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**Datasheet for the decision
of 29 January 2025**

Case Number: T 0667/22 - 3.4.02

Application Number: 15724725.5

Publication Number: 3095002

IPC: G02B19/00, F21V7/00, F21V13/04

Language of the proceedings: EN

Title of invention:
AN OPTICAL SYSTEM FOR COLLIMATION OF LIGHT

Patent Proprietor:
Signify Holding B.V.

Opponent:
Molnia, David

Headword:

Relevant legal provisions:
EPC Art. 54(1), 56, 123(2), 83

Keyword:

Novelty - main request (yes)

Inventive step - main request (yes)

Amendments - allowable (yes)

Sufficiency of disclosure - enabling disclosure (yes)

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
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Case Number: T 0667/22 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 29 January 2025

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
15 December 2021 concerning maintenance of the
European Patent No. 3095002 in amended form.**

Composition of the Board:

Chairman B. Müller
Members: A. Hornung
F. J. Narganes-Quijano

Summary of Facts and Submissions

- I. The opponent appealed against the interlocutory decision of the opposition division maintaining European patent No. 3095002 in amended form.

Opposition had been filed against the patent as a whole and based on the grounds for opposition of Article 100(a) EPC, together with Articles 54(1) and 56 EPC.

The opposition division found that the patent as amended according to a first auxiliary request filed with a letter dated 30 August 2021, and the invention to which it related, met the requirements of the EPC.

- II. Oral proceedings before the board were held on 29 January 2025.

The opponent-appellant requested that the decision under appeal be set aside and that the patent be revoked.

The patentee-respondent requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained on the basis of the claims of auxiliary request 1' filed with the letter dated 1 November 2024.

- III. The following document, which was relied on in the first-instance opposition proceedings, is referred to in the present decision:

D5: DE 20 2014 003 078 U1.

IV. Claim 1 according to the patentee's main request reads as follows (the features of the claim are preceded by the numbering **F0** to **F6**):

"F0 An optical system for collimation of incoming light, comprising:

F1 a body(102);

F2 a recess (110) formed on a first side (104) of the body (102), the recess (110) having a central light entry surface (114) and a side light entry surface (112);

F3 a central light exit surface (118) provided at a second side of the body (108); said central light entry surface (114) being arranged in relation to the central light exit surface (118) such that incoming light falling on the central light entry surface (114) is directed to the central light exit surface (118),

F4 a total internal reflection surface (116) provided at a side surface of the body (102), which is arranged such that incoming light falling on the side light entry surface (112) of the recess (110) is directed towards the total internal reflection surface (116) so as to be subject to total internal reflection towards the second side (108) of the body (102);

characterized in that the optical system further comprises

F5 a rejection area (120) surrounding said central light entry surface (114), said rejection area (120) being configured to prevent incoming light directed to enter the optical system at the rejection area, to exit said body (102) through said second side (108),

F6 wherein the rejection area (120) comprises a light-deflecting portion (124; 126), said light-deflecting portion (124; 126) being arranged such that incoming light entering the light-deflecting portion (124; 126) is directed towards the second side (108) with an angle larger than a total internal reflection critical angle."

Claim 7 according to the patentee's main request reads as follows:

"The optical system according to any one of claims 1-6, wherein the rejection area (120) comprises a layer (122) of material which absorbs, scatters, or specularly reflects incoming light, said layer (122) being arranged on a surface surrounding said central light entry surface (114)".

Reasons for the Decision

1. Main request
 - 1.1 Interpretation of claim 1
 - 1.1.1 The expression in feature **F6** "light is directed towards the second side" requires interpretation, as it is disputed between the parties whether this expression implies that the light hits the second side or not.
 - 1.1.2 The board acknowledges that the general statement, "light is directed towards the second side", when disregarding the technical context in which this statement is made, could be interpreted broadly in the sense that it only defines the direction in which the light propagates, thereby leaving open the question of whether the light

would hit the second surface while propagating towards the second side.

However, this general statement in claim 1 is not detached from the technical context defined in claim 1. More precisely, feature **F5** defines a rejection area that has the function of preventing the light that has entered the body of the optical system at the rejection area to exit the body through the second side of the body. From this it can be inferred that if the light were not prevented by the rejection area to exit the body through the body's second side, it would indeed exit the body through the second side, i.e. it would have hit the second side. Feature **F6** is to be understood as a further specification of the rejection area's function defined in feature **F5** to prevent the light to exit through the second side of feature **F5** and cannot be interpreted in isolation from feature **F5**. When reading features **F5** and **F6** in combination, the skilled person would understand, firstly, that the incoming light at the rejection area is prevented from exiting the body through the second side of the body (feature **F5**) and, secondly, that this is achieved by hitting the second side with an angle larger than the total internal reflection angle (feature **F6**).

It is to be noted that it would make no technical sense in the context of the optical system of claim 1 if feature **F6** defined the rejection area by defining an angle of a light ray directed to the body's second side but which anyhow would not hit the body's second side. The specification of such an angle larger than the total internal reflection angle would fulfil no relevant technical task in the context of the optical system of claim 1. This confirms that feature **F6** must not be read in isolation but together with feature **F5**, namely that feature **F6** specifies by which

means the light is prevented by feature **F5** to exit the body through the second side.

- 1.1.3 The opponent argued during the oral proceedings that claim 1 was, compared to what is set out in the patent description, too broad and that, therefore, the claim had to be interpreted broadly: claim 1 did not define that the light that was prevented from exiting the body through the second side of this body actually hit this second side (but then underwent total internal reflection). The board's and the patentee's interpretation of feature **F6** was based on features which were not written in the claim. In particular, the expression "is directed towards the second side" used the term "towards", which clearly implied that only a *direction* of light was specified, leaving open the question of whether the light hit the second side. For instance, claim 1 did not define any concrete dimensions of the body from which it could be deduced that the light that was directed towards the second side would at a certain distance actually hit the second side.

The board is not convinced by the opponent's arguments. While it is true that claim 1 does not explicitly state that the light that is prevented from exiting the body through the second side hits the second side, for the reasons given in point 1.1.2 above, it is the only technically reasonable interpretation when reading features **F5** and **F6** together and in the context of the optical system of claim 1.

1.2 Novelty

The subject-matter of claim 1 is novel over D5 (Article 54(1) EPC).

In view of the interpretation of feature **F6** explained in point 1.1.2 above, the subject-matter of claim 1 is novel because D5 does at least not disclose a rejection area comprising a light-deflecting portion that is arranged such that the incoming light entering the light-deflecting portion hits the second side of the body with an angle larger than the total internal reflection angle.

Indeed, in D5 the light entering the body through the light-deflecting portion of the rejection area (which, according to the opponent, corresponds to an upper part of the recess (100)) is not directed towards the second side of the body, so that it would hit the second side with an angle larger than the total internal reflection angle, but exits the body through the undercut (13) without striking at all the second side.

It is to be noted that other light rays which enter the body through an upper part of the recess (100) and which do not exit the body through the undercut (13) are directed towards the second side so that they hit the second side but at an angle which is substantially smaller than the total internal reflection angle.

The opponent did not dispute that D5 did not disclose feature **F6** as interpreted in point 1.1.2 above.

1.3 Inventive step

The subject-matter of claim 1 involves an inventive step (Article 56 EPC).

1.3.1 According to the appealed decision, point 6.2, feature **F6** involved an inventive step in view of the closest prior art represented by D5. According to the opposition division, "the skilled person would need to modify the

design of D5 by eliminating the undercuts 13. This represents a major change in the design of the device which cannot be considered an obvious alternative".

1.3.2 According to the minutes of the oral proceedings before the opposition division, point 32, the patentee put forward that the objective technical problem solved by the distinguishing feature **F6** was "to provide a well collimated exit beam from a TIR lens that shows no spatial light brightness variations" and that the object of D5 was different, since "[i]t concerns a car lamp wherein it is deliberately intended to direct some light laterally at the undercut".

1.3.3 The board agrees with the conclusion drawn by the opposition division that the skilled person, starting with the optical system of D5, would have no incentive to modify the optical system to implement feature **F6**, i.e. to avoid that undesired light rays pass through the light exit surface. Indeed, D5 concerns an optical element which achieves a desired light distribution for a motor vehicle headlamp. For that reason, as the patentee argued at first instance, the optical element directs the light in different directions rather than, as in the present invention, producing a homogeneous beam of light by preventing the light from passing through the light exit surface.

1.3.4 The opponent did not dispute in writing the opposition division's decision that feature **F6**, if considered to be novel, involved an inventive step over D5. During oral proceedings before the board, the opponent did not comment further on the issue of inventive step.

1.3.5 The board therefore sees no reason to depart from the opposition division's conclusion that the subject-matter of claim 1 involves an inventive step.

1.4 Amendments

The set of claims of the present main request does not contain subject-matter extending beyond the content of the application as originally filed (Article 123(2) EPC).

1.4.1 The opponent argued that dependent claim 7 (corresponding to claim 8 as originally filed) contained added subject-matter because it defined, in combination with claim 1, an optical system comprising the features of a first embodiment shown in figure 4 (corresponding to the features defined in claim 2 as originally filed and incorporated in claim 1 of the main request as feature F6) as well as the features of a second embodiment shown in figure 3 (corresponding to the features defined in claim 8 as originally filed). However, according to the opponent, the patent application as originally filed did not disclose an embodiment comprising these features in a single embodiment. The two embodiments corresponding to figures 3 and 4 were originally disclosed as different alternative embodiments. In particular, the claim dependency in the set of claims as originally filed was not a sufficient basis for the embodiment defined in present claim 7.

1.4.2 The opposition division did not admit the late-filed objection of added subject-matter into the proceedings under Rule 116(1) EPC. It was raised by the opponent for the first time during oral proceedings before the opposition division (and repeated during the appeal proceedings). The opposition division considered that the

amendments *prima facie* did not contravene Article 123(2) EPC. See point 7.2 of the appealed decision.

- 1.4.3 Independently of the issue of the admittance of the objection under Article 123(2) EPC, the board is of the opinion that it is not well-founded.

First, the features as such of claim 7 are literally disclosed in claim 8 as originally filed. This was not disputed by the opponent. Secondly, the combination of these features of claim 7 with those of feature **F6** of claim 1 is disclosed on page 15, lines 5 to 10, in combination with page 11, lines 1 and 2.

- 1.5 Sufficiency of disclosure

The invention relating to the subject-matter of present dependent claim 7 is sufficiently disclosed in the patent within the meaning of Article 83 EPC, together with Article 100(b) EPC.

The opponent submitted in writing that the subject-matter of claim 7 could not be carried out by the skilled person (statement of grounds of appeal, point VI.3). However, contrary to the assumption of the opponent that "the layer of material [of the rejection area] blocks *all* light" (statement of grounds of appeal, page 10, last paragraph; highlighted by the board), the rejection area of the optical system of claim 7, in combination with claim 1, merely *comprises* a light-deflecting portion and merely *comprises* a light blocking layer. Therefore, the person skilled in the technical field under consideration, when considering an implementation of claim 7, would consider that the rejection area may comprise a first portion with a light-deflecting portion and a second (e.g. adjacent and surrounding) portion with a light blocking

layer. See also the teaching disclosed in paragraph [0060] of the patent. The skilled person would therefore have no difficulties in carrying out the subject-matter of claim 7.

2. For the reasons set out above, the board is satisfied that the patent according to the present main request, and the invention to which it relates, meet the requirements of the EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



K. Boelicke

B. Müller

Decision electronically authenticated