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**Datasheet for the decision
of 25 September 2015**

Case Number: T 1649/10 - 3.4.01

Application Number: 03022260.8

Publication Number: 1378265

IPC: A61N5/10

Language of the proceedings: EN

Title of invention:

Charged particle beam apparatus

Patent Proprietor:

Hitachi, Ltd.

Opponent:

Varian Medical Systems Particle Therapy GmbH

Headword:

Relevant legal provisions:

RPBA Art. 13(1)
EPC R. 99(2)
EPC 1973 Art. 84

Keyword:

Admissibility of the appeal (no)
requests not clearly allowable - not admitted
clarity (no - auxiliary request 3)

Decisions cited:

T 1448/09, G 0009/92

Catchword:



**Beschwerdekammern
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Chambres de recours**

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Case Number: T 1649/10 - 3.4.01

**D E C I S I O N
of Technical Board of Appeal 3.4.01
of 25 September 2015**

Appellant: Hitachi, Ltd.
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Appellant: Varian Medical Systems Particle Therapy GmbH
(Opponent) Friedrich-Ebert-Strasse 1
51429 Bergisch Gladbach (DE)

Representative: Kirchner, Veit
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
16 June 2010 concerning maintenance of the
European Patent No. 1378265 in amended form.**

Composition of the Board:

Chairman G. Assi
Members: P. Fontenay
J. Geschwind

Summary of Facts and Submissions

- I. The appeals lie from the interlocutory decision of the opposition division to maintain European patent No. 1 378 265 in an amended form. The decision was dispatched on 16 June 2010.

The opposed patent was initially granted on the basis of application No. 03 022 260.8 which was a divisional application of earlier application No. EP-A-97 114 481.1. The patent No. 826 394, which had been granted for the earlier application had also been opposed by the present opponent. In decision T 470/07 of 15 September 2015 patent No. 826 394 had been revoked by Board 3.4.01 in a different composition.

- II. The opposition, which led to the decision appealed in the present case, was filed against the patent as a whole and based on the ground that the claimed subject-matter was not patentable (Article 100 (a) EPC 1973) because it was not new (Articles 52(1) and 54 EPC 1973) and did not involve an inventive step (Articles 52(1) and 56 EPC 1973).

- III. In the "Reasons" for its decision to maintain the patent in amended form, the opposition division held that the subject-matter of claim 1 of the patent as granted did not involve an inventive step in the sense of Article 56 EPC 1973. In the analysis developed by the opposition division according to the problem/solution approach, the opposition division relied on the teaching of document D10 (Design, Construction and First Experiments of a Magnetic Scanning System for Therapy; 12 April 1991, Biophysics Group, GSI Darmstadt) as closest prior art. Since the sole difference between the claimed subject-matter and

document D10 resided, in the opposition division's view, in the presence of a scatterer, the problem solved by the invention was to enlarge the irradiation beam and consequently to increase the speed of treatment. According to the opposition division, the skilled person would have found a solution to the problem of enlargement of the charged particle beam in document D4 (The 200-MeV proton therapy project at the Paul Scherrer Institute: Conceptual Design and practical realisation; Medical Physics, 22 (1), January 1995; pages 37-53).

The opposition division decided to maintain the patent as amended according to the first auxiliary request then pending. The objective problem of reducing the loss of particles at the edges of the treatment region, defined with regard to document D10 as closest prior art, was not addressed in D4.

- IV. With letter dated 26 July 2010, appellant I (opponent) filed an appeal against the interlocutory decision of the opposition division. The appeal fee was paid on the same day. The statement of grounds of appeal was filed on 22 October 2010. Appellant I requested that the impugned decision be set aside and the patent be revoked in its entirety.

- V. Appellant II (patentee) filed an appeal against the decision of the opposition division with a letter dated 24 August 2010. The appeal fee was paid on the same day. The statement of grounds was filed on 26 October 2010. Appellant II requested, as a main request, that the impugned decision be set aside and the patent be maintained as granted or, as an alternative, that the patent be maintained on the basis

of various sets of claims according to auxiliary requests 1 to 9.

- VI. By letter of 14 March 2011 (cf. point 2), appellant I raised the issue of the admissibility of appellant II's appeal. Appellant I referred, in this respect, to the principle of *res judicata*, in view of decision T 470/07 taken with regard to the earlier patent, and to an alleged lack of substantiation of the appeal filed by appellant II (Rule 99(2) EPC).

In the view of appellant I, the version of claim 1 which was granted with regard to the patent in suit was, despite differences in the wording, technically equivalent to a version of claim 1 decided upon by the Board in earlier decision T 470/07. Moreover, appellant II did not deal in its statement of grounds with the reasons given in the impugned decision to justify the lack of inventive step of claim 1 of the patent as granted. Appellant I stressed, in this respect, that appellant II had only argued starting from document D4 as closest prior art, although the contested decision relied on document D10 as closest prior art.

- VII. By letter of 16 May 2011, appellant II confirmed its main request and further requested, as an alternative, that the patent be maintained on the basis of various sets of claims according to new auxiliary requests 1 to 13 filed with said letter of 16 May 2011 and replacing the previous auxiliary requests.

- VIII. By letter of 14 December 2011, appellant I further commented on the issue of the admissibility of the appeal of appellant II and raised the issue of the admissibility of certain requests filed by appellant II.

- IX. Summons to attend oral proceedings were issued on 1 July 2015.
- X. On 16 July 2015, the Board issued a communication pursuant to Article 15(1) RPBA, expressing its provisional opinion with regard to the parties' submissions and requests then on file.
- XI. In two letters dated 25 August 2015, Appellant I and appellant II developed their argumentation with regard to the issue of admissibility of the appeal. Appellant I further objected to the admissibility of the main request and auxiliary requests 1, 2 and 4 to 13 presented by appellant II.
- XII. Oral proceedings before the Board took place on 25 September 2015 in presence of both appellant I and appellant II.
- In an attempt to remedy to the objections discussed with regard to auxiliary request 3, appellant II presented an additional new auxiliary request 3A.
- XIII. The final requests submitted by the parties at the oral proceedings were as follows.

Appellant I requested:

that the appeal of appellant II be rejected as inadmissible,

that the main request and auxiliary requests 1, 2, 3a and 4 to 13 of appellant II be rejected as inadmissible,

that auxiliary request 3 of appellant II be rejected as not allowable, and

that the patent be revoked.

Appellant II requested:

that the decision under appeal be set aside, and that the patent be maintained as granted (main request) or, in the alternative, as amended according to one of auxiliary requests 1 to 3, filed with letter of 16 May 2015, auxiliary request 3a, filed at the oral proceedings of 25 September 2015, and auxiliary requests 4 to 13, filed with letter of 16 May 2015.

XIV. Claim 1 of the granted patent reads as follows:

"1. A charged particle beam apparatus, comprising a charged particle accelerator (100, 172), for irradiating an irradiation target with a charged particle beam supplied from said charged particle accelerator, further comprising:

*a scatterer (300) for enlarging the size of the charged particle beam,
an extraction switching means (120, 121, 166, 167) for switching extraction of said charged particle beam on and off,
electromagnets (220, 221) for setting an irradiation position or an irradiation range of said charged particle beam, and
a control unit (132) for changing said irradiation position or said irradiation range while extraction of said charged particle beam is switched off by controlling said electromagnets during any one of operations of injection, acceleration, and deceleration of said charged particle accelerator."*

Claims 2 to 7 of the granted patent are dependent claims.

Claim 1 of auxiliary request 3 reads as follows:

"1. A charged particle beam apparatus, comprising a charged particle accelerator (100, 172), for irradiating an irradiation target with a charged particle beam supplied from said charged particle accelerator, further comprising:

a scatterer (300) for enlarging the size of the charged particle beam,

an extraction switching means (120, 121, 166, 167) for switching extraction of said charged particle beam from said charged particle accelerator on and off,

electromagnets (220, 221) for setting an irradiation position and an irradiation range of said charged particle beam,

an operation unit (131) for determining the size of the charged particle beam enlarged by the scatterer and magnitudes of currents (I_{xij} , I_{yij}) to be supplied to said electromagnets, and

a control unit (132) for changing said irradiation position and said irradiation range while extraction of said charged particle beam is switched off, by controlling said electromagnets during any one of operations of injection, acceleration and deceleration of said charged particle accelerator, causing said currents (I_{xij} , I_{yij}) to be supplied to said electromagnets so that the change of said irradiation position and irradiation range is based on the size of the charged particle beam enlarged by the scatterer."

Claims 2 to 6 of auxiliary request 3 depend on claim 1:.

Claim 1 according to auxiliary request 3a reads as follows.

"1. A charged particle beam apparatus, comprising a charged particle accelerator (100, 172), for irradiating an irradiation target with a charged particle beam supplied from said charged particle accelerator, further comprising:

 a scatterer (300) for enlarging the size of the charged particle beam,

 an extraction switching means (120, 121, 166, 167) for switching extraction of said charged particle beam from said charged particle accelerator on and off,

 electromagnets (220, 221) for setting for each of a plurality of irradiation regions an irradiation position at the center of the irradiation region and an irradiation range of said charged particle beam,

 an operation unit (131) for determining the size of the charged particle beam enlarged by the scatterer and first magnitudes of currents (I_{xij} , I_{yij}) to be supplied to said electromagnets in order that the center of the charged particle beam matches the irradiation position of an irradiation region and a second current magnitude (ΔI_{xij}) necessary for changing the magnetic field strength of one of the electromagnets on the basis of the extent of the irradiation region in an x-direction, and

 a control unit (132) for causing said currents (I_{xij} , I_{yij} , ΔI_{xij}) to be supplied to said electromagnets so that the charged particle beam is irradiated while being scanned in the x-direction, and for changing said irradiation position and said irradiation range while extraction of said charged particle beam is switched off, by controlling said electromagnets during any one of operations of injection, acceleration and deceleration of said charged particle accelerator, causing said currents (I_{xij} , I_{yij} , ΔI_{xij}) to be supplied to said

electromagnets so that the change of said irradiation position and irradiation range is based on the size of the charged particle beam enlarged by the scatterer."

The explicit wording of claim 1 of auxiliary requests 1, 2 and 4 to 13 is not reproduced herewith.

Reasons for the Decision

1. Applicable law

It is noted that the revised version of the Convention (EPC 2000) does not apply to European patent applications pending at the time of its entry into force (13 December 2007), unless otherwise provided. In the present decision, where Articles or Rules of the former version of the EPC apply, their citation is followed by the indication "1973".

2. Admissibility of the appeal filed by appellant I

The notice of appeal and the statement of grounds of appeal filed by appellant I comply with the requirements of Articles 106 to 108 EPC and Rule 99 EPC. The appeal of appellant I is thus admissible.

3. Admissibility of the appeal filed by appellant II

- 3.1 Rule 99 EPC relates to the "*Content of the notice of appeal and the statement of grounds*". Rule 99(2) EPC stipulates: "*In the statement of grounds of appeal the appellant shall indicate the reasons for setting aside the decision impugned, or the extent to which it is to be amended, and the facts and evidence on which the appeal is based*".

3.2 The mere indication by appellant II that the subject-matter of granted claim 1 would be inventive, starting from document D4 as closest prior art, whereas the impugned decision based its analysis on a combination of D10 as closest prior art and document D4, does not fulfill the requirements of Rule 99(2) EPC as to the necessity for the appellant to indicate the reasons for setting aside the decision. Independently of whether the assessment made by the appellant is convincing or not, the submission that a claimed invention is inventive when starting from a selected item of prior art when combined with a second item of prior art is without bearing on a finding which relies on a different document as closest prior art. The fact that the prior art selected as closest prior art by appellant II, i.e. D4, corresponds to the document relied upon by the opposition division to provide evidence for the obviousness of the claimed solution, when starting from document D10, does not affect this finding. It is namely of the very nature of the problem/solution approach that the analysis carried out in order to substantiate a lack of inventive step is directly affected by the selection of the closest prior art, since the determination of the distinguishing features, and the analysis which derives therefrom, directly depends on this initial selection.

The Board is thus not in a position to recognise in the reasoning put forward by appellant II, which relies on D4 as closest prior art, why the reasoning of the opposition division, which relied on document D10 as closest prior art, should be rejected. It is reminded, in this respect, that in *inter parte* proceedings, it is up to the parties to substantiate their views and not for the Board to do so.

During the oral proceedings before the Board, the representative of appellant II stressed that the patentee was of the firm conviction that the closest prior art was indeed disclosed by document D4, and not by D10, as assumed by the opposition division. This line of argumentation had been constantly reiterated in the course of the opposition proceedings. In the opinion of appellant II, the fact that D4, and not D10, was to be regarded as closest prior art constituted *per se* a sufficient argument to question the validity of the appealed decision. This submission was hence sufficient to establish the admissibility of the appeal under Rule 99(2) EPC. Whether or not the argumentation put forward was convincing related to the issue of allowability of the appeal and was thus not relevant when deciding on its admissibility.

The Board, however, rejects the argumentation of appellant II. Firstly, contrary to its assertion, the appellant II had acknowledged in the course of the opposition proceedings that document D10 could have illustrated the closest prior art when deciding on the issue of inventive step as confirmed by the minutes of the oral proceedings before the opposition division (cf. page 2, 4th and 5th. paragraph). Secondly, although the Board acknowledges that the argument according to which D4, and not D10, should be considered as closest prior art constitutes as such a valid argument to question the reasoning underlying the impugned decision, it observes that this would only be the case if the argument had indeed been put forward with the statement of grounds of appeal. The Board, however, observes that the statement of grounds does not contain any indication as to why the selection of

D10 as closest prior art by the opposition division was not correct.

3.3 The impugned decision is devoid of any ambiguity in its finding of lack of inventive step. According to the problem/solution approach, the opposition division, first, identified the features known from the closest prior art, i.e. D10, and then defined the objective problem solved by the claimed invention on the basis of the sole distinguishing feature not disclosed in D10, i.e. the scatterer. It, finally, justified why the skilled person would have considered the teaching of D4 in order to solve said objective problem. Consequently, appellant II can not rely on any contradiction or ambiguity in the reasoning followed by the opposition division to justify its alternative approach (cf. decision T 1448/09 *a contrario*, not published).

3.4 It is generally accepted that the filing of auxiliary requests when filing an appeal might constitute an appropriate reaction in order to deprive the adverse decision of its basis. This is, however, only the case if the substance of the amendments quite obviously address the objections relied upon in the impugned decision. Under the present circumstances, the amendments carried out with regard to auxiliary requests 1, 2 and 4 to 10 require a substantive and thorough analysis of both the claims' wording and prior art in order to determine if the amendments indeed constitute a serious attempt to address the objections relied upon in the decision in suit. In the absence, in the statement of grounds, of any statement drawing the attention of the Boards to the consequences of the amendments carried out on the correctness of the reasoning of the opposition division, the Board concludes that the mere filing of auxiliary requests 1,

2 and 4 to 9 filed with the statement of grounds is not sufficient to substantiate the appeal.

Auxiliary request 3, filed with the statement of appeal, corresponds to auxiliary request 1 filed during the opposition proceedings and considered allowable by the opposition division. The filing of auxiliary request 3 can thus not be considered to address the objections relied upon in the appealed decision.

The appeal filed by appellant II is, hence, rejected as inadmissible (Rule 101(1) EPC). His role in the present appeal proceedings is then that of a party as of right under Article 107 EPC.

4. *Admissibility of the auxiliary requests 1, 2, and 4 to 13 filed on 16 May 2011*

4.1 It follows from Article 13(1) RPBA that "*Any amendment to a party's case after that it has filed its grounds of appeal or reply may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject-matter admitted, the current state of the proceedings and the need for procedural economy*". This provision of the Rules of Procedure has been construed by the jurisprudence of the Boards of appeal as implying that the late filed requests should not be directed to subject-matter which is prima facie not allowable. It must be immediately apparent to the Board, with little investigative effort on its part, that the amendments made successfully address the issue raised, without giving rise to new ones (cf. Case law of the Boards of appeal of the European patent office, 7th edition, section IV-E-4.4.2).

4.2 Under the present circumstances, the patent proprietor is primarily restricted to defending the patent in the form in which it was maintained by the opposition division in its interlocutory decision. This follows from its role limited to that of a party as of right under Article 107 EPC and the resulting application of the principle of *reformatio in peius* (cf. decision G 9/92, OJ EPO 1994, 875; Headnote, 2).

Auxiliary requests 1, 6 and 7 differ from the auxiliary request considered allowable by the opposition division, *inter alia*, in that some features relating to the operation unit and the control of electromagnets in claim 1 have been excised from the independent claim. Claim 1 of auxiliary requests 12 and 13 differ from claim 1 considered allowable in that the functionality of the operation unit has been specified, without however reproducing the feature according to which the operation unit determines the magnitudes of currents (I_{xij} , I_{yij}) to be supplied to the magnets. Claim 1 of auxiliary requests 2, 7 and 8 recites that the electromagnets and the control unit are, respectively, for setting and changing the irradiation range, whereas in claim 1 considered allowable said units were, respectively, for setting and changing an irradiation position and an irradiation range.

It follows that the scope of claim 1 according to auxiliary requests 1, 2, 6 to 8, 12 and 13 is broader than that of claim 1 considered allowable by the opposition division. As a consequence, these requests thus infringe the principle of prohibition of "*reformatio in peius*".

Thus, exercising its discretionary power under Article 13(1) RPBA, the Board did not admit auxiliary requests 1, 2, 6 to 8, 12, and 13 into the appeal proceedings.

- 4.3 Concerning auxiliary requests 4 and 5, the Board noted that appellant II merely refers in its submissions of 16 May 2011 to the differences between said requests and auxiliary request 3 (cf. letter of 16 May 2011, page 9, lines 10-17). The submissions of appellant II are completely silent as to the consequences which should result from the proposed amendments on the issues of novelty and inventive step objected to by appellant I in its notice of appeal.

A similar finding applies to auxiliary request 9, 10, and 11 which differ from auxiliary requests 3, 4 and 5, respectively, in that independent claim 1 specifies that the charged particle beam apparatus comprises a synchrotron. Many of the objections raised by appellant I under article 123(2) EPC, 83 EPC 1973 and 84 EPC 1973 indeed relied on the ambiguity resulting from the fact that claim 1 referred to concepts typical for synchrotrons while *de facto* also encompassing the possibility of the accelerator consisting of a cyclotron. The Board thus acknowledges that the amendment carried out in auxiliary requests 9 to 11 are sufficient, as such, to solve many of the issues objected to by appellant I. However, it does not address the objection of lack of inventive step raised by appellant I in its statement of grounds against claim 1 of the patent as amended according to the interpretation that the charged particle accelerator would refer to a synchrotron (cf. statement of grounds of 22 October 2010, point 10).

Consequently, the Board did not admit auxiliary requests 4, 5 and 9 to 11 into the appeal proceedings.

4.4 Auxiliary request 3 corresponds to the auxiliary request 1 underlying the decision under appeal and considered allowable by the opposition division. It is thus admissible.

5. *Auxiliary request 3*

Claim 1 of auxiliary request 3 differs from the granted version of claim 1, firstly, in that the features of the electromagnets and control unit have been amended so as to specify that they are "*for setting an irradiation position and an irradiation range*" and "*for changing said irradiation position and irradiation range*", respectively. Claim 1 of the granted patent referred instead to "*an irradiation position or irradiation range*".

Secondly, claim 1 of auxiliary request 3 incorporates the additional features of "*an operation unit (131) for determining the size of the charged particle beam enlarged by the scatterer and magnitudes of currents (I_{xij} , I_{yij}) to be supplied to said electromagnets*" and of the control unit "*causing said currents (I_{xij} , I_{yij}) to be supplied to said electromagnets so that the change of said irradiation position and irradiation range is based on the size of the charged particle beam enlarged by the scatterer*".

The Board agrees with appellant I in that the amendments carried out generate some confusion as to the actual sequence of events taking place within the claimed particle beam apparatus. The feature relating to the control unit implies namely that the irradiation

position and irradiation range be changed while extraction of the beam is switched off. This control is achieved by controlling the electromagnets, as recited in claim 1. It is observed that the control of the electromagnets, in the absence of any irradiating beam, indeed defines a preliminary step in order to later on irradiate a specific position after that the beam is switched on. However, the feature according to which the irradiation range is obtained by controlling the electromagnets, causing the currents I_{xij} and I_{yij} to be supplied to the electromagnets, can only be achieved if the component I_{xij} of the current varies continuously between two extrema defining said range and if the varying magnetic field resulting from the electromagnets being controlled by said varying current I_{xij} directly affects the movement of the charged particles. In other words, a scan line of a target area can only be irradiated if a charged particle beam is moving within the space controlled by the electromagnets.

This finding is thus directly conflicting with the feature according to which the control unit changes *"said irradiation range **while** extraction is switched off, by controlling said electromagnets during any one of operations of injection, acceleration and deceleration of said charged particle accelerator"*.

Consequently, the subject-matter of claim 1 of auxiliary request 3 is not clearly defined contrary to Article 84 EPC 1973.

Auxiliary request 3 is thus not allowable.

6. *Auxiliary request 3A*

6.1 As stated above under section 2.1, the provision of Article 13(1) RPBA has been construed by the jurisprudence of the Boards of appeal as implying that late filed requests presented by a party should not be directed to subject-matter which is *prima facie* not allowable. Auxiliary request 3A was presented during the oral proceedings before the Board following the debate on the merits of auxiliary request 3. In order to be admissible, it should have been immediately apparent to the Board that the newly filed request successfully address the issues previously raised, starting with the lack of clarity objected to by appellant I with regard to auxiliary request 3.

In this respect, the Board observes that the feature of "*a control unit (132) for causing said currents (I_{xij} , I_{yij} , ΔI_{xij}) to be supplied to said electromagnets so that the charged particle beam is irradiated while being scanned in the x-direction, and for changing said irradiation position and said irradiation range while extraction of said charged particle beam is switched off, by controlling said electromagnets during any one of operations of injection, acceleration and deceleration of said charged particle accelerator, causing said currents (I_{xij} , I_{yij} , ΔI_{xij}) to be supplied to said electromagnets so that the change of said irradiation position and irradiation range is based on the size of the charged particle beam enlarged by the scatterer*" does not affect the conclusion reached above with regard to auxiliary request 3. While the first portion of the newly introduced feature appears to specify that the currents are supplied while the charged particle beam is irradiated, the second portion of this feature claims the contrary by specifying that the changing of the irradiation

position and irradiation range by controlling the electromagnets is performed while the beam is switched off.

6.2 Consequently, the Board did not admit auxiliary request 3A into the appeal proceedings.

Order

For these reasons it is decided that:

1. The appeal of appellant II is rejected as inadmissible.
2. The decision under appeal is set aside.
3. The patent is revoked.

The Registrar:

The Chairman:



G. Nachtigall

G. Assi

Decision electronically authenticated