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Datasheet for the decision of 21 June 2018

Case Number: T 0311/14 - 3.4.02

Application Number: 07740460.6

Publication Number: 2003432

IPC: G01J3/46

Language of the proceedings: EN

Title of invention:
METHOD FOR MEASURING COLOR OF OBJECT AND COLOR MEASURING DEVICE

Applicant:
TOYOTA JIDOSHA KABUSHIKI KAISHA

Relevant legal provisions:
EPC 1973 Art. 56, 84
EPC Art. 123(2)

Keyword:
Added subject-matter: no (amended claims)
Clarity: Main request - no
Inventive step: Auxiliary request - yes

Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0311/14 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 21 June 2018

Appellant: TOYOTA JIDOSHA KABUSHIKI KAISHA
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted on 18 July 2013 refusing European patent application No. 07740460.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman R. Bekkering
Members: F. J. Narganes-Quijano
B. Müller

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision of the examining division refusing European patent application No. 07740460.6 (originally filed in Japanese as international patent application No. PCT/JP2007/057022, and published in accordance with Article 153(4) EPC with the publication number EP2003432).

In its decision the examining division cited the following documents:

D1: WO 99 30136 A
D2: WO 99 30137 A
D3: US 5 118 183 A
D4: US 4 003 660 A,

and held that claim 1 of the main request and of the first and second auxiliary requests then on file was not allowable. In particular, the examining division found that

- the subject-matter of claim 1 of the main and the first auxiliary requests then on file did not involve an inventive step (Article 56 EPC) in view of documents D1, D3 and D4, and
- the subject-matter of claim 1 of the second auxiliary request then on file did not comply with the requirements of Article 123(2) EPC and, in addition, did not involve an inventive step (Article 56 EPC).

Under the heading *"Obiter dictum"* the examining division expressed its opinion that the same objections of lack of inventive step raised on the basis of document D1 would also apply if raised on the basis of document D2.

II. In a communication annexed to a summons to oral proceedings the board referred to the following documents illustrating the common general knowledge in the field of colorimetry:

A1: "Color Science in the Examination of Museum Objects", R. Johnston-Feller; The Getty Conservation Institute, Los Angeles, 2001; bibliographic pages (2 pages) and pages 20 to 29,

A2: "Color Appearance Models", M. D. Fairchild; John Wiley & Sons, Ltd., 2nd edition, 2005; bibliographic pages (2 pages), and pages 72 to 76, and

A3: "McGraw-Hill Encyclopedia of Science & Technology", volume 4, McGraw-Hill, Inc., 7th edition, 1992; bibliographic pages (2 pages), and pages 150 and 151,

and presented a preliminary assessment of the appellant's case on appeal.

III. In reply to the summons to oral proceedings, the appellant, with its letter dated 15 May 2018, submitted a main request comprising a set of claims 1 to 5, and several auxiliary requests.

IV. Oral proceedings before the board were held on 21 June 2018.

During the oral proceedings the appellant submitted a claim 1 and pages 1 to 20 of the description as a first auxiliary request. The appellant withdrew all other pending auxiliary requests.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request filed with the letter of 15 May 2018 or in the following version:

- claim: No. 1 of the first auxiliary request filed during the oral proceedings of 21 June 2018,
- description: pages 1 to 20 of the first auxiliary request filed during the oral proceedings of 21 June 2018, and
- drawings: figures 1 to 8 of the European patent application as published in accordance with Article 153(4) EPC.

At the end of the oral proceedings the chairman announced the decision of the board.

V. Claims 1 to 3 of the main request read as follows:

"1. A color-measuring method for a body, the method being a body color-measuring method of measuring a color of light being emitted or reflected from a body being irradiated by a light source (11) in a predetermined measurement environment, and the method comprising the following steps:

a reference-color measurement step of obtaining a reference-color measurement value by measuring a spectroscopic-radiation luminance of a light being emitted or reflected from a reference-color portion (8b) of the body in a measurement direction, using a light-source-color measuring instrument (5), in said measurement environment, wherein the reference-color portion (8b) is irradiated with said light source (11);

an objective-portion measurement step of obtaining an objective-portion measurement value by measuring a spectroscopic-radiation luminance of a light being emitted or reflected from a measurement-objective portion (8a) of the body in said measurement direction, using said light-source-color measuring instrument (5), in said measurement environment, wherein the measurement-objective portion (8a) is irradiated with said light source (11); and

a color identification step of finding a color of said measurement-objective portion:

wherein a spectroscopic-radiation luminance factor $\beta(\lambda)$ is found from said reference-color measurement value $L_w(\lambda)$ of a spectroscopic-radiation luminance and an objective-portion measurement value $L_{01}(\lambda)$ of a spectroscopic-radiation luminance using a known spectroscopic-radiation luminance factor $\beta_w(\lambda)$ of said reference-color portion (8b), the spectroscopic-radiation luminance factor $\beta(\lambda)$ serving as a reflectivity-equivalent value that is equivalent to a spectroscopic-solid-angle reflectivity of said measurement-objective portion (8a), and thereafter a color of the measurement-objective portion (8a) is found from the spectroscopic-radiation luminance factor $\beta(\lambda)$ and a color-matching function at said color identification step."

"2. The color-measuring method for a body set forth in claim 1, wherein, when taking a theoretical value of a spectroscopic-radiation luminance of perfectly-diffuse reflective surface as $L^*_w(\lambda)$ and taking the spectroscopic-radiation luminance factor of said reference-color portion as $\beta_w(\lambda) = L_w(\lambda)/L_w^*(\lambda)$, the spectroscopic-radiation luminance factor $\beta(\lambda)$ of said measurement-objective portion is found at said color identification step by means of the following Equation (1):

$$\beta(\lambda) = L_{01}(\lambda)/(L_w(\lambda)/\ \beta_w(\lambda))$$
$$= L_{01}(\lambda)/\{L_w(\lambda) \cdot (L^*_w(\lambda)/L_w(\lambda))\}$$
$$= L_{01}(\lambda)/L^*_w(\lambda) \qquad \ldots (1)."$$

"3. The color-measuring method for a body set forth in claim 2, wherein a color of said measurement-objective portion (8a) is found as a relative value by means of the following Equation (2) from the spectroscopic-radiation luminance factor β(λ) of said measurement-objective portion (8a) and said color-matching function at said color identification step:

$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} = \int \beta(\lambda) \begin{pmatrix} \bar{x}(\lambda) \\ \bar{y}(\lambda) \\ \bar{z}(\lambda) \end{pmatrix} d\lambda \qquad --- (2)$$

."

The first auxiliary request contains a single claim which reads as follows:

"1. A method of measuring a color of light being emitted and reflected from a body being irradiated by a light source (11) in a predetermined measurement environment, ultraviolet being included in the light source and the method comprising the following steps:

a reference-color measurement step of obtaining a reference-color measurement value by measuring a spectroscopic-radiation luminance of a light being emitted and reflected from a reference-color portion (8b) in a measurement direction, using a light-source-color measuring instrument (5), in said measurement environment, wherein the reference-color portion (8b) is irradiated with said light source (11);

an objective-portion measurement step of obtaining an objective-portion measurement value by measuring a spectroscopic-radiation luminance of a light being emitted and reflected from a measurement-objective portion (8a) of the body, the measurement-objective portion (8a) including a fluorescent material, in said measurement direction, using said light-source-color measuring instrument (5), in said measurement environment, wherein the measurement-objective portion (8a) is irradiated with said light source (11); and

a color identification step of finding a color of said measurement-objective portion:

wherein a spectroscopic-radiation luminance factor $\beta(\lambda)$ is found from said reference-color measurement value $L_w(\lambda)$ of a spectroscopic-radiation luminance and an objective-portion measurement value $L_{01}(\lambda)$ of a spectroscopic-radiation luminance using a known spectroscopic-radiation luminance factor $\beta_w(\lambda)$ of said reference-color portion (8b), the spectroscopic-radiation luminance factor $\beta(\lambda)$ serving as a reflectivity-equivalent value that is equivalent to a spectroscopic-solid-angle reflectivity of said measurement-objective portion (8a), and thereafter a color of the measurement-objective portion (8a) is found from the spectroscopic-radiation luminance factor $\beta(\lambda)$ and a color-matching function at said color identification step,

wherein, when taking a theoretical value of a spectroscopic-radiation luminance of perfectly-diffuse reflective surface as $L^*_w(\lambda)$ and taking the spectroscopic-radiation luminance factor of said reference-color portion as $\beta_w(\lambda) = L_w(\lambda)/L_w{}^*(\lambda)$, the spectroscopic-radiation luminance factor $\beta(\lambda)$ of said measurement-objective portion is found at said color identification step by means of the following Equation (1):

$$\beta(\lambda) = L_{01}(\lambda)/(L_w(\lambda)/\beta_w(\lambda))$$
$$= L_{01}(\lambda)/\{L_w(\lambda)\cdot(L^*_w(\lambda)/L_w(\lambda))\}$$
$$= L_{01}(\lambda)/L^*_w(\lambda) \quad \ldots (1),$$ and

wherein a color of said measurement-objective portion (8a) is found as a relative value by means of the following Equation (2) from the spectroscopic-radiation luminance factor β(λ) of said measurement-objective portion (8a) and said color-matching function at said color identification step:

$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} = \int \beta(\lambda) \begin{pmatrix} \bar{x}(\lambda) \\ \bar{y}(\lambda) \\ \bar{z}(\lambda) \end{pmatrix} d\lambda \quad --- (2)$$

."

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Article 84 EPC 1973*

2.1 Claim 1 of the main request is directed to a method of measuring a color of the light from a body irradiated by a light source in a predetermined measurement environment. According to claim 1, the method comprises, in essence, the steps of

- measuring the spectroscopic-radiation luminance of a reference-color portion and of a measurement-objective portion of the body when both are irradiated by the mentioned light source in the mentioned measurement environment, the corresponding luminance measurements being called the reference-color measurement value $L_w(\lambda)$ and the objective-portion measurement value $L_{01}(\lambda)$, respectively;

- calculating the spectroscopic-radiation luminance factor $\beta(\lambda)$ as a function of $L_w(\lambda)$ and $L_{01}(\lambda)$ and the known spectroscopic-radiation luminance factor $\beta_w(\lambda)$ of the reference-color portion; and
- finding the color of the measurement-objective portion as a function of $\beta(\lambda)$ and a color-matching function.

In addition, according to dependent claim 2 of the main request the value of $\beta(\lambda)$ is calculated with equation (1) specified in the claim, and according to dependent claim 3 of the main request the tristimulus value (X Y Z) of the color of the measurement-objective portion is then calculated with equation (2), i.e. as the integral of the product of $\beta(\lambda)$ and the color-matching function $(x(\lambda)\ y(\lambda)\ z(\lambda))$ mentioned in the claim [*here, and in the following, the bars used in the notation of the claims are omitted*].

2.2 It is first noted that the spectroscopic-radiation luminance factor $\beta(\lambda)$ is computed according to equation (1) of dependent claim 2, among other alternatives, as $L_{01}(\lambda)/L^*_w(\lambda)$, where $L^*_w(\lambda)$ represents the spectroscopic-radiation luminance of a perfectly-diffuse reflective surface when illuminated with the light source under consideration and therefore it also represents the spectral power distribution of the light source. Accordingly, $\beta(\lambda)$ represents the spectral intensity of the light reflected by the measurement-objective portion when this portion is irradiated with the light source under consideration after factoring out the spectral power distribution of the light source, i.e. $\beta(\lambda)$ represents the reflectance of the measurement-objective portion. This conclusion can also be drawn from the first and the second members of equation (1) according to which $\beta(\lambda)$ is also determined as $L_{01}(\lambda)/(L_w(\lambda)/\beta_w(\lambda))$, wherein the quotient between the luminance $L_w(\lambda)$ measured with the reference-color portion upon irradiation with the light source and the luminance factor $\beta_w(\lambda)$ of the reference-color portion also represents the spectral power distribution of the light source. In addition, this conclusion is consistent with claim 1 which refers to "$\beta(\lambda)$ serving as a reflective-equivalent value that is equivalent to a spectroscopic-solid-angle reflectivity of said measurement-objective portion".

According to the conventional approach followed in the field of colorimetry in the determination of the tristimulus value (X Y Z) of the color of an object illuminated with a specific light source, the tristimulus value of the color is calculated as the integral of the product of the spectral reflectance of the object, the color-matching function ($x(\lambda)$ $y(\lambda)$ $z(\lambda)$) representing the spectral sensitivity of the human eye, and the spectral power distribution of the light source (see for instance document A1, page 23, second paragraph, and page 24, first paragraph, and in particular equation (2.2); document A2, page 73, last paragraph, and page 75, first and second paragraphs, and in particular equations (3.11), (3.12) and (3.13); and document A3, page 151, left column, second paragraph).

Equation (2) of dependent claim 3, however, involves the integration of the product of the color-matching function with only the quantity $\beta(\lambda)$, i.e. without a function representing the spectral power distribution of the light source. In addition, the reflectance $\beta(\lambda)$ is independent of the specific light source because, as shown above, the dependence of the reflectivity of the body on the spectral power distribution of the light source has been factored out. Accordingly, the tristimulus value (X Y Z) obtained with equation (2) of dependent claim 2 is independent of the specific light source under which the body is being observed in the measurement environment. The fact that the spectral power distribution of the specific light source under consideration is absent in equation (2) is, technically speaking, equivalent to assuming the use of a light source having a spectral power distribution of 1, i.e. of an ideal, neutral white light source having a uniform, constant power distribution in the whole spectrum of visible light. Accordingly, the tristimulus value (X Y Z) obtained with equation (2) of dependent claim 3 represents the color of the body irradiated with the mentioned neutral white light source having a uniform, constant power distribution.

2.3 It follows from the above considerations that, while according to the introductory paragraph of claim 1 the color to be determined is a color of the body when it is irradiated with a specific light source in a predetermined measurement environment, the color actually determined according to dependent claim 3 represents a color of the body independent of the specific light source mentioned in claim 1, and more specifically it represents the color of the body when it is irradiated with a neutral white light source having a uniform, constant power distribution in the visible region of the spectrum.

As a consequence, dependent claim 3 is inconsistent with claim 1, and therefore not clear, in that the color actually determined with the claimed mathematical expression is independent of the light source referred to in claim 1 and, contrary to the method defined in claim 1 (see first paragraph), it does not represent a color of the body when viewed with the light source referred to in claim 1 (Article 84 EPC 1973).

2.4 During the appeal proceedings the appellant submitted counter-arguments in reply to the board's view expressed above, and none of them are convincing:

2.4.1 The appellant has submitted that in the event that the body presented fluorescence the ultraviolet components of the light source would induce in the body emission of light in the visible region of the spectrum that would not be factored out in the determination of the spectroscopic-radiation luminance factor $\beta(\lambda)$ according to equation (1) of dependent claim 2, and that for this reason the quantity $\beta(\lambda)$ would include information about the fluorescence of the body, and the tristimulus value obtained according to equation (2) of dependent claim 3 would depend on the spectrum of the specific light source.

The board, however, does not find this argument persuasive. Claims 1, 2 and 3 of the main request refer only to bodies in general and they are silent as to the specific application of the claimed method to fluorescent bodies. Consequently, the claims encompass carrying out the method with common bodies not presenting fluorescence and for which the considerations in points 2.2 and 2.3 remain valid.

2.4.2 The appellant also submitted that there was no reason to restrict the claimed method to fluorescent bodies because the skilled person would understand that the claimed method made only sense when applied to fluorescent bodies.

The board, however, cannot accept this argument because the claimed method refers generally to a "body" and to a "measurement-objective portion" representing the body, and claims 1 to 3 cover the application of the claimed method to ordinary, non-fluorescent bodies.

2.4.3 The appellant likewise submitted that the tristimulus value obtained with equation (2) of dependent claim 3 would allow the comparison of the color of an object with the color of a reference object, or the comparison between the color of different objects in different environments, especially as the spectrum characteristic of the light source had been factored out but the fluorescent effects induced by the light source would still contribute to the tristimulus value.

As already noted above, however, the claimed method is not restricted to fluorescent objects and, in addition, any possible technical advantage associated with the tristimulus values determined according to dependent claim 3 does not *per se* overcome the inconsistency between claims 1 and 3 referred to in points 2.2 and 2.3 above.

2.5 The board concludes that dependent claim 3 of the main request, when read together with claim 1 and dependent claim 2 to which it refers, is not clear (Article 84 EPC 1973) and that, consequently, the main request is not allowable.

3. *First auxiliary request*

3.1 Article 123(2) EPC

3.1.1 Claim 1 of the first auxiliary request is based on the combination of claims 1, 2, 3 and 4 of the English translation of the application as originally filed, wherein the resulting combination has been amended to specify that the light source includes ultraviolet and the measurement-objective portion includes a fluorescence material, these features being based on paragraphs [0006] and [0010] of the English translation of the application as originally filed. In addition the resulting combination of features has been clarified in the light of the corresponding disclosure in the description of the application.

The board notes that claim 1 of the English translation of the application as originally filed referred to measuring a color of light emitted from a body "in a predetermined measurement environment" and to carrying out the measurement of a spectroscopic-radiation luminance in both a reference-color portion and a measurement-objective portion using a light-source-color measuring instrument "without irradiating the reference-color portion with a light source for measurement, in said measurement environment" and "without irradiating the measurement-objective portion with a light source for measurement, in said measurement environment". These features referred in the context of the application to carrying out the measurements, not with the built-in light source commonly incorporated in a light-source-color measuring instrument as claimed, but with a light source equivalent or identical to the light source used in the environment (for instance, "a living room") in which the body is viewed by an observer, and in particular with a light source that reproduces the illumination conditions in the mentioned environment (see paragraphs

[0012], [0038] to [0040] and [0053] of the English translation of the application as originally filed). These features have been replaced in claim 1 of the first auxiliary request by the features relating to the measurement of the color under irradiation "by a light source in a predetermined measurement environment" and to the measurements of the spectroscopic-radiation luminance in both the reference-color portion and the measurement-objective portion "using a light-source-color measuring instrument (5), in said measurement environment", wherein both the reference-color portion and the measurement-objective portion are "irradiated with said light source". This replacement is based on paragraph [0015] of the English translation of the application as originally filed specifying that the method can be "executed in a living room or the like that possess a certain measurement environment".

In addition, the objection raised under Article 123(2) EPC by the examining division in the decision under appeal in respect of the second auxiliary request then on file concerned the reference in the claims to a feature (the use of a "D65 light source") that is no longer present in claim 1 of the present first auxiliary request.

3.1.2 As regards the description, the amendments concern the acknowledgement of the prior art (documents D1, D2 and D3) under Rule 27 (1) (b) EPC 1973, and the adaptation of its content to the invention as defined in claim 1 (Article 84 and Rule 27 (1) (c) EPC 1973).

3.1.3 In view of the above considerations, the board is satisfied that the patent documents amended according to the first auxiliary request comply with the requirements of Article 123(2) EPC.

3.2 Article 84 EPC 1973

Claim 1 of the first auxiliary request encompasses essentially the features of claims 1 to 3 of the main request, and the claim further requires that "the measurement-objective portion (8a) includ[es] a fluorescent material", and that the body is "irradiated by a light source [...], ultraviolet being included in the light source".

As a consequence of this amendment, the considerations in points 2.1 and 2.2 apply to claim 1 of the first auxiliary request only in respect of the color component of the body associated with the portion of the light from the light source in the visible spectrum reflected by the body, and the mentioned considerations have to be supplemented by the fact that the color of the body will present an additional color component induced in the visible region of the spectrum by the fluorescence of the body irradiated with the ultraviolet light from the light source. As a consequence, the spectroscopic-radiation luminance factor $\beta(\lambda)$ does not only represent the reflectance of the body, but the superposition of the reflectance of the body and the fluorescence induced in the body by the light source. In addition, the tristimulus value obtained with equation (2) does not merely represent the color of the body when viewed with a neutral white light source having a uniform, constant power distribution, i.e. a color independent of the specific light source mentioned in the method, but the superposition of two color components, namely a first color component representing the color of the body when viewed with a neutral white light source having a uniform, constant power distribution, and a second color component representing the color of the body induced by fluorescence by the specific light source used for carrying out the claimed method.

It follows that the objection raised under Article 84 EPC 1973 in point 2 above in respect of dependent claim 3 of the main request is no longer applicable to claim 1 of the first auxiliary request because the tristimulus value obtained according to this claim, although not properly representing "the" color of the body when viewed with the specific light source, represents a color having a color component corresponding to the fluorescence color induced in the fluorescent body by the specific light source in the predetermined measurement environment.

In addition, the board is satisfied that claim 1 complies with the requirements of Article 84 EPC 1973.

3.3 Novelty and inventive step

When compared with claim 1 of the main and the first auxiliary request underlying the decision under appeal and whose subject-matter was found by the examining division to be obvious in view of documents D1 to D4, claim 1 of the first auxiliary request has been amended in several respects, and in the board's opinion its subject-matter is novel and not obvious in view of the available prior art and the common general knowledge (see in particular documents A1 to A3) for the following reasons:

3.3.1 Documents A1 to A3 disclose the conventional approach of determining the tristimulus value of an object by integration of the product of the reflectance of the object and the spectral power distribution of the light source (see point 2.2 above, second paragraph). This approach is, by its very nature, conventionally only applied to the determination of the color of the light reflected by an object illuminated by a light source, and not to the determination of the color induced by other physical phenomena such as emission by fluorescence. Therefore, the claimed method is novel over the conventional approach at least in that the method is applied to fluorescent objects illuminated by a light source irradiating in the ultraviolet spectral range, and in that the calculation of the tristimulus value by integration does not involve the spectral distribution of the light source, and involves a factor $\beta(\lambda)$ representing not only the reflectance of the object, but superposed thereon the fluorescence emitted by the object illuminated by the light source.

Document D1 mentions the conventional color determination approach used for non-fluorescent objects (page 3, lines 8 to 15, and page 6, lines 3 and 4) using a reference (page 7, lines 4 to 8), addresses the problem of the contribution of fluorescence to the apparent reflectance of fluorescent objects (page 7, line 20 to page 9, line 22), and discloses a method of determination of the color of a material independent of fluorescence metamerism in terms of the calculation of the apparent emissivity of the material (page 14, line 32 to page 16, lines 12). The method of claim 1 is at least novel over document D1 in the determination of a color of the fluorescent object by integration of the factor $\beta(\lambda)$ as defined in claim 1.

Documents D1 and D2 are parallel patent applications and, for the issues under consideration, the disclosure of document D2 is analogous to that of document D1.

Documents D3 (abstract) and D4 (abstract) disclose systems for measuring the color of objects using calibration strips (document D3, Fig. 30 and column 38, lines 9 to 49) and the like (document D4, Fig. 1 and column 6, lines 9 to 37). The documents, however, are silent as to the determination of the color of fluorescent objects.

The remaining documents on file are less pertinent.

Therefore, the subject-matter of claim 1 is novel over the available prior art.

3.3.2 As regards the issue of inventive step, the closest state of the art is represented by document D1 or, alternatively, by document D2. Both documents D1 and D2 address the same problem as the one underlying the claimed method, i.e. the assessment of the color of a fluorescent object. However, while documents D1 and D2 propose determining the apparent emissivity of the object and disclose methods of determination of the same, claim 1 follows a different approach, namely the determination of a tristimulus value by integration of the product of the factor $\beta(\lambda)$ - representing the apparent reflectance, i.e. the superposition of the reflectance independent of the specific light source and of the fluorescence induced by the specific light source - and the color-matching function as claimed, the color defined in terms of the tristimulus value calculated in this way having the technical meaning explained in the second paragraph of point 3.2 above.

Neither the common general knowledge (see documents A1 to A3) nor the remaining documents on file (in particular, documents D3 and D4) disclose or suggest the claimed solution. For this reason, the subject-matter of claim 1 involves an inventive step over the available prior art (Article 56 EPC 1973).

3.4 In view of the above considerations, the board concludes that the first auxiliary request of the appellant is allowable.

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 with the order to grant a patent in the following version:
   - claim: No. 1 of the first auxiliary request filed during the oral proceedings of 21 June 2018;
   - description: pages 1 to 20 of the first auxiliary request filed during the oral proceedings of 21 June 2018; and
   - drawings: figures 1 to 8 of the European patent application as published in accordance with Article 153(4) EPC.

The Registrar: The Chairman:

M. Kiehl R. Bekkering

Decision electronically authenticated