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**Datasheet for the decision
of 22 November 2006**

Case Number: T 0944/04 - 3.3.10

Application Number: 97307074.1

Publication Number: 0829463

IPC: C07C 33/12

Language of the proceedings: EN

Title of invention:

(E)-(R)-2-Alkyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol, process for preparing the same, and use thereof in perfume compositions

Patentee:

Takasago International Corporation

Opponent:

Givaudan Schweiz AG

Headword:

Enantiomeric perfume/TAKASAGO

Relevant legal provisions:

EPC Art. 54(3)(4), 56, 111(1), 123(2)(3)

EPC R. 55(c)

Keyword:

"Main request: novelty (no) - optical purity not a distinguishing feature"

"Auxiliary requests 1, 2, 3: inventive step (no) - obvious to try"

"Auxiliary request 4: remittal"

Decisions cited:

G 0009/91, T 0012/81, T 0206/83, T 0026/85, T 0296/87,

T 0990/96, T 0219/98, T 0728/98

Catchword:

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Case Number: T 0944/04 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 22 November 2006

Appellant: Takasago International Corporation
(Patent Proprietor) 37-1, Kamata 5-chome
Ohta-ku
Tokyo (JP)

Representative: Uchida, Kenji
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Respondent: Givaudan Schweiz AG
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Representative: McStea, John Anthony
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CH-8600 Dübendorf (CH)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 9 July 2004
revoking European patent No. 0829463 pursuant
to Article 102(1) EPC.

Composition of the Board:

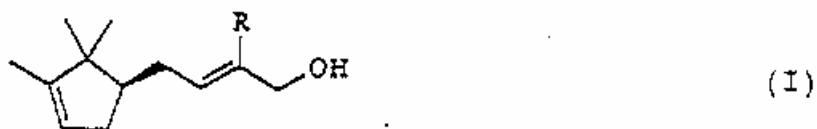
Chairman: R. Freimuth
Members: J. Mercey
J. Seitz

Summary of Facts and Submissions

- I. The Appellant (Proprietor of the Patent) lodged an appeal on 20 July 2004 against the decision of the Opposition Division dated 9 July 2004 revoking European patent No. 829 463, and on 22 October 2004 filed a written statement setting out the grounds of appeal.
- II. Notice of Opposition had been filed by the Respondent (Opponent), requesting revocation of the patent in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC). *Inter alia* the following documents were submitted in opposition proceedings:
- (1a) EP-A-801 049,
 - (2) J. Chromatogr. A, 697, 475-84 (1995) and
 - (4) US-A-4 652 402.
- III. The decision under appeal was based on a main request consisting of the claims as granted, and four auxiliary requests filed during opposition proceedings. The Opposition Division decided that the subject-matter according to the then pending main and first auxiliary request was not novel over document (1a), which was prior art according to Article 54(3) and (4) EPC, and that the subject-matter according to the second to fourth auxiliary requests was not inventive over *inter alia* documents (2) and (4).
- IV. At the oral proceedings before the Board, held on 22 November 2006, the Appellant defended the maintenance of the patent in suit in amended form on the basis of a main request and auxiliary requests 1

to 4, all submitted during these oral proceedings and thus superseding any previous requests. The main request comprised a set of three claims, independent claim 1 reading as follows:

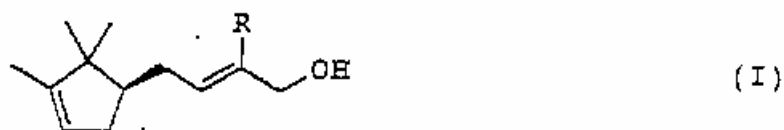
"1. An (E)-(R)-2-alkyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol represented by formula (I):



wherein R represents a straight-chain or branched alkyl group having 1 to 3 carbon atoms; having an optical purity of 50%e.e. or higher."

Claim 1 of auxiliary requests 1 and 2 differed from claim 1 of the main request exclusively in that the alkyl group R had 2 or 3 carbon atoms, and Claim 1 of auxiliary request 3 differed exclusively in that R was an ethyl group only. Claim 1 (and the only claim) of auxiliary request 4 was directed to a process for preparing the compounds of formula (I) and read as follows:

"1. A process for preparing an (E)-(R)-2-alkyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol represented by formula (I):



wherein R represents a straight-chain or branched alkyl group having 1 to 3 carbon atoms, comprising hydrogenating an (E)-(R)-2-alkyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-al represented by formula (II):



wherein R is as defined above, in the presence of a ruthenium-phosphine complex as a catalyst, a base comprising an alkali metal or an alkaline earth metal, and an amine."

During these oral proceedings, the Appellant withdrew its request for reimbursement of the appeal fee in accordance with Rule 67 EPC, which had been based on alleged substantial procedural violations committed by the Opposition Division.

- V. The Appellant submitted that the subject-matter of claim 1 of the main request was novel, more particularly that the mere mention of (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol in Example 5 of document (1a) did not amount to a specific disclosure of this compound, since it had not been made available to the public because this compound was obtained merely as an intermediate which was not isolated. Nor did document (1a) provide an individualised description of the compound claimed, since no optical purity was specified. And finally, document (1a) provided no enabling disclosure of how to prepare and separate this compound. With regard to

inventive step of the subject-matter of claim 1 of the main and first to third auxiliary requests, the Appellant submitted that in the light of the teaching of document (4), the problem to be solved by the patent in suit was to provide a compound having a stronger odour intensity while the odour note varies. The comparative data given in Table 4 of the patent in suit demonstrated that the (R)-(E)-2-ethyl-(trimethylcyclopentenyl)-butenol had an odour about 50 times stronger than its (S)-(E) counterpart. This finding was surprising, since it was against the general technical trend at the time of filing of the patent in suit that the absolute configuration of the asymmetric carbon atom had no influence on odour properties. With regard to the teaching in document (2), the Appellant argued that this document speculated on qualitative differences in odour notes between isomers but did not address differences in intensity. The Appellant made no substantive submissions with regard to the subject-matter of the fourth auxiliary request.

VI. The Respondent submitted that the subject-matter of claim 1 of the main request was not novel, since the compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol was specifically disclosed in Example 5 of document (1a). This compound could have been isolated by the skilled person without difficulty using art-recognised techniques available at the priority date of the patent in suit, it not being necessary for a compound to have actually been isolated in order for it to have been disclosed to those skilled in the art. With regard to the specified level of optical purity, the Respondent referred to the decision T 990/96 (OJ EPO 1998, 489), wherein it was stated that

a document disclosing a low molecular chemical compound and its manufacture normally made this compound available to the public in the sense of Article 54 EPC in all desired grades of purity. Finally, document (1a) was an enabling disclosure, since it described a method by which this compound could be prepared. With regard to inventive step of the subject-matter of claim 1 of the main and first to third auxiliary requests, the Respondent submitted that in view of the teaching of document (4), it was to be expected that compounds of the type claimed in the patent in suit had sandalwood-like odour characteristics, said document noting that the compounds may also be made stereospecifically from (+)- or (-)- α -pinene. It was also well known in the art, as witnessed for example by document (2), that the stereochemical configuration of the compound could have an effect on both the nature and strength of the odour. For the skilled person aiming at providing compounds having different sandalwood notes and a stronger odour, it was thus obvious to try and prepare and/or separate the individual enantiomers, and any difference in odour notes and/or intensity observed for the individual enantiomers could not be considered to be surprising. The Respondent made no substantive submissions with regard to the subject-matter of the fourth auxiliary request.

VII. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request or, subsidiarily, on the basis of any of the requests 1 to 4, all requests submitted during the oral proceedings on 22 November 2006.

The Respondent requested that the appeal be dismissed.

VIII. At the end of the oral proceedings, the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.
2. *Jurisdiction of the Board*

The power of an Opposition Division or of a Board of Appeal to decide on a European patent in the framework of opposition (appeal) proceedings depends on the extent to which the patent is opposed pursuant to Rule 55(c) EPC in the notice of opposition (G 9/91, OJ EPO 1993, 408). Since in the present case the Opponent (Respondent) directed its opposition against the patent in its entirety (cf. Notice of Opposition filed 13 September 2002), the Board, as well as the Opposition Division, has the power, and the obligation, to decide on the patent as a whole.

The patent as granted comprised process claim 3. Thus that process claim, which is now claim 2 in the main request and the auxiliary requests 1 to 3 and claim 1 in auxiliary request 4, lies within the jurisdiction of the Board and of the Opposition Division. This finding was challenged by the Appellant during the appeal proceedings, but subsequently conceded during the oral proceedings before the Board.

Main Request

3. *Amendments (Article 123 EPC)*

The subject-matter of claim 1 is based on original claims 1 and 2, which correspond to granted claims 1 and 2 respectively, the scope of protection being thereby restricted. The requirements of Article 123(2) and (3) EPC are thus satisfied.

4. *Novelty*

4.1 The Respondent challenged the novelty of the claimed invention exclusively with regard to document (1a). In the circumstances of this case, the Board limits its considerations with respect to novelty to this document.

4.2 Document (1a) is comprised in the state of the art according to Article 54(3) and (4) EPC. This finding was never contested by the Appellant.

4.3 Document (1a) discloses in Example 5 the compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol. This is a compound of formula (I) according to claim 1 of the main request wherein the substituent R is a methyl group. Consequently this specific disclosure in document (1a) destroys the novelty of the subject-matter claimed.

4.4 The Appellant argued in support of novelty that Example 5 of document (1a) did not amount to a specific disclosure of the compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol, since said

compound had not been made available to the public for essentially three reasons.

- 4.4.1 Firstly, the Appellant alleged that the feature which distinguished the claimed compound was the **level of optical purity**, namely of at least 50%e.e., document (1a) providing no individualised description of such a level of purity.

However, the level of purity of a low molecular chemical compound, as a general rule, cannot entail novelty since conventional methods for its purification are common general knowledge. Thus, a document disclosing such a chemical compound normally makes this compound available to the public within the meaning of Article 54 EPC in any level of purity (cf. T 990/96, *loc. cit.*, point 7 of the reasons and T 728/98, OJ EPO 2001, 319, point 6.4 of the reasons). This principle applies equally to optical purity defined in terms of an enantiomeric excess "e.e." (cf. T 219/98, point 4.8 of the reasons, not published in OJ EPO). No evidence was submitted from which the Board could conclude that in the present case an exceptional situation exists which would justify a different conclusion (cf. T 990/96, *loc cit.*, point 8 of the reasons), such that the Board holds that document (1a) makes the compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol available to the public in all levels of optical purity.

- 4.4.2 Secondly, the Appellant alleged that document (1a) provided **no enabling disclosure**, since it did not disclose a method of preparing and separating the

compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol.

Indeed, document (1a) would not effectively disclose the compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol even though its precise chemical name is indicated, if the skilled person were unable to find out from the information given in that document or from common general knowledge how to obtain this compound (see T 206/83, OJ EPO 1987, 5, point 2 of the reasons and T 26/85, OJ EPO 1990, 22, point 8 of the reasons).

In the present case, Example 5 of document (1a) indicates that (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol was obtained from (R)-(+)-campholenic aldehyde. On page 7, lines 56 to 58 of that document, it is stated that (R)-(+)-campholenic aldehyde was available from the suitable α -pinene. Scheme 1 on page 4 of document (1a) depicts the preparation of a 2-alkyl-4-(2,3,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol, under which the aforementioned compound of Example 5 falls, from campholenic aldehyde via two reaction routes i.e. b) and c) or a) and d), said conventional reactions a), b), c) and d) being described in more detail on page 5, lines 48 to 57 of that document. Therefore the Board concludes that a reproducible method of preparation for the compound (R)-(E)-2-methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol is indicated in document (1a), because it supplies a skilled person with all the information needed, i.e. regarding the starting materials and the essential reaction conditions, for preparing said

compound, with the consequence that this document comprises an enabling disclosure.

Any challenge by the Appellant to the above findings in respect of the enabling disclosure of document (1a) lacks substantiating facts or corroborating evidence. The burden of proving the facts it alleges lies with the party invoking these facts. If a party, whose arguments rest on these alleged facts, is unable to discharge its onus of proof, it goes to the detriment of that party. In the absence of any pertinent evidence presented by him, the Appellant has merely speculated which cannot convince the Board.

- 4.4.3 Finally, the Appellant argued that this compound described in document (1a) was obtained merely as an intermediate which was **not isolated**, such that the skilled person could not analyse or reproduce it.

However, the conventional way of describing a substance in chemistry is by giving its precise scientific designation, i.e. its name using (standard) chemical nomenclature (cf. T 12/81, OJ EPO 1982, 296, point 5 of the reasons), said chemical name identifying that compound, thereby disclosing it to the public. In the present case this compound was not only identified by its chemical name, but was also actually prepared, it being immaterial for the purposes of prejudice to novelty whether or not the compound was actually isolated, its isolation not being a requirement for making it available to the public.

- 4.5 For the above reasons, the Board concludes that document (1a) discloses the compound (R)-(E)-2-methyl-

4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol in all levels of optical purity, such that the subject-matter of claim 1 of the main request is not novel.

- 4.6 As a result, the Appellant's request is not allowable as the subject-matter of claim 1 lacks novelty within the meaning of Articles 52(1), 54(3) and (4) EPC.

Auxiliary requests 1 to 3

5. *Amendments (Article 123 EPC)*

Claim 1 of each of these requests has been further restricted such that the lower limit of the alkyl group of the substituent R has 2 carbon atoms (auxiliary requests 1 and 2) or that the alkyl group has been restricted to an ethyl group (auxiliary request 3). Both amendments find support on page 6, line 10 of the application as filed, wherein the substituent R is disclosed as an ethyl group. These amendments bring about a restriction of the scope of the claims as granted, and therefore of the protection conferred thereby. The requirements of Article 123(2) and (3) EPC are thus satisfied.

6. *Novelty*

The Board is satisfied that the subject-matter as defined in claim 1 according to the auxiliary requests 1 to 3 is novel due to the restrictions made and thus meets the requirements of Article 54 EPC. Novelty of the subject-matter of the auxiliary requests was not contested during the appeal proceedings. Hence, it is unnecessary to go into more detail in this respect.

7. *Inventive step*

- 7.1 Independent claim 1 of auxiliary request 3 is directed to an embodiment comprised within claim 1 according to auxiliary requests 1 and 2, namely to the alternative that the substituent R is an ethyl group. In case this embodiment according to auxiliary request 3 lacked inventive step, such a line of requests would mandatorily result in the conclusion that the subject-matter of auxiliary requests 1 and 2, which comprise that obvious embodiment, cannot, at least to that extent, involve an inventive step either. For this reason, it is appropriate that the subject-matter of claim 1 of the auxiliary requests 1 and 2, insofar as it relates to the embodiment wherein the substituent R is an ethyl group, and that of claim 1 of auxiliary request 3, is examined first as to its inventive ingenuity.
- 7.2 According to the established jurisprudence of the Boards of Appeal it is necessary, in order to assess inventive step, to establish the closest state of the art, to determine in the light thereof the technical problem which the invention addresses and successfully solves, and to examine the obviousness of the claimed solution to this problem in view of the state of the art. This "problem-solution approach" ensures assessing inventive step on an objective basis and avoids an *ex post facto* analysis.
- 7.3 Claim 1 is directed to the compound (E)-(R)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol having a sandalwood odour.

Document (4) discloses in Example 1, Table 1, the compound (E)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol, this example being silent with regard to the configuration (R,S) at the chiral centre. At column 6, lines 30 to 31, it is indicated that the campholene aldehyde, from which that substituted butenol is prepared, can be produced in an optically active form from (+)- or (-)- α -pinene, (-)- α -pinene resulting in (R)-campholene aldehyde, leading subsequently to the (R)-enantiomer of the butenol. Document (4) describes 2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol as having a sandalwood note (cf. column 3, lines 49 to 50).

Therefore, the Board considers, in agreement with the Appellant and the Respondent, that the disclosure of document (4) specified above represents the closest state of the art and starting point in the assessment of inventive step.

- 7.4 In view of this state of the art, the problem underlying the patent in suit, as formulated by the Respondent at the oral proceedings, consists in providing a 2-alkyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol having a stronger odour intensity while the odour note varies (cf. also Appellant's letter dated 22 October 2004, page 15, last paragraph).
- 7.5 As the solution to this problem the patent in suit proposes the (R)-enantiomer of the (E)-2-ethyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)-2-buten-1-ol of formula (I) as defined in claim 1.

- 7.6 The specification of the patent in suit demonstrates in Table 4 on page 17 that the claimed (R)-enantiomer has a stronger odour intensity (as witnessed by a lower threshold value), together with a different odour note, than the corresponding (S)-enantiomer (cf. the (E)-(R)-compound of Example 2 and Reference Example 2 in Table 4). For these reasons, the Board is satisfied that the problem underlying the patent in suit has been successfully solved. This finding has not been challenged by the Respondent.
- 7.7 It remains to be decided whether or not the proposed solution to the problem underlying the patent in suit is obvious in view of the cited state of the art.

When starting from the (E)-2-ethyl-(trimethylcyclopentenyl)-butenol of undisclosed configuration at the chiral centre known from document (4), it is a matter of course that the person skilled in the art seeking to alter the odour properties thereof would turn his attention to that prior art in the field of perfumes just dealing with the same technical problem. As a skilled person, he would be struck by document (2) which addresses α -campholene derivatives, including the 2-ethyl-(trimethylcyclopentenyl)-butenol of present formula (I) of undisclosed stereoisomeric, i.e. diastereomeric and enantiomeric, configuration (cf. compound 27 on page 477), which is described as having sandal notes (cf. sentence bridging pages 475 and 476). This document teaches that stereoisomers of these compounds may have different odour properties (cf. Abstract), more particularly it teaches that different enantiomers may have different odour notes (cf. page 475, left hand

column, second sentence and page 476, second full sentence). This document thus addresses the problem underlying the present invention, since it is concerned with variations in odour properties, odour properties encompassing for the person skilled in the art both odour note and intensity. Moreover, it teaches a causal link between odour properties and stereoisomers, more particularly enantiomers, of α -campholene derivatives encompassing the claimed butenol. Therefore, the skilled person has an incentive to investigate both possible enantiomers of the (E)-2-ethyl-(trimethylcyclopentenyl)-butenol known from document (4) as to their different odour properties, i.e. odour notes and intensities. The skilled person, thus acting routinely, identifies without the exercise of inventive ingenuity which of the two enantiomeric forms, in the present case the (R)-enantiomer, has the stronger odour intensity.

The Board concludes from the above that the state of the art, in particular document (2), gives the person skilled in the art a concrete hint as to how to solve the problem underlying the patent in suit as defined in point 7.4 above, namely by providing one of the two possible enantiomers, here the (R)-enantiomer, of the (E)-2-ethyl-(trimethylcyclopentenyl)-butenol known from Example 1 of the closest prior art document (cf. point 7.3 above), thereby arriving at the solution proposed by the patent in suit. In the Board's judgement, it was obvious to try to follow the avenue indicated in the state of the art with a reasonable expectation of success without involving any inventive ingenuity.

7.8 For the following reasons the Board cannot accept the Respondent's arguments designed for supporting inventive step.

The Respondent submitted that document (2) addressed only qualitative differences in odour notes between isomers but did not address differences in intensity, such that the claimed enantiomer was inventive, in view of its unexpectedly much stronger odour.

However, document (2) addresses odour properties in general (cf. point 7.7 above), odour properties including not only odour note but also odour intensity. Nothing was submitted by the Appellant from which the Board could reasonably conclude that the skilled person was deterred from following the straight teaching of this document. Moreover, varying the odour note necessarily results in a change in the perception of the odour intensity, both having been in fact subjectively measured by the human nose.

The conclusion reached above is not affected even by the circumstance that the (R)-enantiomer in question has an odour about 50 times stronger than its (S)-enantiomer, nor that it has a milky sandalwood oil odour with a cedar character. For once it was obvious to test whether the enantiomers had different odour properties, it no longer makes any difference which configuration proves to have a stronger odour and how exactly its odour note varies. Since if tests with enantiomers suggested themselves to a skilled person as an obvious way of arriving at compounds offering different odour properties, neither the extent of the increase in odour strength nor the exact nature of the

odour note can be taken as an indication of inventive step (cf. T 296/87, OJ EPO 1990, 195, points 8.4.3 and 8.4.4 of the reasons).

7.9 Therefore, in the Board's judgement, the subject-matter of claim 1 of auxiliary request 3 represents an obvious solution to the problem underlying the patent in suit and does not involve an inventive step.

Since a decision can only be taken on a request as a whole, none of the further claims need to be examined.

8. As a result, the Appellant's request is not allowable as the subject-matter of claim 1 according to auxiliary request 3 lacks inventive step pursuant to Article 56 EPC.

9. Since independent claim 1 of auxiliary request 3 is directed to an embodiment comprised within claim 1 of auxiliary requests 1 and 2 wherein the substituent R is an ethyl group (cf. point 7.1 *supra*), the considerations having regard to inventive step given in points 7.2 to 7.8 *supra* and the conclusion drawn in point 7.9 *supra* with respect to auxiliary request 3 apply also to auxiliary requests 1 and 2, i.e. the subject-matter claimed is obvious and does not involve an inventive step.

10. In these circumstances, the Appellant's auxiliary requests 2 and 3 share the fate of auxiliary request 1 in that they too are not allowable for lack of inventive step pursuant to Article 56 EPC.

Auxiliary request 4

11. This request is restricted to a process claim for preparing the compounds of formula (I) identical to claim 3 as granted. The decision under appeal was based on lack of novelty or inventive step of the compounds of formula (I) *per se* only, which objections are no longer pertinent in view of the restriction to the preparation process. The Opposition Division has, however, not yet ruled on this process claim. It is not the duty of the Boards of Appeal to consider and decide upon questions raised for the first time during the appeal proceedings. Instead, the main purpose of appeal proceedings is to give the losing party the opportunity to challenge the decision of the Opposition Division (cf. G 9/91, *loc. cit.*, point 18 of the reasons). Taking into account that there were also no submissions from either party as regards novelty or inventive step of the claimed process during appeal proceedings, the Board considers it appropriate to exercise its power conferred on it by Article 111(1) EPC to remit the case to the Opposition Division for further prosecution on the basis of the sole claim according to the auxiliary request 4.

In view of Article 114(1) EPC, it will be the task of the first instance to examine and decide on the grounds of opposition raised, i.e. novelty and inventive step, of the subject-matter of this process claim.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution on the basis of auxiliary request 4 submitted during the oral proceedings held before the Board.

The Registrar:

The Chairman:

C. Moser

R. Freimuth