided that:

Refund of the additional fee paid by the Applicant is ordered.

The Registrar:

The Chairman:

P. Martorana

E. Turrini