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**Datasheet for the decision
of 14 April 2021**

Case Number: T 1369/18 - 3.2.01

Application Number: 07425625.6

Publication Number: 2045514

IPC: F21V7/00, F21S8/10, F21Y101/02

Language of the proceedings: EN

Title of invention:
Modular reflective optical lighting system and lighting device
equipped therewith, in particular for vehicles

Patent Proprietor:
Marelli Automotive Lighting Italy S.p.A.

Opponent:
Valeo Vision

Headword:

Relevant legal provisions:
EPC Art. 83, 123(2), 54(2), 54(3), 56
EPC R. 103

Keyword:

Discretion not to admit submission - submission admitted (yes)

Sufficiency of disclosure - (yes)

Amendments - extension beyond the content of the application
as filed (no)

Novelty - (yes)

Inventive step - ex post facto analysis - (yes)

Reimbursement of appeal fee - withdrawal of appeal

Decisions cited:

Catchword:



Beschwerdekammern

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Case Number: T 1369/18 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 14 April 2021

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Decision under appeal: **Interlocutory decision of the Opposition**
Division of the European Patent Office posted on
9 April 2018 concerning maintenance of the
European Patent No. 2045514 in amended form.

Composition of the Board:

Chairman G. Pricolo
Members: M. Geisenhofer
A. Jimenez

Summary of Facts and Submissions

- I. Appeals were filed by the opponent and the patent proprietor against the interlocutory decision of the opposition division finding that, on the basis of the second auxiliary request, the patent in suit met the requirements of the EPC.
- II. The opposition division held that
- (a) the subject-matter of the independent claim of the main request (patent as granted) was not novel (Article 54 EPC);
 - (b) the auxiliary request 01 (filed during oral proceedings before the opposition division) was admitted, but the independent claims were unallowably amended (Article 123(2) EPC); and
 - (c) the auxiliary request 2 (filed during oral proceedings before the opposition division) was admitted and its subject-matter was deemed to be novel and inventive (Article 54 and 56 EPC).
- III. With a communication dated 27 March 2020 and annexed to the summons to oral proceedings the Board presented its preliminary opinion according to which the appellant-proprietor's main request (maintenance of the patent as granted) was not allowable for lack of novelty. The appellant-proprietor's first auxiliary request corresponding to the maintenance of the patent in the form allowed by the Opposition Division appeared instead to be allowable.
- IV. With letter of 24 February 2021, the appellant-opponent withdrew its request for oral proceedings and maintained the requests as submitted with the statement of grounds of appeal, namely that the decision under

appeal be set aside and the patent be revoked.

With letter of 25 March 2021, the appellant-proprietor withdrew the main request as filed with the statement of grounds of appeal and requested maintenance of the patent in the form allowed by the opposition division (main request), in the alternative maintenance of the patent in amended form based on one of the auxiliary requests 03, 05 or 04 (in that order) filed with letter dated 28 December 2020.

As a consequence, the patent proprietor is hereinafter referred to as respondent (see also point 8 of the reasons) and the opponent as (sole) appellant.

- V. Oral proceedings were subsequently cancelled by the Board.
- VI. Independent claim 1 according to the main request reads as follows:

"Reflective optical lighting system (1; 100; 200) comprising at least one light source (2) having a first optical axis (A) defining a main direction of radiation of light rays emitted by said source and at least a first (3) and a second (4) reflecting surface operationally associated with the light source (2) to intercept said light rays and arranged so as to form between them a first preset angle (β) of a size other than 180° , wherein the first and second reflecting surfaces (3, 4) between them delimit a concavity (5) oriented towards the light source and are shaped so that, when in use, said concavity receives a substantial portion of said light rays emitted by said source to reflect them in a direction forming with the first optical axis (A) a second angle (α) of a preset

size, characterized in that said first and second angle are such that the reflected rays present a main direction of radiation defined by a second optical axis (B) essentially perpendicular to the first; wherein said light source (2) is a Lambertian source and said concavity (5) defined between said first and second reflecting surfaces (3,4) and oriented towards said light source (2) occupies a solid angle greater than π steradians, i.e. greater than a quarter of the solid spherical angle, and in any case such that at least 30% of the light rays emitted by said source are intercepted by said first and second reflecting surfaces (3, 4)."

Independent claim 14 of the main request reads as follows:

"Lighting device (400) comprising a cup-shaped element (401), preferably made of a synthetic plastic material and fixable to the body of a vehicle or to the inside of the body of a headlight also made of synthetic material, at least one transparent fluid-tight sealing element (402) to close an opening (404) of the cup shaped element and a reflective optical lighting system (1; 100; 200) comprising at least one light source (2) having a first optical axis (A) defining a main direction of radiation of light rays emitted by said source and at least a first (3) and a second (4) reflecting surface operationally associated with the light source (2) to intercept said light rays and arranged so as to form between them a first preset angle (β) of a size other than 180° , wherein the first and second reflecting surfaces (3,4) between them delimit a concavity (5) oriented towards the light source and are shaped so that, when in use, said concavity receives a substantial portion of said light

rays emitted by said source to reflect them in a direction forming with the first optical axis (A) a second angle (α) of a preset size, and wherein said first and second angle are such that the reflected rays present a main direction of radiation defined by a second optical axis (B) essentially perpendicular to the first; characterized in that the optical system (1; 100; 200) is arranged and housed inside the cup-shaped element (401) in a position oriented towards the opening (404) and such that the second optical axis (B) intercepts said transparent closing element (402) and when in use is directly parallel to a direction in which the vehicle is travelling; said at least one light source comprising a printed circuit board (31) provided on-board with a single LED (30) or a plurality of selectively activatable LEDs (30a,b,c); the printed circuit board (31) being attached to a mounting surface (405) of the cup-shaped element; said mounting surface (405) being obtained on a side wall (406), preferably an upper wall, of said cup-shaped element and in such a way that said first optical axis (A) is arranged perpendicularly to said mounting surface (405)."

VII. In the present decision, reference is made to the following documents:

D3 US 2005/0088758 A1

D4 EP 1 912 018 A1

VIII. The appellant's arguments can be summarised as follows:

(a) The opposition division did not exercise its discretion correctly when admitting the current main request (corresponding to auxiliary request 2 in opposition proceedings) since this request did

not converge with the higher ranking auxiliary request 01.

- (b) Claim 1 of the main request was unallowably amended (Article 123(2) EPC) since the term "said first and second angle are such that" implied that both angles influenced the resulting light pattern whereas in the application as filed, only the first angle β had an influence thereon. Furthermore, an "approximately perpendicular" angle required by claim 1 of the main request could not be considered to be identical to an "essentially perpendicular" angle as originally disclosed.
- (c) The patent as such did not provide sufficient information for the skilled person to carry out the invention (Article 83 EPC) since there was no teaching available on how to measure the angle β .
- (d) Claim 1 of the main request defined two alternatives: "the cavity occupies a solid angle greater than π steradians" and "at least 30% of the light rays are intercepted by the reflecting surfaces". The subject-matter of claim 1 in the second alternative was not novel over D3 (Article 54 EPC), whereas the first alternative was not inventive over a combination of D3 with the teaching of D4 (Article 56 EPC).

IX. The respondent's arguments can be summarised as follows:

- (a) The opposition division used their discretion correctly when admitting the auxiliary request 2 (current main request).

- (b) No information was introduced with the amendments that was not already disclosed in the application as filed. The reference to both angles was to be considered as a clarification only. The terms "essentially perpendicular" and "approximately perpendicular" could be used as synonyms.
- (c) The patent provided sufficient information enabling the skilled person to carry out the invention. The description provided sufficient details on how to measure this angle.
- (d) Claim 1 did not define two alternatives but required two conditions to be fulfilled at the same time. This was not the case in D3, D3 hence not anticipating the subject-matter of claim 1.
- (e) The skilled person would not combine D3 and D4, and - even if - he would not arrive at the subject-matter of claim 1 of the main request. Furthermore, D4 was a document under Article 54(3) EPC only and hence could not be used for an argumentation of inventive step.

Reasons for the Decision

1. The appellant-opponent's request for oral proceedings filed with its grounds of appeal was withdrawn with letter dated 24 February 2021 such that the present decision could be taken without holding oral proceedings.

Main request

Admittance of the request during oral proceedings in opposition

2. The main request corresponds to auxiliary request 2 filed during oral proceedings in opposition and admitted by the opposition division.
 - 2.1 The appellant argued that the auxiliary request 2 should not have been admitted in opposition proceedings since it was late filed and did not meet the criterion of convergency of the auxiliary requests (having regard to auxiliary request 1).
 - 2.2 The decision to admit auxiliary request 2 was a discretionary decision of the opposition division. As regards discretionary decisions, the Board should only examine whether the opposition decision exercised its discretion in a reasonable manner and applying the correct criteria. It is generally not the function of a board of appeal to review all the facts and circumstances of the case as if it were in the place of the department of first instance, in order to decide whether or not it would have exercised such discretion in the same way.
 - 2.3 The opposition division considered convergency as one of the suitable criteria as is reflected by the minutes of the oral proceedings under section 7 and point 2.5.1 of the appealed decision, but came to the conclusion that strict convergency was not already required for the first and second auxiliary requests but usually for later ones.

The opposition division further concluded that the auxiliary request 2 could not be considered as an unexpected development of the proceedings since it was based on a combination of granted claims and corresponded to auxiliary request 02 filed about a year before the oral proceedings.

- 2.4 In the Board's view, the opposition division correctly exercised its discretionary power by not strictly applying solely the criterion of convergency of the requests, but in considering and weighing other criteria, in particular the state of the proceedings and whether the other party was taken by surprise.
- 2.5 The Board hence sees no reason to overrule the discretionary decision of the opposition division to admit the auxiliary request 2 during oral proceedings.

Amendments (Article 123(2) EPC)

3. The main request complies with the requirements of Article 123(2) EPC.
- 3.1 Claim 1 of the main request is based on a combination of originally filed claims 1, 9 and 10. The wording was however slightly amended to bring the independent claim into the two-part form.
- 3.2 The appellant argued that in the first line of the characterizing portion of claim 1, the expression "said first and second angle are such that" implied that both angles α and β influenced the direction of the reflected light, whereas in the application as originally filed, it was only the first angle β that had an influence on the direction of reflected light.

- 3.3 This opinion is not shared by the Board since the second angle α is not an angle which value has to be chosen in order to achieve the result that the first and second optical axis are essentially perpendicular. In fact, the second angle α is identical to the angle between said first and second optical axis.
- 3.3.1 This derives directly from the wording of claim 1 that defines that light is emitted along a first optical axis. The emitted light rays are then reflected in a direction forming with the first optical axis a second angle α , whereby the reflected light rays follow a second optical axis which is essentially perpendicular to the first optical axis. As a consequence, the second angle α must be identical to the angle between the first and second optical axis.
- 3.3.2 The appellant argued that the term "perpendicular" referred to the angle between the first and second optical axis but not to the angle α . Angle α in his understanding had not just one value but referred to the plurality of light rays each having a slightly different direction forming thus a fan-like shape and each having a (different) angle α .
- 3.3.3 However, claim 1 refers to light rays being reflected "in a direction forming with the first optical axis a second angle α of a preset size", the claim thus referring to the direction and angle in singular. Claim 1 hence does not define that the reflected light shall be directed in a plurality of different directions whereby each direction forms a different angle α with the first optical axis, but the reflected light shall be rather combined into a bundle of more or less parallel light rays having a common axis (second

optical axis B). This common axis shall form an angle α with the first optical axis whereby the angle α shall be essentially perpendicular.

3.3.4 The angle α is hence not an angle which value can be chosen but is the angle resulting from a choice of the angle β between the two reflecting surfaces, the geometry of the reflecting surfaces (bent, flat etc.) and the orientation of the reflecting surfaces relative to the light source (whereby no angle is defined in the application that could be used for a definition of the orientation of the reflecting surfaces). The expression used in claim 1 of the main request is therefore identical in content with the expression used in claim 1 as originally filed.

3.3.5 This amendment hence complies with the requirements of Article 123(2) EPC.

3.4 The appellant further argued that replacing the term "approximately perpendicular" by "essentially perpendicular" resulted in another unallowable amendment.

3.4.1 This is also not shared by the Board because the term "essentially perpendicular" is already used in the application as originally filed (see paragraph [0020] of the application as published) when describing the orientation of the second optical axis with respect to the first optical axis, i. e. in the same context as in claim 1 of the main request.

3.4.2 This amendment hence also complies with the requirements of Article 123(2) EPC.

Insufficiency of disclosure (Article 83 EPC)

4. The patent provides sufficient information for the person skilled in the art of lighting systems to carry out the invention.
- 4.1 The appellant argues that no information is given on how to measure the angle β and therefore the skilled person is not able to carry out the invention.
- 4.2 In this respect the Board fully agrees with the reasoning of the Opposition Division in the contested decision, see point 2.3.1, and makes it as its own.

It worth to note here, that the patent discloses in figures 1a an embodiment with two reflecting surfaces 3, 4 indicating the angle β as the angle between the two lower edges of the first and second reflecting surface, i.e. the angle β is the angle formed at the junction of the two reflecting surfaces and comprised between them as pointed out by the respondent. Hence, the angle to be measured is the angle comprised between the two tangents of the curves representing the reflecting surfaces at their point of intersection. Although other methods might be used to measure the angle between surfaces, such as the "method of the medium planes" as submitted by the appellant, these other methods do not correspond to the disclosure of the patent in suit.

Novelty (Article 54 EPC)

5. The subject-matter of claim 1 is novel in the sense of Article 54 EPC.

- 5.1 The appellant alleges that document D3 anticipates the subject-matter of claim 1.
- 5.2 D3 discloses in figure 10 a reflector that receives light from the source (41) in a first direction perpendicular to the surface (43), forming thus a first optical axis. This light is reflected by the reflector (40) having four sections. The adjacent sections form an angle different from 180° at the edges where the sections meet (otherwise there would be no bent in the surface of the reflector).

Since the reflector covers approximately half of the hemisphere above the surface (43) and the light source is approximately in the centre of the semi-sphere, the amount of light reflected by the reflector is about half of the light emitted by the light source. Assuming that the light is evenly distributed amongst the four sections, each section receives about 12,5% as correctly estimated by the opposition division.

Each of the sections of the reflector therefore receives a "substantial portion" of the light rays emitted by the light source.

- 5.2.1 The term "substantial portion" refers in the Board's understanding to an amount of reflected light that is large enough such that it cannot be disregarded. The term "substantial portion" however does not mean "more of the light is captured than lost" nor refers to a specific minimum value for the amount of reflected light. A substantial portion can already be an amount of only 10% of the emitted light or even less - this depends on the particular circumstances.

A reflector covering approximately half of the semi-sphere above the light source will however in any case reflect a substantial portion of the light rays and thus falls under the wording of the claim.

- 5.2.2 Covering half of the semi-sphere furthermore corresponds to covering a solid angle being approximately π steradians, which is however not "greater than π steradians" as required by claim 1.
- 5.2.3 The amount of about 12,5% per section furthermore results in about 25% of the light rays being emitted by the source of light intercepting the first and second reflecting surfaces, which is less than "at least 30%" as required by claim 1.
- 5.3 Figure 7 of D3 discloses an alternative reflector, using only two sections meeting at an edge (30CL). Following the same reasoning as set out with respect to figure 10, these sections will receive about 25% of the emitted radiation each, which again is a substantial portion of the light emitted by the light source.
- The first and second reflecting surfaces hence intercept about 50% of the light rays emitted by the light source which is indeed "at least 30%".
- 5.4 The light leaves the reflector(s) known from D3 through the opening between the reflector and surface (43) as can be seen in figure 15. As set out in paragraph [0112] on page 8, the reimaging mirror (62) has a configuration similar to that of "mirror 40 of Fig. 9 and Fig. 9", whereby it appears reasonable to assume, that the second "Fig. 9" should read "Fig. 10" instead.

The rays of light as indicated in figure 15 leave the reimaging mirror (62) in a direction that is "essentially perpendicular" to the first optical axis. The term "essentially perpendicular" is to be interpreted in the light of the definition of dependent claim 7 of the patent in suit as encompassing an angle within the range of 50° to 150°.

- 5.5 The light source used in D3 is a LED (cf. paragraph [0055]) which is in good approximation a Lambertian source.
- 5.6 The appellant argues that claim 1 refers to two alternatives: "the concavity occupies a solid angle greater than π steradians", and "at least 30% of the light rays are intercepted by the reflecting surfaces". Since the reflector of figure 7 fulfils the second criteria, D3 anticipates the subject-matter of claim 1.
- 5.7 The term "in any case" in claim 1 however cannot be understood as "or". Claim 1 requires that the concavity formed by the two reflecting surfaces must cover more than π steradians, (mathematical equivalent to "more than a quarter of the solid spherical angle") which must allow reflection of at least 30% of the light rays emitted by the light source. The amount of 30% is not a characteristic of the reflector surfaces as such but the intended result to be achieved.
- 5.8 Having regard to the above understanding of the wording of claim 1, the subject-matter of claim 1 differs from the optical lighting system using a reflector according to the embodiment of figures 9 and 10 of D3 in that
- (a) the concavity defined between first and second reflecting surfaces occupies a solid angle greater

than π steradians, i. e. greater than a quarter of the solid spherical angle; and

(b) at least 30% of the light rays emitted by the light source are intercepted by first and second reflecting surfaces.

5.9 Furthermore, the subject-matter of claim 1 differs from the lighting system using a reflector according to the embodiment of figure 7 of D3 in that

(a) the concavity defined between first and second reflecting surfaces occupies a solid angle greater than π steradians, i. e. greater than a quarter of the solid spherical angle.

1.2 Neither the embodiment of figure 7 nor the embodiment of figures 9 and 10 hence prejudice novelty of claim 1.

Inventive step (Article 56 EPC)

2. The subject-matter of claim 1 is not obvious when starting from document D3 as closest prior art.

2.1 The subject-matter of claim 1 differs from the embodiment of figure 7 of D3 as set out above in that the concavity defined between first and second reflecting surfaces occupies a solid angle greater than π steradians, i. e. greater than a quarter of the solid spherical angle.

2.2 There is no indication in the prior art that would suggest to the skilled person to increase the solid

angle of π steradians covered by the reflector of figure 7 of D3.

2.2.1 The appellant argued that for an increase of the portion of reflected light from about 25% to 30% it would be sufficient to enlarge the reflector such that it only covered 6° more. It hence would also cover more than π steradians, this being only a slight and straightforward modification of the known reflector of figures 9 and 10 of D3.

2.2.2 However, there is no reason why the skilled person would consider such an increase of 6° without having previous knowledge of the invention according to the patent in suit and in particular of the target percentage of 30% to be achieved. It is thus neither obvious to amend the reflector of figure 7 nor of figures 9 and 10 of D3 such that it covers a solid angle of more than π steradians.

3. The appellant further argued starting from document D4.

3.1 Document D4 claims priority from DE 102006041942 dated 7 September 2006 and was published on 16 April 2008, i. e. D4 was filed before but published after the relevant date of the patent in suit (5 October 2007).

3.2 D4 is hence prior art under Article 54(3) EPC only and cannot be considered when assessing inventive step.

4. Further lines of argument were not presented by the appellant. In particular, novelty and inventive step of independent claim 16 being directed to a lighting device was not questioned by the appellant.

Partial reimbursement of the appeal fee

5. By withdrawing the main request for maintenance of the patent as granted (submitted with the statement of grounds of appeal) and requesting as a new main request (with letter dated 25 March 2021) the maintenance of the patent in the amended form which was allowed by the opposition division and thus the dismissal of the opponent's appeal, the patent proprietor has, in effect, withdrawn its appeal before a decision was issued.

The patent proprietor is thus entitled to a reimbursement at 25% of the appeal fee according to Rule 103(4) (b) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

G. Pricolo

Decision electronically authenticated