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Datasheet for the decision of 13 June 2012

Case Number: T 1881/09 - 3.4.02

Application Number: 06118768.8

Publication Number: 1798579

IPC: G02B6/00, G02B6/42

Language of the proceedings: EN

Title of invention:
Condensing and collecting optical system using parabolic reflectors or a corresponding ellipsoid/hyperboloid pair of reflectors

Applicant:
Wavien, Inc.

Headword:

Relevant legal provisions:

Keyword:

Decisions cited:

Catchword:

Beschwerdekammern
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Case Number: T 1881/09 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 13 June 2012

Appellant: (Applicant)	Wavien, Inc. 26145 Technology Drive Santa Clarita, CA 91355-1137 (ETATS-UNIS D'AMERIQUE)
Representative:	Jordan, Volker Otto Wilhelm Weickmann & Weickmann Patentanwälte Postfach 860 820 81635 München (ALLEMAGNE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 14 April 2009 refusing European patent application No. 06118768.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: A. Klein
Members: F. Maaswinkel
B. Müller

Summary of Facts and Submissions

I. This is an appeal against the decision, dispatched on 14 April 2009, of the examining division refusing European patent application No. 06118768.8 (published as EP-A-1 798 579) on the ground that the patent application did not meet the requirements of Art. 52(1) EPC because the subject-matter of claim 1 lacked novelty (Art. 54(1) and (2) EPC) over the disclosure in document D1 (US-A-5 191 393). As to dependent claims 2 to 4, 6, 7, and 9 to 17, the examining division found that the additional features of these claims did not contribute to inventive step (Art. 56 EPC). Finally claim 5 had been subject of a grant in the parent patent application (No. 00963256.3), therefore this claim should be deleted in order to avoid double patenting.

II. Against this decision the applicant (appellant) lodged an appeal which was received on 15 June 2009 and paid the fee for the appeal on the same day. With the statement setting out the grounds of appeal filed on 14 August 2009 the appellant filed new claims. The appellant requested that the decision under appeal be set aside and the patent application be granted with the claims filed with the statement of grounds and also requested that the appeal fee be reimbursed. Furthermore an auxiliary request for oral proceedings was filed.

III. In a Communication pursuant to Article 15(1) RPBA, dated 7 March 2012 and accompanying the summons to oral proceedings on 13 June 2012, the board raised objections under Art. 84 EPC. With respect to the issue

of patentability, the board concurred with the appellant that the claims appeared to define new subject-matter but expressed its doubt that the subject-matter of claim 1 involved an inventive step, having regard to the disclosure in document D1 and the normal routine skill of the person in the technical field of optical design engineering. As to the request for the reimbursement of the appeal fee it appeared doubtful that a refund was justified.

IV. In a letter dated 11 May 2012 the appellant filed new sets of claims according to a main request and first to fifth auxiliary requests and adapted description pages.

V. At the oral proceedings the appellant filed new fourth and fifth auxiliary requests replacing the former fourth and fifth auxiliary requests. It requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or auxiliary requests 1 to 5, including the following sets of claims (*numbering by the appellant*):

- WEI-1 (main request),
- WEI-1a (first auxiliary request),
- WEI-2 (second auxiliary request),
- WEI-2a (third auxiliary request),

all filed with the letter of 11 May 2012, or

- WEI-3' (fourth auxiliary request),
- WEI-3a' (fifth auxiliary request),

both filed in the oral proceedings.

The appellant also requested reimbursement of the appeal fee.

VI. The wording of independent claim 1 of the main request reads as follows:

" An optical device comprising:

a source of electromagnetic radiation (20) located proximate to a focal point (36) of a collimating reflector (30) to produce collimate rays of radiation reflected from said collimating reflector in a direction substantially parallel to an optical axis (38) of said collimating reflector (30);

a target (60) to be illuminated with at least a portion of the electromagnetic radiation emitted by said source, and

a focusing reflector (40) comprising at least a portion (42, 44) of a paraboloid of revolution, said focusing reflector (40) having an optical axis (48) and a focal point (46) on said optical axis (48), said target (60) being located proximate said focal point (46) of said focusing reflector (40), said focusing reflector (40) being positioned and oriented with respect to said collimating reflector (30) so that the collimated rays of radiation reflected from said collimating reflector (30) are reflected by said focusing reflector (40) and focused substantially toward said target (60),

the collimating reflector (30) and the focusing reflector (40) comprising a collimating/focusing reflector pair consisting of:

a pair of reflectors, each reflector of the pair of reflectors comprising at least a portion (32, 34, 42, 44) of a substantial paraboloid of revolution and having about the same size and shape, with the collimating reflector (30) and focusing reflector (40) having a corresponding size and optical orientation with respect to each other so that substantially each ray of radiation reflected by a surface portion of said collimating reflector (30) is reflected by a corresponding surface portion of said focusing reflector (40) toward said target (60) so as to achieve

substantially unit magnification between the source and an image focused onto said target (60) ".

The wording of claim 1 of the first auxiliary request is substantially the same as that of claim 1 according to the main request and only differs in that it is cast in the two-part form (Rule 43 EPC). Its wording, as well as the wording of claim 1 of the third and fifth auxiliary request, which only differ from claim 1 according to the second and fourth auxiliary request by their casting in the two-part form, are not relevant for the purpose of the present Decision and are therefore not reproduced.

Claim 1 of the second auxiliary request has the same wording as claim 1 of the main request, but with the following additional feature at the end of the claim:

" (*…and an image focused onto said target (60)*) wherein the optical device further comprises one or more additional reflectors (50, 64, 70, 72) constructed and arranged to reflect at least part of the portion of the electromagnetic radiation emitted by said source (20) that does not impinge directly on said collimating reflector (30) toward said collimating reflector (30) through the focal point (36) of said collimating reflector (30) to increase the flux intensity of the collimated rays ".

The wording of claim 1 of the fourth auxiliary request reads as follows:

" An optical device comprising:
a source of electromagnetic radiation (20) located proximate to a focal point (36) of a collimating reflector (30) to produce collimated rays of radiation

reflected from said collimating reflector in a direction substantially parallel to an optical axis (38) of said collimating reflector (30);

a target (60) to be illuminated with at least a portion of the electromagnetic radiation emitted by said source, and

a focusing reflector (40) comprising at least a portion (42, 44) of a paraboloid of revolution, said focusing reflector (40) having an optical axis (48) and a focal point (46) on said optical axis (48), said target (60) being located proximate said focal point (46) of said focusing reflector (40), said focusing reflector (40) being positioned and oriented with respect to said collimating reflector (30) so that the collimated rays of radiation reflected from said collimating reflector (30) are reflected by said focusing reflector (40) and focused substantially toward said target (60),

the collimating reflector (30) and the focusing reflector (40) comprising a collimating/focusing reflector pair consisting of:

a pair of reflectors, each reflector of the pair of reflectors comprising at least a portion (32, 34, 42, 44) of a substantial paraboloid of revolution and having about the same size and shape, with the collimating reflector (30) and focusing reflector (40) having a corresponding size and optical orientation with respect to each other so that substantially each ray of radiation reflected by a surface portion of said collimating reflector (30) is reflected by a corresponding surface portion of said focusing reflector (40) toward said target (60) so as to achieve substantially unit magnification between the source and an image focused onto said target (60),

wherein the optical device further comprises one or more additional reflectors (50, 64, 70, 72)

constructed and arranged to reflect at least part of the portion of the electromagnetic radiation emitted by said source (20) that does not impinge directly on said collimating reflector (30) toward said collimating reflector (30) through the focal point (36) of said collimating reflector (30) to increase the flux intensity of the collimated rays,

wherein said collimating reflector (112) and said focusing reflector (120) each comprise a single quadrant of a paraboloid of revolution and said additional reflectors comprise:

first, second, and third secondary collimating reflectors (130, 140, 150), each comprising a quadrant of a paraboloid of revolution having optical axes (138, 148, 158) that substantially coincide with the optical axis of said collimating reflector (118) and focal points (136, 146, 156) substantially coincident with the focal point (116) of said collimating reflector so that electromagnetic radiation emitted from said source (20) in a direction away from said collimating reflector produces collimated rays of electromagnetic radiation reflected from said first, second, and third secondary collimating reflectors (130, 140, 150) in a direction parallel to the optical axes of said secondary collimating reflectors;

a redirecting reflector (168) positioned with respect to the collimating reflector (112) so as to redirect the collimated reflected output of the reflector (112) toward the focusing reflector (120),

a first generally flat reflector (160) that is substantially perpendicular to the optical axis (138) of said first secondary collimating reflector (130) and constructed and arranged to reflect the collimated rays of electromagnetic radiation reflected from said first secondary collimating reflector (130) to produce collimated rays of electromagnetic radiation reflected

from said first flat reflector (160) in a direction parallel to the optical axis (138) of said first secondary collimating reflector (130), the collimated rays reflected from said first flat reflector (160) thereafter being reflected by said first secondary collimating reflector (130) toward said second secondary collimating reflector (140) through the focal point (146) of said second secondary collimating reflector (140); and

second and third generally flat reflectors (162, 164) oriented perpendicularly with respect to each other and operatively disposed in front of said second and third secondary collimating reflectors (140, 150), respectively, said second and third flat reflectors (140, 150) being constructed and arranged to:

(1) reflect the collimated rays of electromagnetic radiation reflected from said second secondary collimating reflector (162) from said second flat reflector (162) toward said third flat reflector (164) to produce collimated rays of electromagnetic radiation reflected from said third flat reflector (164) in a direction parallel to the optical axis (158) of said third secondary collimating reflector (150), the collimated rays reflected from said third flat reflector (164) thereafter being reflected by said third secondary collimating reflector (150) toward said collimating reflector (112) through the focal point (118) of said collimating reflector (112), and

(2) reflect the collimated rays of electromagnetic radiation reflected from said third secondary collimating reflector (150) from said third flat reflector (164) toward said second flat reflector (162) to produce collimated rays of electromagnetic radiation reflected from said second flat reflector (162) in a direction parallel to the optical axis (148) of said second secondary collimating reflector (140), the

collimated rays reflected from said second flat reflector (162) thereafter being reflected by said second secondary collimating reflector (140) toward said first secondary collimating reflector through the focal point (136) of said first secondary collimating reflector (130) ".

Claims 2 to 6 of this request are dependent claims.

VII. In support of its requests the appellant submitted the following arguments:

The claims have been amended to overcome the formal objections in the decision under appeal and those pointed out in the Communication by the board. With respect to the claims of the first, third and fifth auxiliary requests, these correspond to two-part form versions of the respective higher (main, second and fourth auxiliary requests) which are one-part form versions.

With respect to claim 1 of the main request, the board had indicated that its subject-matter was novel over the disclosure in document D1, but that it lacked inventive step over this prior art in view of the normal routine skill of an optics engineer. The appellant disagrees. Regarding Fig. 3 of document D1, it is clear that none of the light from light source 22 is directed towards the collimating reflector 63. Only a relatively small portion of the light is directed to an anticaloric dichroic filter 60, which reflects the ultraviolet and visible light towards the collimated reflector 63 letting the infrared rays 61 pass. Furthermore, the optical system of document D1 is certainly not intended to obtain maximum brightness at the target, since according to col. 6, lines 3 to 7, a

filter 26 is used "...for only keeping narrow areas about two wavelengths selected in the visible and ultraviolet", therefore document D1 clearly teaches away from the invention. Clearly, in D1 there is no suggestion whatsoever why the person skilled in the art **would** suppress the filter. Further, concerning the considerations in the board's Communication, it should be noted that the teaching to achieve maximum possible brightness by employing parabolic reflectors and providing for unit magnification or near magnification is not known from document D1, nor from the other prior art on file. It is correct that an optics engineer, within his normal routine skill, **could** concretise the design starting from the general design principles disclosed in document D1 for the condenser shown in Fig. 3. However, on the basis of this normal routine skill an optics engineer would not necessarily arrive at the teaching of claim 1 according to the main request providing for substantially unit magnification between the source and the image focused onto the target.

In claim 1 of the second auxiliary request, additional substantive delimitation over the prior art solution according to document D1 is achieved on the basis of the teaching of former claim 3. Reflector 60 of Fig. 3 of document D1 is clearly a reflector which is not in agreement with this teaching, because this reflector does not reflect at least part of the portion of the electromagnetic radiation emitted by the source towards the collimating reflector through the focal point of the collimating reflector to increase the light intensity of the collimated light. Instead, reflector 60 would have to be associated to belong to the collimating reflector in a functional sense, because of directing radiation emitted by the source to the

collimating reflector. With the optical device defined in claim 1 of this request a considerable increase of flux intensity at the target can be achieved, being a substantial improvement over the prior art device of Fig. 3 of document D1.

Claim 1 according to the fourth auxiliary request is directed to a particular embodiment, which is very effective for achieving particular high flux intensity at a target and which is far away from prior art solutions. The prior art on file includes no disclosure which could direct the skilled person to provide the optical device defined by this claim.

It is therefore believed that the application documents according to the present requests should allow the grant of a patent.

Reasons for the Decision

1. The appeal is admissible.

2. *Formal matters*

The board is satisfied that in the claims of the present requests the objections under Art. 84 EPC 1973 raised by the board in its Communication of 7 March 2012 have been overcome.

3. *Patentability*

3.1 *Novelty - main request*

3.1.1 Document D1, Fig. 3, discloses an optical device comprising:

- a source of electromagnetic radiation (high power Xenon arc lamp 22) located proximate to a focal point of a collimating reflector (off-axis paraboloid mirror 63) to produce a collimate beam 64 reflected from the collimating reflector in a direction substantially parallel to an optical axis of the collimating reflector (col. 8, l. 4 - 10);
- a target (optical fiber 8 with flat input surface 69) to be illuminated with at least a portion of the electromagnetic radiation emitted by the light source; and
- a focusing reflector (68) comprising at least a portion of a paraboloid of revolution ("second off-axis paraboloid 68", col. 8, l. 18), said focusing reflector (68) having an optical axis (same axis as beam 64, defined by beam 67) and a focal point (at point 69) on the optical axis, the target surface (input surface of optical fiber 8) being located proximate to said focal point of the focusing reflector, the focusing reflector (68) being positioned and oriented with respect to the collimating reflector (63) so that the collimated rays of radiation reflected from said collimating reflector (63) are reflected by said focusing reflector (68) and focused substantially toward the target (69) (col. 8, l. 17 - 21).

3.1.2 The collimating reflector (63) and the focusing reflector (68) comprise a collimating/focusing reflector pair, each reflector of the pair of reflectors comprising at least a portion of a

substantial paraboloid of revolution (col. 8, l. 4 - 22).

3.1.3 Claim 1 defines the further conditions:

- the reflectors have about the same size and shape;
- they are arranged and orientated with respect to each other so that substantially each ray of radiation reflected by a surface portion of the collimating reflector is reflected by a corresponding surface portion of the focusing reflector toward the target so as to achieve substantially unit magnification between the source and an image focused onto the target.

3.1.4 With respect to the first condition, the requirement "about the same size" does not enable an unambiguous distinction over the prior art; with respect to the prior art, document D1 discloses in the context of Fig. 3 that the beam 64, after having been collimated by off-axis paraboloid mirror 63, is reflected (as beam 67) from the second off-axis paraboloid 68. Since both beams must be reflected from the mirror surfaces and these beams are equal in size, it follows implicitly that the mirrors in the embodiment of Fig. 3 have at least "about the same size".

3.1.5 With respect to the second condition it appears that document D1 does not disclose any explicit values concerning the magnification factor of the condenser shown in Fig. 3.

3.1.6 Therefore, by virtue of this feature, the subject-matter of claim 1 of the main request is novel.

3.2 *Inventive step – main request*

3.2.1 The conditions reproduced in point 3.1.3 supra should ensure to achieve substantially unit magnification between the source and an image focused onto the target. According to the description, see page 7, lines 8 to 13, such an arrangement solves the technical problem to achieve a maximum possible brightness.

3.2.2 Therefore, having regard to the condenser system disclosed in document D1, the technical problem addressed by the optical device of claim 1 of the main request resides in selecting the arrangement of the paraboloid reflectors in order to obtain a maximum possible brightness at the target (fiber input). According to this claim 1, this is ensured if the arrangement is selected to achieve substantially unit magnification.

3.2.3 However, to the understanding of the Board, an arrangement selected for achieving substantially unit magnification would only be beneficial if the acceptance aperture of the target corresponded to the apparent size of the light source.

3.2.4 With respect to the condenser disclosed in document D1, the light source is a Xenon arc lamp (col. 5, l. 58 and 59). The light emission of these lamps is based on a plasma discharge near the electrodes and has small dimensions, in the order of 1 mm size. With respect to the "target", D1 discloses that the optical fiber has an aperture of "advantageously 1 mm" (col. 5, l. 63 and 64).

3.2.5 Therefore, the skilled person understands from this disclosure that the condenser system in Fig. 3 of document D1 should be designed so as to image the light source, with typical dimensions of around 1 mm size,

onto the optical fiber with a 1 mm aperture. According to D1, advantageously in this design two off-axis paraboloid reflectors are included, the first one imaging the source at infinity (by providing a collimated beam) and the second one focusing the collimated beam ("recondensing the light into a point", col. 4, l. 14 - 16). By this design it is also possible to filter (unit 65) and to modulate the beam (unit 66).

3.2.6 To the board's understanding, it would be within the normal routine skill of an optics engineer, starting from the general design principles disclosed in D1 for the condenser shown in Fig. 3 and the corresponding description, to concretise this design, since it merely involves imaging a point-like source onto a fiber using two off-axis paraboloid reflectors (i.e. a symmetric arrangement).

3.2.7 The use of matched off-axis paraboloid reflectors in a symmetric arrangement is known in the technical field of optics engineering and is illustrated, for instance, in document US-A-4,473,295 mentioned in the European Search Report. This document shows in Fig. 2 an arrangement comprising two off-axis paraboloid reflectors having collinear (col. 7, l. 36) collimated entering and exiting beams and superimposed focal points (col. 5, l. 15- 44). Therefore the size and shape of these reflectors are identical, which also follows from col. 5, l. 41, which discloses (in the context of Figs. 9 and 10) that the surfaces may be two spaced surfaces on the same paraboloid.

3.2.8 Hence, by designing the optical condenser system with two off-axis paraboloid reflectors for the Xenon light source (typical emission size 1 mm) and the optical fiber (advantageously 1 mm size) the skilled person

would design the optical components so as to achieve substantially unit magnification, hereby arriving at the subject-matter of claim 1 of the main request without an inventive step being involved.

3.2.9 In its submissions the appellant has argued that the arrangement shown in Fig. 3 of document D1 would not be intended to obtain maximum brightness at the target because, firstly, only a relatively small portion of the light is directed to an anticaloric dichroic filter 60 and, secondly, in this arrangement a filter 26 is used "...for only keeping narrow areas about two wavelengths selected in the visible and ultraviolet". Therefore there was no reason why the skilled person would suppress this filter for obtaining maximum brightness at the target.

3.2.10 With respect to the first argument the board observes that, according to claim 1 of the main request, the target is to be illuminated with "...at least a portion of the electromagnetic radiation emitted by the source", therefore the claim does not specify the relative amount of the radiation emitted by the source which should reach the target (*i.e. the optical efficiency of the optical system*). Evidently, this requirement "at least a portion" is fulfilled in the optical system of document D1, Fig. 3.

3.2.11 As to the further argument that, because of the filter 65 arranged in the collimated beam path, the arrangement in Fig. 3 of document D1 would not be intended to obtain maximum brightness at the target, it is noted that, firstly, the function of filter 65 is to suppress undesired parts of the optical spectrum, and it should therefore not affect the brightness of the portion of the optical spectrum of interest. Secondly,

the insertion of such a filter in condenser systems as shown in Fig. 3 of D1 appears to be quite common, as is, for example, also disclosed in Figure 1 of the present patent specification, which shows a filter 56 which "may be inserted between the reflectors 30 and 40" (page 9, line 30 - page 10, line 3 of the originally filed patent application), see also claim 16 of the original set of claims. Therefore the presence of such a filter is not excluded by the patent application or in the independent claim and the board does not concur with these arguments of the appellant.

3.2.12 It is concluded that the subject-matter of claim 1 according to the main request does not involve an inventive step having regard to the disclosure in document D1 and the general skill of the optics engineer, as e.g. documented in document US-A-4 473 295. Hence, the main request is not allowable.

3.3 *First auxiliary request*

3.3.1 Claim 1 according to this request defines the same technical features as claim 1 of the main request, the only difference being that this claim is cast in the two-part form. Since the subject-matter of claim 1 of the main request is not allowable for lack of inventive step, this similarly applies to claim 1 of the first auxiliary request.

3.4 *Second auxiliary request*

3.4.1 Claim 1 according to this request defines the additional features that the optical device further comprises one or more additional reflectors constructed and arranged to reflect at least part of the portion of the electromagnetic radiation emitted by the light

source that does not impinge directly on the collimating reflector toward the collimating reflector through its focal point.

3.4.2 As set out in point 7.1 of the decision of the examining division, the problem addressed by these additional features may be regarded as to have the maximum optical power at the target. According to the examining division, the inclusion of additional reflectors in light collecting systems, located in positions in which the light not impinging directly on the first collimating reflector will be captured and re-sent on the collimating reflector is known. In this respect reference was made to document US-A-5,707,131 (document D2), which in Fig.4 shows a retro-reflector M1, having the same purpose and advantage as the additional reflectors defined in claim 1 of the second auxiliary request. Therefore the skilled person would, if he aims at increasing the optical efficiency of the optical condenser system of Fig. 3 of document D1, modify this system by additionally including a retro-reflector, positioned behind the light source 22 and arranged to reflect the radiation coming from the light source back to its focal point, in the same way as the retro-reflector M1 in Fig. 4 of document D2.

3.4.3 The subject-matter of claim 1 of this request thus does not imply an inventive step. Therefore this request is not allowable.

3.5 *Third auxiliary request*

3.5.1 Claim 1 according to this request only differs from claim 1 of the second auxiliary request in its being cast in the two-part form. Since the subject-matter of claim 1 of the second auxiliary request is not

allowable for lack of inventive step, this similarly applies to claim 1 of the third auxiliary request.

3.6 *Fourth auxiliary request*

3.6.1 Claim 1 of this request basically includes the combined features of claims 1, 3 and 8 of the original set of claims. The embodiment addressed in this independent claim is illustrated in Fig. 6 of the patent application.

3.6.2 In point 4.3 of the annex to the oral proceedings dated 2 October 2008 the examining division had expressed its opinion that the features of original claim 8 were not disclosed in any of the available prior art documents. The board concurs with this position.

3.6.3 The board also agrees with the appellant that the embodiment defined in this claim solves the technical problem of achieving a high flux density at the target.

3.6.4 Since this solution is not disclosed or suggested in the prior art, the optical device of claim 1 of the fourth auxiliary request involves an inventive step (Art. 52(1) EPC and Art. 56 EPC 1973).

3.6.5 This similarly applies to the further dependent claims 2 to 6.

3.6.6 Independent claim 1 is cast in the one-part form, while, according to Rule 43 EPC, the two-part form should be applied "wherever appropriate". Since claim 1 includes an extensive, complex device of interrelated parts, the board considers that casting this claim in the two-part form would render it less readable. Since, moreover, the closest prior art (document D1) has been

correctly acknowledged in the description, the board finds that in the present case the casting of the subject-matter of the invention in the one-part form appears more appropriate.

4. *Request for reimbursement of the appeal fee*

4.1 In point 11 of the letter of 13 August 2009 the appellant motivated its request for reimbursement of the appeal fee by its contention that the examining division had not analysed the disclosure of document D1 in a fair manner in the frame of novelty.

4.2 In this respect, the board in its communication of 7 March 2012, made the following remarks:

- It is noted that the conditions for a reimbursement of the appeal fee in Rule 67, first sentence, EPC 1973 require that the appeal be allowable. Notwithstanding this fact, the further condition requires the presence of a "substantial procedural violation".

- Provisionally, it appears to the Board that even if the decision under appeal might be based on a wrong assessment of the prior art document D1, this might be regarded as a substantive error, but not as a procedural error. Therefore at present the Board does not see a justification for a refund (see T367/91).

4.3 Neither in its subsequent letter dated 11 May 2012, nor at the oral proceedings did the appellant provide any counterarguments against the provisional position of the board.

5. Therefore the board finds no reason to come to a different final assessment and conclusion. Hence, the request for reimbursement of the appeal fee must be refused.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent in the following version:

   Claims:
   1 - 6 of auxiliary request 4 (WEI-3'), filed at the oral proceedings;
   Description:
   pages 1, 2, 2a, 2b, 3, 3a, 4 to 13 of document WEI-5 filed with the letter of 21 May 2012;
   Drawings:
   Figures 1 to 10B as published.

3. The request for reimbursement of the appeal fee is refused.

The Registrar: The Chairman:

M. Kiehl A. Klein

Decision electronically authenticated