Datasheet for the decision of 11 June 2014

Case Number: T 1471/10 - 3.4.03

Application Number: 98304108.8

Publication Number: 0880185

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Language of the proceedings: EN

Title of invention:
Ultrasonic motor and ultrasonic apparatus with ultrasonic motor

Patent Proprietor:
Seiko Instruments Inc.

Opponent:
Physik Instrumente (PI) GmbH & Co. KG

Headword:

Relevant legal provisions:
EPC 1973 Art. 111(1)
EPC Art. 123(2)
EPC R. 80
RPBA Art. 15(1)

Keyword:

Decisions cited:
T 0714/00, T 0461/05, T 0759/10

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It can be changed at any time and without notice.
Catchword:
Case Number: T 1471/10 - 3.4.03

DECISION
of Technical Board of Appeal 3.4.03
of 11 June 2014

Appellant: Seiko Instruments Inc.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted on 4 May 2010
revoking European patent No. 0880185 pursuant to
Article 101(3)(b) EPC.

Composition of the Board:
Chairman G. Eliasson
Members: S. Ward
T. Karamanli
Summary of Facts and Submissions

I. This is an appeal by the patent proprietor against the decision of the Opposition Division to revoke the European patent No. 0 880 185 on the grounds that the main request did not fulfil the requirements of Rule 80 EPC (and hence was not admitted into the opposition procedure), and that the first, second and third auxiliary requests did not fulfil the requirements of Article 123(2) EPC.

The opposition had been filed against the patent as a whole. Grounds for the opposition were lack of novelty and lack of inventive step (Articles 100(a), 52(1), 54 and 56 EPC).

II. At the end of the oral proceedings held before the Board the appellant-proprietor (hereinafter referred to as the proprietor) requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of the main request or one of the auxiliary requests 1 to 8, all requests filed with letter dated 9 May 2014.

The respondent-opponent (hereinafter referred to as the opponent) requested that the appeal be dismissed.

III. Independent claims 1 and 2 of the main request read as follows:

"1. An ultrasonic motor comprising:
a periodically vibrating member (14) being vibrated periodically by the application of a high-frequency voltage;"
a moving body (11a) being moved by the periodic vibration of said periodically vibrating member (14); and

two node supporting/pressurising members (17a, 17b) each in the form of a single member, which support a vibration node of said periodically vibrating member (14), wherein said two node supporting/pressurising members are spring members (17a, 17b) disposed on opposite sides of the periodically vibrating member and provide a pressing force to said opposite surfaces of the periodically vibrating member to urge said periodically vibrating member (14) towards said moving body (11a).

"2. An ultrasonic motor comprising:

a periodically vibrating member (14) being vibrated periodically by the application of a high-frequency voltage;
a moving body (11a) being moved by the periodic vibration of said periodically vibrating member (14);
a node supporting/pressurising member (17) in the form of a single member, which supports a vibration node of said periodically vibrating member (14), wherein the node supporting/pressurising member (17) is a spring member that provides a pressing force to a surface of the periodically vibrating member to urge said periodically vibrating member (14) towards said moving body (11a); and

a member disposed between the periodically vibrating member (14) and the node supporting/pressurising member (17) to maintain a support point of the vibrating member (14) at the vibration node."

The versions of claim 1 according to the first to fifth auxiliary requests differ from claim 1 of the main request by the incorporation of further additional
features. Claim 2 according to the first to third auxiliary requests is identical to claim 2 of the main request. Claim 4 according to the fourth and fifth auxiliary requests is identical to claim 2 of the main request.

Claim 1 according to the sixth to eighth auxiliary requests is identical to claim 1 of the main request.

Claim 2 according to the sixth auxiliary request differs from claim 2 of the main request in that the final feature ("a member disposed between...") has been replaced by:
- "a resilient sheet disposed between the periodically vibrating member (14) and the node supporting/pressurising member (17)."

Claim 2 according to the seventh auxiliary request differs from claim 2 of the main request in that all of the text after "spring member" has been replaced by:
- "having a V shape in cross section, wherein the lower tip of the V shape, which may include a flat portion, provides a pressing force to a vibration node on a surface of the periodically vibrating member to urge said periodically vibrating member (14) towards said moving body (11a)."

Claim 2 according to the eighth auxiliary request differs from claim 2 of the main request in that all of the text after "spring member" has been replaced by:
- "having a V shape in cross section, wherein the lower tip of the V shape provides a pressing force to a vibration node on a surface of the periodically vibrating member to urge said periodically vibrating member (14) towards said moving body (11a); and a rubber sheet disposed
between the periodically vibrating member (14) and the node supporting/pressurising member (17)."

IV. The proprietor argued essentially as follows:

In relation to claim 1 of the main request, the "embodiment shown in Figs. 3, 4 and 5 is discussed in paragraphs [0045] to [0053] of the published patent. This portion of the description uses the expression 'spring members' at least eight times, but only once is it described that the spring members are formed in a curved plate shape." Moreover, in paragraph [0050], the function and effect of the spring members was expressly described, but "nowhere here is it explained that a curved plate shape is needed to fulfil this function or provide the effect. Rather, this paragraph merely refers to 'spring members'."

Concerning claim 2 of the main request, the skilled addressee would understand that "the function of the rubber sheet [15] is to prevent the point of contact between the spring 17 and vibrating body 14 from slipping away from the vibration node". This was also the function of the prismatic fastener 21 (Fig. 2). Two different means were therefore disclosed to perform this function, and hence "the last clause of claim 2 is not an unallowable intermediate generalisation."

The versions of claim 1 of the first to fifth auxiliary requests comprised further features based on "Embodiment 2", and the versions of claim 2 of the sixth to eighth auxiliary requests comprised further features based on "Embodiment 1". The generalisation from "rubber sheet" to "resilient sheet" was based on the implicitly understood purpose of the sheet and consequently did not add subject-matter.
V. The opponent argued essentially as follows:

When a claim is amended to cover only a particular embodiment, the subject-matter should be correspondingly restricted to the form in which this embodiment is disclosed in the application. In relation to claim 1 of the main request, general "spring members" were not disclosed in embodiment 2, but only spring members formed in a curved plate shape. Moreover, the following features of embodiment 2 were absent from claim 1 without any basis in the application as filed for their omission: the spring members being fixed to the vibrating body, the "fixed plates 19" (to which the springs were also fixed) and the vibrating body being rectangular.

In relation to claim 2 of the main request, there was no basis for generalising a rubber sheet or a prismatic fastener to the "member" defined in terms of its function.

Other requests failed to meet the requirements of Article 123(2) EPC on the grounds that features disclosed in the embodiments on which they were based had been omitted or as a result of clearly unallowable generalisations (e.g. of "rubber sheet" to "resilient sheet").

VI. With the summons to oral proceedings, the Board sent the parties a communication under Article 15(1) RPBA setting out the procedure to be followed at oral proceedings and certain provisional assessments. The Board indicated that in the event that one of the proprietor's requests was found to meet the requirements of Article 123(2) EPC, it was likely that
the case would be remitted to the department of first instance for further prosecution.

Reasons for the Decision

1. The appeal is admissible.

2. Article 123(2) EPC

2.1 Independent claims 1 and 2 of all requests define subject-matter corresponding to a combination of features from claim 1 as originally filed and features drawn from either "Embodiment 2" (Figs. 3-5 and page 9, line 8 - page 10, line 8) or "Embodiment 1" (Figs. 1-2 and page 7, line 24 - page 9, line 7), respectively.

2.2 All of these independent claims represent, to some extent, intermediate generalisations, that is to say, they define subject-matter which is less general than claim 1 as originally filed, but more general than the particular respective embodiment.

2.3 A uniform approach has been developed by the boards, according to which, to be allowable under Article 123(2) EPC, "an amended feature must, explicitly or implicitly, be directly and unambiguously disclosed to the skilled person using common general knowledge in the application as filed" (T 759/10, Reasons, point 5.3). By definition, the subject-matter of an intermediate generalisation is not explicitly disclosed in the application as filed. Hence, the question is: under which conditions can subject-matter corresponding
to an intermediate generalisation as defined above be said to be implicitly disclosed to the skilled person.

2.4 Intermediate generalisations are dealt with at some length in section II.E.1.2 of "Case Law of the Boards of Appeal of the European Patent Office", 7th edition 2013. In the case where certain features of a particular embodiment are incorporated into an amended independent claim, while other features disclosed in relation to the same embodiment are omitted, various approaches have been followed by the boards in judging compliance with the requirements of Article 123(2) EPC.

2.4.1 In T 461/05 the present Board in a different composition followed an approach in which the omission of certain features of an embodiment would present the skilled person with new information only if the omitted features were necessary to carry out the particular embodiment of the invention (T 461/05, Reasons, point 2.4, final paragraph). In deciding this matter the Board considered whether the omitted features had been presented in the application as filed as being necessary for carrying out the invention, whether these features had their own recognisable function independent of the functioning of the rest of the system, and whether it would be apparent to the skilled person from the application that other solutions for providing the functions of the omitted features would be clearly possible (T 461/05, Reasons, point 2.6, final two paragraphs).

2.4.2 In T 714/00 the relevant criterion was set out as follows:
- "Extracting an isolated feature from an originally disclosed combination and using it for delimiting claimed subject-matter can only be allowable under
the concept of Article 123(2) EPC if that feature is not inextricably linked with further features of that combination." (T 714/00, Reasons, point 3.3.)

2.4.3 According to another criterion regularly applied, an amendment extracting isolated features from a set of features which have originally been disclosed in combination for an embodiment can only be justified in the absence of any clearly recognisable functional or structural relationship among said features (see the examples in "Case Law", op. cit., II.E.1.2).

2.4.4 The Board is of the opinion that these approaches, although not identically formulated, follow a broadly similar line and are essentially complementary, in the sense that they are unlikely to result in different conclusions in any particular case in which they are applicable. Nevertheless, it is stressed that whatever help these considerations may offer in particular cases, the ultimate standard for judging compliance with the requirements of Article 123(2) EPC remains that set out under point 2.3, above.

3. Main Request: Claim 1 (Article 123(2) EPC)

3.1 Two distinct objections can be discerned in the opponent's submissions on claim 1 of the main request: firstly, that the imported feature (two node supporting/pressurising members in the form of spring members) constitutes in itself an impermissible generalisation, as the spring members of embodiment 2 are disclosed as having a particular form (a curved plate shape), and secondly that omitting other features of embodiment 2 amounts to a further unallowable intermediate generalisation.
3.2 Regarding the first of these objections, even if the opponent is correct in asserting that there is no explicit disclosure of general "spring members" in embodiment 2 (and the proprietor disputes this on the grounds that the phrase "spring members" appears eight times in the description of embodiment 2, whereas only once are they described as having the form of curved plates), the Board does not believe that this amendment contravenes the requirements of Article 123(2) EPC.

In deciding whether the disclosed form (curved plates) of the claimed spring members may be omitted, the approach followed in T 461/05 appears the most appropriate, since following the other approaches mentioned above would lead, in this case, to asking the somewhat nonsensical question whether a disclosed feature (spring members) and the particular form which these features take (curved plates) are "inextricably linked" or have a "functional or structural relationship".

There is no disclosure in the application as filed of the significance of forming the spring members as curved plates nor any indication that this is necessary to carry out embodiment 2 in practice. Moreover, the possibility of alternative spring configurations which could equally well be employed to carry out this embodiment would readily occur to the skilled reader. This amendment is therefore not seen as contravening the requirements of Article 123(2) EPC.

3.3 Regarding the second of these objections, the opponent pointed to the absence in claim 1 of the main request of several features disclosed as belonging to embodiment 2, namely the springs being fixed at the
vibration node, the vibrating body being rectangular and the other ends of the springs being attached to fixed plates 19.

3.3.1 The first of these objections is not convincing, as this feature is not disclosed in all of the examples corresponding to embodiment 2; in this regard, the "modified" modes of embodiment 2 depicted in Figs. 4 and 5 must be seen as part of the disclosure of embodiment 2. According to Fig 4, the springs are engaged with grooves 14b, 14c, and it is not disclosed that they are fixed to the vibrating body (indeed, they appear not to be). According to Fig 5, the springs are engaged with engagement protrusions, but not precisely at the node. The springs are therefore not disclosed to be fixed at the vibration node. Hence, no valid objection is seen to arise from the omission of this feature, which is only unambiguously disclosed in the first of the three examples corresponding to embodiment 2.

3.3.2 The vibrating body of embodiment 2 is described as being "rectangular", and is depicted as such in Figs. 3-5. There is, however, no disclosure in the application as filed of the significance of this feature or any hint of its necessity. The only concrete examples of vibrating bodies mentioned in the application are piezoelectric vibrating bodies (see e.g. page 2, final paragraph), and the skilled person would be well aware that ultrasonic motors can be implemented with a wide variety of shapes of piezoelectric vibrator, the shape being chosen in accordance with the vibrational modes to be excited. A rectangular shape is not necessary to carry out this embodiment, nor is there any inextricable link or
functional or structural relationship between the shape of the vibrating body and the spring members.

3.3.3 In embodiment 2 fixed plates 19 are provided "for supporting the spring members 17a and 17b" (page 9, line 13, and Figs. 3-5); the opponent therefore objects that these fixed plates have not been incorporated into claim 1 of the main request.

The spring members of claim 1 are defined to support a vibration node and to provide a pressing force to urge the vibrating member towards the moving body. In order to perform these functions, it is implicit that each spring member must be anchored to some form of fixed support. The Board accepts that it is not implicit that these fixed supports must necessarily be fixed plates, but the technical significance of this refinement is not apparent. In Figs. 3-5 the springs are supported by small areas at the centres of the plates 19; the rest of the material defining the plates appears to have no function whatsoever, and could just as well be replaced by material of a different shape or simply be dispensed with. According to any of the approaches mentioned above, the omission of a feature having no disclosed or apparent function cannot be seen as being contrary to the requirements of Article 123(2) EPC.

3.3.4 Hence, for the reasons set out above, the Board is satisfied that claim 1 of the main request complies with the requirements of Article 123(2) EPC.

4. **Main Request: Claim 2 (Article 123(2) EPC)**

4.1 With respect to claim 1 as originally filed, claim 2 has been amended to define that the node supporting/pressurising member is a spring member, and the
definition of the function of this member has been reworded; moreover, the following feature has been added:

- "a member disposed between the periodically vibrating member (14) and the node supporting/pressurising member (17) to maintain a support point of the vibrating member (14) at the vibration node."

4.2 Concerning the last feature, the proprietor states: "This member corresponds to the rubber sheet 15 shown in Figs. 1 and 2." The Board notes that although such an amendment falls within the definition of an "intermediate generalisation" given under point 2.2, above, it is one which does not only involve the omission of features from a disclosed embodiment (as was the case for claim 1), but a generalisation of a concrete feature (the rubber sheet) to a "member" and its (alleged) function. It falls to decide whether this amendment is compliant with the requirements of Article 123(2) EPC.

4.3 There is no explicit basis for this amendment, as the element 15 is consistently described in the application as originally filed as a rubber sheet and nothing else.

Although no particular function is ascribed to the rubber sheet in the application (the effect mentioned on page 9, lines 4-7 clearly refers to the consequence of providing the prismatic fastener, introduced in the previous three lines), the proprietor's position is that it would be implicit to the skilled addressee in view of "his common general knowledge of the characteristics of rubber sheets" that the rubber sheet is "for maintaining a support point of the vibrating member (14) at the vibration node", as claimed. As this
represents "a good but imperfect solution", a prismatic fastener can be used in addition, as shown in Fig. 2.

The Board considers this to be essentially speculation. An equally plausible interpretation consistent with the application would be that the rubber sheet serves some other purpose (for example, preventing the vibrating body being scratched or damaged by the spring), and that the function of maintaining the support point at the vibration node is performed - where necessary - by the prismatic fastener of Fig. 2, as stated in the application (page 9, lines 1-7).

It is therefore neither explicitly nor implicitly disclosed in the application that the rubber sheet 15 serves to maintain a support point of the vibrating member at the vibration node; consequently, generalising the disclosed rubber sheet to a "member" performing this function contravenes Article 123(2) EPC.

4.4 For completeness, the Board considers that even if the claimed feature were to be regarded as a generalisation of the prismatic fastener (also suggested by the proprietor), this would not lead to a different conclusion.

The Board accepts that it would be accurate to describe the prismatic fastener as a member performing the claimed function. However, the prismatic fastener is the only means disclosed in the application for maintaining the support point at the node, whereas the amended feature includes every possible means for performing this function. Such an amendment cannot, in the opinion of the Board, be considered to be satisfactorily based on the application as filed.
4.5 Moreover, if the claimed member maintaining the support point is identified with the prismatic fastener, it would also have to be asked whether it is permissible to omit the other features of Fig. 2 with which it is disclosed. There is at least one feature disclosed in Fig. 2 - namely the flat middle section of the spring member - which must be regarded as having a structural and functional interaction with the prismatic fastener and contributing to the effect of maintaining the position of the support point. Hence the omission of this feature also has no basis in the application as filed.

4.6 The Board therefore finds that claim 2 of the main request does not comply with the requirements of Article 123(2) EPC. Consequently the main request is not allowable.

5. First to Fifth Auxiliary Requests

5.1 The subject-matter of claim 2 of the first to third auxiliary requests and claim 4 of the fourth and fifth auxiliary requests is the same as that of claim 2 of the main request which has been found not to comply with the requirements of Article 123(2) EPC. The first to fifth auxiliary requests are therefore not allowable.

6. Sixth Auxiliary Request

6.1 Claim 2 according to the sixth auxiliary request has been amended to include, inter alia, a "resilient sheet" between the vibrating member and the node supporting/pressurising member. This feature is
acknowledged by the proprietor to be a generalisation of the rubber sheet 15 shown in Figs. 1 and 2.

It has already been noted that this feature is nowhere disclosed as being anything other than a "rubber sheet". Furthermore, the word "resilient" (or "resilience" etc.) does not appear in the application as filed. The proprietor states, however, that from the "overall teaching of the application as filed and the clearly understood purpose of the sheet, the skilled addressee is implicitly taught that it is the resilience of the sheet that provides the required properties. Thus, the skilled person is implicitly taught to position a resilient sheet between the periodically vibrating member and the node supporting/pressurising member."

In the discussion of claim 2 of the main request, the Board concluded that there is no explicit or implicit disclosure in the application of the purpose served by the rubber sheet 15, and consequently there is no implicit disclosure of any particular property "required" to achieve this purpose, including resilience (which is clearly not the only property possessed by a rubber sheet). At least for this reason claim 2 of the sixth auxiliary request does not comply with the requirements of Article 123(2) EPC, and hence this request is not allowable.

7. Seventh Auxiliary Request

7.1 Claim 2 according to the seventh auxiliary request has been amended to include, *inter alia*, a spring member having a V shape in cross section, the lower tip of which "may include a flat portion".
A "flat portion" is not mentioned in the text of the application, and could only be derived from Fig. 2, which also discloses the prismatic fastener 21. As noted under point 4.5, above, these two features clearly have a structural and functional interaction with each other which allows the effect of maintaining the position of the support point to be achieved. Hence, claim 2 of the seventh auxiliary request, which defines that the spring member may include a flat portion while omitting the prismatic fastener, does not meet the requirements of Article 123(2) EPC.

8. Eighth Auxiliary Request

8.1 The final section of claim 2 according to the eighth auxiliary request reads as follows:

- "wherein the node supporting/pressurising member (17) is a spring member having a V shape in cross section, wherein the lower tip of the V shape provides a pressing force to a vibration node on a surface of the periodically vibrating member to urge said periodically vibrating member (14) towards said moving body (11a); and a rubber sheet disposed between the periodically vibrating member (14) and the node supporting/pressurising member (17)."

The structural aspects are essentially as recited on page 8, lines 2-14, and the functional aspects ("provides a pressing force ... to urge ...") find a basis (albeit using a slightly different wording) on page 8, lines 20-28.

The objection of the opponent is again based on the allegation that the omission of certain features of embodiment 1 results in subject-matter being claimed at
a level of generality which has no basis in the application as filed. In particular, objections are raised against the omission of the fixed plate 19, rail 11a and the (upper) rubber sheets 16,18.

8.2 The Board has already found (point 3.3.3, above), in relation to claim 1 of the main request, that it is implicit that the spring members must be attached to a support, and that omitting the term "plates" cannot be seen as giving rise to a legitimate objection under Article 123(2) EPC. The same conclusion applies, mutatis mutandis, to claim 2 according to the eighth auxiliary request.

8.3 The opponent points out that a general "moving body" is claimed, whereas in embodiment 1 a "rail" is specified. However, the skilled person is well aware that a variety of types of moving bodies are routinely employed in ultrasonic motors in combination with a variety of vibrator types to provide a range of linear, rotatory or other motions.

During the oral proceedings the Board invited the parties to comment on the fact that although claim 1 of the main request refers to a general moving body, only a rotating moving body (11b) was explicitly disclosed in embodiment 2. No objection was raised by the opponent, and the Board also has no difficulty accepting this claim formulation, as the the embodiment could equally be carried out with other types of moving body (see the considerations set out under point 2.4.1, above).

The same logic applies to embodiment 1: the skilled person would understand that the rails are not necessary for carrying out the embodiment, and that
other types of moving body could easily be employed. 
Hence the omission of a rail is not seen as contrary to 
the requirements of Article 123(2) EPC.

8.4 Since the "the lower tip of the V shape provides a 
pressing force to a vibration node on a surface of the 
periodically vibrating member to urge said periodically 
vibrating member (14) towards said moving body" it is 
implicit that the upper ends of the V shape must be 
supported to provide such a force (cf. point 8.2, 
above), and it would be apparent to the skilled person 
that this could be achieved using a wide variety of 
conventional support means. The skilled person would 
not regard the rubber sheets 16, 18 as being necessary 
for carrying out embodiment 1, especially as the 
function of these rubber sheets is nowhere explained in 
the application as filed. Hence, in line with the 
considerations set out under point 2.4.1, above, the 
 omission of rubber sheets 16, 18 from the claimed 
subject-matter is not seen as being contrary to the 
requirements of Article 123(2) EPC.

8.5 The Board sees no further objections of unallowable 
extension of subject-matter which may be justifiably 
raised against claim 2 of the eighth auxiliary request, 
and consequently judges that this claim meets the 
requirements of Article 123(2) EPC.

The subject-matter of claim 1 of the eighth auxiliary 
request is the same as that of claim 1 of the main 
request which has already been found to meet the 
requirements of Article 123(2) EPC.

No objections against dependent claims 3 and 4 were 
raised by the opponent under Article 123(2) EPC, and 
the Board also has no objections in this regard.
The Board therefore judges that the subject-matter of the claims of the eighth auxiliary request meets the requirements of Article 123(2) EPC.

9. **Further Procedure**

9.1 For the reasons stated above, the Board considers that the claims of the main request and the claims of the first to seventh auxiliary requests, all filed with the letter of 9 May 2014, comprise subject-matter which does not meet the requirements of Article 123(2) EPC. However, the subject-matter of the claims of the eighth auxiliary request filed with the said letter is judged to meet the requirements of Article 123(2) EPC.

The patent was revoked on the grounds that the requests then on file failed to meet the requirements of either Rule 80 EPC or Article 123(2) EPC. Consequently, in the contested decision the Opposition Division did not consider the grounds raised by the opponent in the notice of opposition, namely the alleged lack of novelty and inventive step.

The Board therefore considers it appropriate to exercise its discretion under Article 111(1) EPC 1973 to remit the case to the Opposition Division for further prosecution on the basis of the claims of the eighth auxiliary request filed with the letter of 9 May 2014.
Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The application is remitted to the department of first instance for further prosecution.

The Registrar: The Chairman:

S. Sánchez Chiquero G. Eliasson

Decision electronically authenticated