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**Datasheet for the decision
of 24 September 2009**

Case Number: T 1746/08 - 3.2.06

Application Number: 02018382.8

Publication Number: 1258602

IPC: F01L 9/04

Language of the proceedings: EN

Title of invention:

Electromagnetically driven valve for an internal combustion engine

Patentee:

Toyota Jidosha Kabushiki Kaisha

Opponent:

FEV Motorenttechnik GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 123(2)

RPBA Art. 13(1)

Relevant legal provisions (EPC 1973):

EPC Art. 112(1)(a)

Keyword:

"All requests - amendments contrary to Article 123(2) EPC"

Decisions cited:

-

Catchword:

-



Case Number: T 1746/08 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 24 September 2009

Appellant: Toyota Jidosha Kabushiki Kaisha
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Respondents: FEV Motorentechnik GmbH
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 1 July 2008
revoking European patent No. 1258602 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Alting van Geusau
Members: M. Harrison
W. Sekretaruk

Summary of Facts and Submissions

I. The appellant (patent proprietor) filed an appeal against the opposition division's decision revoking European patent number 1 258 602.

The opposition division found *inter alia* that claim 1 as granted contained subject matter which extended beyond the content of the application as filed and thus was not allowable with respect to Article 123(2) EPC.

II. Together with its grounds of appeal, the appellant requested that the patent should be maintained with claim 1 as granted as a main request or alternatively on the basis of claim 1 of a first or a second auxiliary request.

III. The respondent (opponent) requested dismissal of the appeal.

IV. Subsequent to summoning the parties to oral proceedings, the Board issued a communication stating its provisional opinion in respect of Article 123 EPC and Article 84 EPC 1973.

V. In its submission dated 20 August 2009, the respondent informed the Board that it would not attend oral proceedings.

VI. With its submission of 14 September 2009, the appellant replaced its previous requests by a new main request and three auxiliary requests, each containing an amended claim 1 upon which maintenance of the patent in an amended form should be based.

VII. In its submission of 17 September 2009, the respondent filed further argumentation in support of its request.

VIII. During the oral proceedings of 24 September 2009 held before the Board, and in the absence of the respondent (as announced), the appellant requested that the decision under appeal be set aside and that the patent be maintained in an amended form on the basis of either its main request or alternatively on the basis of one of its four auxiliary requests, all as filed during the oral proceedings.

Additionally, the appellant filed a question in writing and requested that this be referred to the Enlarged Board of Appeal.

IX. Since the respondent did not attend the oral proceedings, its request remained as stated in its written submissions, namely that the appeal be dismissed.

X. Claim 1 of the main request reads as follows:

"1. An electromagnetically driven valve for an internal combustion engine comprising: an armature (132) coupled to a valve body (102) of an exhaust valve of the engine for reciprocal movement therewith between an open and a closed position; a second elastic member coupled to the armature (132), to bias the armature (132) toward the closed position; and a first elastic member coupled to the armature (132), to bias the armature (132) toward the open position; wherein said first and second elastic members are each formed by both an upper spring

(124) and a lower spring (116) coupled with the armature; a neutral position of the armature (132) is defined between the open and closed positions at a point in which the forces applied by the first and second elastic members balance one another; a second electromagnet (136) is adjacent to the open position; a first electromagnet (134, 152) is adjacent to the closed position; the first and second electromagnets (134, 136; 152, 136) are positioned so that, when the armature (132) is in the neutral position, the first and second electromagnets (134, 136; 152, 136) are spaced apart from the armature (132); the second electromagnet (136) generates an electromagnetic force attracting the armature (132) toward the open position; and the first electromagnet (134; 152) generates an electromagnetic force attracting the armature toward the closed position; characterized in that an energy stored in the first elastic member when the armature (132) is in the closed position is larger than an energy stored in the second elastic member when the armature (132) is in the open position; and the neutral position is closer to the second electromagnet (136) than to the first electromagnet (134, 152)."

XI. Claim 1 of the first auxiliary request is the same as claim 1 of the main request, with the exception that the terminology

"the first and second elastic members are each formed by both an upper spring (124) and a lower spring (116) coupled with the armature;"

is replaced by

"the first and second elastic members are each formed by both an upper spring (124) and a lower spring (116) coupled with and oppositely urging the armature",

and that the reference numerals "(124)" and "(116)" have been added after the terms "first" and "second" to provide the expression "a neutral position of the armature (132) is defined between the open and closed positions at a point in which the forces applied by the first (124) and second (116) elastic members balance one another".

XII. Claim 1 of the second auxiliary request reads:

"1. An electromagnetically driven valve for an internal combustion engine comprising:

- an armature (132) coupled to a valve body (102) of an exhaust valve of the engine for reciprocal movement therewith between an open and a closed position;
 - a second elastic member coupled to the armature (132), to bias the armature (132) toward the closed position;
- and
- a first elastic member coupled to the armature (132), to bias the armature (132) toward the open position;
 -

wherein

- said first and second elastic members are each formed by both an upper spring (124) and a lower spring (116) coupled with the armature (132), whereby when the armature (132) is magnetically coupled to a first electromagnet (134), the upper spring (124) contracts in an axial direction by a predetermined length XL, and the lower spring (116) expands in the axial direction by the predetermined length XL in comparison with a

case where the armature (132) is held at a neutral position, and whereby when the armature (132) is magnetically coupled to a second electromagnet (136), the upper spring (124) expands in an axial direction by a predetermined length XS, and the lower spring (116) contracts in the axial direction by the predetermined length XS in comparison with a case where the armature (132) is held at the neutral position; wherein

- the neutral position of the armature (132) is defined between the open and closed positions at a point in which the forces applied by the first and second elastic members balance one another;

- the second electromagnet (136) is adjacent to the open position;

- a first electromagnet (134; 152) is adjacent to the closed position;

- the first and second electromagnets (134, 136; 152, 136) are positioned so that, when the armature (132) is in the neutral position, the first and second electromagnet (134, 136; 152, 136) are spaced apart from the armature (132);

- the second electromagnet (136) generates an electromagnetic force attracting the armature (132) toward the open position; and

- the first electromagnet (134; 152) generates an electromagnetic force attracting the armature toward the closed position;

characterized in that

- an energy stored in the first elastic member when the armature (132) is in the closed position is larger than an energy stored in the second elastic member when the armature (132) is in the open position; and

- the neutral position is closer to the second electromagnet (136) than to the first electromagnet (134, 152)."

XIII. Claim 1 of the third auxiliary request is the same as that of the second auxiliary request, with the exception that the terminology

"the first and second elastic members are each formed by both an upper spring (124) and a lower spring (116) coupled with the armature (132);"

is replaced by

"the first and second elastic members are each formed by both an upper spring (124) and a lower spring (116) coupled with and oppositely urging the armature (132)",

and that the second occurrence of the word "wherein" has been deleted.

XIV. Claim 1 of the fourth auxiliary request is the same as that of the third auxiliary request, with the exception that the terminology

"- the neutral position of the armature (132) is defined between the open and closed positions at a point in which the forces applied by the first and second elastic members balance one another;"

is replaced by

"- a neutral position of the armature (132) is defined between the open and closed positions at a point in which the forces applied by the upper and lower springs

balance one another and an energy stored in the upper and lower springs is zero;"

- XV. The question filed during oral proceedings which the appellant requested be referred to the Enlarged Board has the following text:

"Liegt der Widerrufgrund des Art. 100 c) in Verbindung mit Art. 123(2) und (3) vor, wenn sich ein Anspruchsmerkmal, für das es zwei mögliche Auslegungen gibt, in einer der Auslegungen, insbesondere wenn sich diese gegen den sich der ursprünglich offenbarten Ausführungsform wendet, als nicht ursprünglich offenbart herausstellt."

- XVI. The appellant's arguments may be summarised as follows:

The terms "first elastic member" and "second elastic member" each refer to a member including both the first and second springs. Paragraph [0024] of the patent was not to be considered alone. In particular with paragraph [0011] as background, it was clear that the invention related to the use of a pair of springs and the amount of energy required from both springs to urge the armature. Equations (1) and (2) in paragraphs [0097] and [0101] for example also prescribed the amount of energy stored in both springs when displacing towards or away from the neutral position. Paragraphs [0098], [0102] and [0105] each disclosed that both springs were responsible for displacing the armature during both opening and closing operations. Thus the term "first elastic member" as defined in the claim was to be understood as comprising the first and second spring but operating functionally differently to the "second

elastic member" even though this also comprised the same two springs. When interpreting the claim this way, the requirements of Article 123(2) were fulfilled and no contradiction was present. Even if the patent gave a further interpretation of what was understood by "elastic member", an interpretation such that both springs formed the first elastic member and both formed the second elastic member was still equally valid. It was incorrect to dismiss a clear and unambiguous disclosure merely because another disclosure was present. Also, the independent claims as filed had to be in line with the entire description, and so this embodiment was clearly intended to be covered in some way by the claim wording.

The question filed to the Enlarged Board was important since no EPO case law dealt with this matter.

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

The terms "first elastic member" and "second elastic member" were only disclosed as being a first and second spring respectively, as evident from paragraphs [0024] and [0092]. Amendment which defined that the first and second member were anything else was contrary to Article 123(2) EPC.

No new requests should be admitted into proceedings; the appellant had already had ample opportunity to file its requests and any requests which might in some way overcome the objections under Article 123(2) EPC or Article 84 EPC 1973 would not only be late filed but would involve a fresh case.

Reasons for the Decision

1. *Admittance of requests made during oral proceedings*

All the requests of the appellant which remained at the end of the proceedings were filed for the first time during the oral proceedings before the Board. However, the Board admitted the requests into proceedings since they were not only filed without delay, but involved a response to a lack of clarity objection under Article 84 EPC 1973 made by the Board during oral proceedings, and the amendments were minor. Each request contained an amendment involving the reformulation of the terminology defining which elements constituted the first and second elastic members, in the way which the appellant had intended these members to be understood in accordance with its written submissions. The Board thus exercised its discretion under Article 13(1) of the Rules of Procedure of the Boards of Appeal and admitted all the requests into proceedings.

Although the respondent had objected to the admittance of any further request into proceedings, the amendments introduced overcame at least the specific objection made by the Board during the oral proceedings. A fresh case was thus not being presented by way of the amendment, because, as stated in the preceding paragraph, the amendment introduced was in line with the written submissions of the appellant as to what the terms in claim 1 were intended to mean.

2. *Article 123(2) EPC*

2.1 In claim 1 of all requests it is defined that "said first and second elastic members are each formed by both an upper spring (124) and a lower spring (116)".

This terminology however defines subject matter which extends beyond the content of the application as originally filed.

2.2 Claim 1 of all requests defines a "first elastic member" and a "second elastic member". The first elastic member is also defined as being "coupled to the armature, to bias the armature toward the open position", and the second elastic member is defined as being "coupled to the armature, to bias the armature toward the closed position". A normal reading of this terminology has the consequence that the first and second elastic members are indeed different members, one is the first and the other is the second, since they are defined as performing opposed biasing functions. However, the terminology introduced into claim 1 (see item 2.1 above) defines that each of the elastic members is constituted by the same two springs, the upper spring and the lower spring.

The upper spring 124 (see e.g. Figure 12 of the filed application) is shown as biasing the armature and thus the valve body connected thereto towards its open position while the lower spring 116 similarly biases the valve body towards its closed position. The springs 116 and 124 are the only biasing members shown and these each bias the armature in one direction only. It is thus clear that the first and second elastic members,

when compared to what is disclosed in this embodiment, are intended to refer to, albeit more broadly, the second spring and the first spring respectively.

This is also entirely in line with paragraph [0025] of the application as filed where it is described that the elastic "members" (i.e. a plurality of members) generate an urging force that urges the valve body towards its neutral position. This is also confirmed in paragraph [0104] of the filed application referring to Figure 12, which states that the armature is urged downwards toward the neutral position by the upper spring urging the armature shaft downwards and the lower spring 116 urging the valve shaft upwards.

The following is also stated in paragraph [0025]:
"Hence, more energy is stored in the elastic members when the armature is attracted towards the second electromagnet", which is a result of the neutral position being displaced toward the first electromagnet. Here it is to be noted that it is the energy stored in the elastic members which is being described, not a biasing of the armature or its attachment by one elastic member or the other towards any particular position. In fact, nowhere is there any direct and unambiguous statement to the effect that the first elastic member should be understood as being formed by both springs and that the second elastic member should be understood as being formed by the same two springs.

The amount of energy in the springs is defined in paragraphs [0097] and [0101] of the patent ([0109] and [0113] of the filed application) as being equal to the spring constant (of the upper spring and the lower

spring) multiplied by half the square of the displacement towards the open and closed positions respectively, whereby the energy arising from the springs results from respective contractions and expansions in the direction of displacement. However, none of these parts of the description leads to an interpretation that the upper and lower springs together form both the first and second elastic members, but merely that the energy stored in the springs is calculated based on the expansion of one and the contraction of the other.

The same applies to paragraphs [0110] and [0114] of the filed application (paragraphs [0098] and [0102] of the patent) which describe that the spring forces of the upper and lower springs displace the armature shaft so as to open or close, respectively, the valve, since this merely implies that there is a net force in one direction.

Paragraph [0117] of the filed application (paragraph [0105] of the patent) describes that the upper spring and the lower spring urge the exhaust valve with more energy during the valve opening operation than during the valve closing operation. Again here, reference is merely made to the energy of the springs and whilst this allows the interpretation that both expansion and contraction forces of both springs would act on the armature at the same time, this is not a direct and unambiguous disclosure of a first elastic member and a second elastic member each comprising the same two springs and each biasing the armature in a different direction.

2.3 The appellant argued that the first elastic member and second elastic member should be understood as being functional definitions rather than structural parts, and in this way the first and second elastic members would fall into the definition in claim 1 not only as being constituted by both springs but as functionally biasing the armature in one direction and the other direction. However there is, put quite simply, no direct and unambiguous disclosure in the application as filed that the first and second elastic members should be considered functionally rather than structurally. Thus, even if the claim wording could somehow be understood to match such an interpretation, this would merely be an afterthought rather than being subject matter having a direct and unambiguous basis in the application as originally filed.

The appellant also argued that one disclosure was equally valid with another disclosure and thus both disclosures had to be given equal weight and that, in this way, the definition in claim 1 was within the content of the application as originally filed. However, the Board is not convinced by this argument, since the Board sees only one direct and unambiguous disclosure, according to which the first and second elastic members are merely broader terms used to refer to the second and first springs respectively. The remaining disclosure refers merely to energy stored and used by the springs and the urging effect caused by both springs when moving from an open or closed position.

2.4 The further amendment made in the first, third and fourth auxiliary requests, whereby the first and second members are not only coupled with but also "oppositely

urge the armature" does not change the foregoing conclusion, since this is again based on the notion of a functional understanding of the first and second elastic members, for which there is no direct and unambiguous basis in the filed application.

None of the other amendments appearing in any of these requests alters this conclusion either, as the same definition remains in the claim.

2.5 The amendments made in the second auxiliary request also do not alter the foregoing conclusion in any way, since the same definition still remains in the claim.

2.6 Consequently, none of the requests is allowable because claim 1 of each request includes subject matter which extends beyond the content of the application as originally filed, contrary to the requirements of Article 123(2) EPC.

3. *Request for referral of a question to the Enlarged Board of Appeal*

The Board understands the appellant's question in the following manner:

"Does a ground of revocation exist under Article 100(c) EPC when seen in connection with Article 123(2) and (3) EPC, when a feature of a claim, which has two possible interpretations, in one interpretation, in particular when this would be against the interpretation of one particular embodiment, is found not to be originally disclosed."

In order to ensure uniform application of the law, or if an important point of law arises, the Board of Appeal shall refer a question to the Enlarged Board of Appeal if it considers that a decision is required for the above purposes (Article 112(1)(a) EPC 1973).

At least the final condition is not met, since the answer to the question would not affect the outcome of the case. The question presupposes that two possible interpretations are provided by the filed application. However, the Board finds that only one interpretation is present in the content of the application as originally filed, namely that each elastic member is a structural element corresponding, also in the disclosed embodiments, to a single spring.

The question therefore fails to meet the requirements of Article 112(1)(a) EPC 1973.

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for referral of a question to the Enlarged Board of Appeal is rejected.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau