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**Datasheet for the decision
of 10 February 2021**

Case Number: T 0081/20 - 3.4.02

Application Number: 12152963.0

Publication Number: 2469336

IPC: G03B21/00, G02B27/22,
G02B27/26, G03B35/26

Language of the proceedings: EN

Title of invention:

Combining p and s rays for bright stereoscopic projection

Patent Proprietor:

RealD Inc.

Opponent:

VOLFONI R&D

Headword:

Relevant legal provisions:

EPC Art. 100(a), 100(b), 100(c), 87(1), 54(3)
RPBA 2020 Art. 12(2), 12(4), 12(6)

Keyword:

Grounds for opposition - added subject-matter (no) -
insufficiency of disclosure (no) - lack of patentability (no)
Priority - validity of priority date (yes)
Novelty - (yes)
Late-filed objection - admitted (no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0081/20 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 10 February 2021

Appellant:

(Opponent)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 31 October 2019
rejecting the opposition filed against European
patent No. 2469336 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman R. Bekkering
Members: C. Kallinger
G. Decker

Summary of Facts and Submissions

- I. The opposition division decided to reject the opposition against European patent No. 2 469 336.
- II. The appellant (opponent) filed an appeal against the opposition division's decision and requested that the decision under appeal be set aside and that the patent be revoked.
- III. The respondent (patent proprietor) requested as a main request that the appeal be dismissed, or, alternatively, that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claims according to one of the first to third auxiliary requests, all filed with the letter dated 14 July 2020.
- IV. In preparation of the oral proceedings a communication pursuant to Article 15(1) RPBA 2020 setting out the board's preliminary opinion was sent to the parties.
- V. Oral proceedings took place on 10 February 2021.
- VI. The parties final requests are as indicated above under points II and III.
- VII. The following documents will be referred to in this decision:

E1	EP 2 067 066 B1
E1-Prio	US 60/827,657
E6	US 4,792,850

- E7 Wikipedia entry in French: *Polarisation (optique)*, [https://fr.wikipedia.org/wiki/Polarisation_\(optique\)](https://fr.wikipedia.org/wiki/Polarisation_(optique))
- E8 US 11/583,243, priority document of the contested patent
- E9 WO 2008/048494 A2, WO publication of EP parent application of the contested patent

VIII. Claim 1 of the main request, i.e. the patent as granted, reads as follows:

"An apparatus for projecting stereoscopic images, comprising:

a polarizing splitting element (303, 620) configured to receive image light that includes image information and split the image light received into primary path image light directed along a primary path and secondary path image light directed along a secondary path, wherein the primary path image light has a first polarization, the secondary path image light has a second polarization, and the first polarization is orthogonal to the second polarization;
a reflective element (308, 603) configured to reflect one of the primary path image light and the secondary path image light and direct the reflected image light toward a surface (309, 608), the reflective element being operable to adjust the beam angles of the reflected image light so that the primary path image light and the secondary path image light are aligned at the surface;
a first polarization modulator positioned in the primary path and configured to receive the primary path image light, modulate the primary path image light into primary path circularly-polarized image

light, and transmit the primary path circularly-polarized image light toward the surface; and a second polarization modulator positioned in the secondary path and configured to receive the secondary path image light, modulate the secondary path image light into secondary path circularly-polarized image light, and transmit the secondary path circularly-polarized image light toward the surface, wherein the primary path circularly-polarized image light and the secondary path circularly-polarized image light have substantially the same polarization state."

Reasons for the Decision

1. Amendments - Article 100(c) EPC

1.1 Feature "Substantially the same polarization state"

The board agrees with the opposition division's and the respondent's reasoning that the introduction of the feature that *"the primary path circularly-polarized image light and the secondary path circularly-polarized image light have substantially the same polarization state"* (present in independent claims 1, 2 and 11) does not extend the subject-matter of the patent beyond the content of the application as filed or the earlier application as filed (document E9).

1.1.1 The appellant argued that the earlier application as filed did not contain the phrase *"substantially the same polarization state"*. Furthermore, the contested patent (see paragraph [0034], corresponding to page 13,

lines 24 to 25 of the application as filed) stated that "*the modulators are not used to switch between polarization states ...*". This rendered unclear how the modulators determined the polarization state of the image light output beams.

Furthermore, the fact that the objected feature had only been introduced after three communications from the examining division also showed that the earlier application as filed did not directly and unambiguously disclose the contested feature.

- 1.1.2 The board is not convinced by the appellant's line of argument. Although no literal basis for the contested feature is present in the application or the earlier application as filed, it is clear throughout the description that what is projected by the apparatus, for each point in time, is an image intended for one eye only. It follows from this concept of time sequential imaging, which is unambiguously clear from the entire teaching, that the polarization states of the image light output beams must be substantially the same. Otherwise, a 3D effect would not occur.

The passage referred to by the appellant refers to an embodiment in which two projectors are used, in each of which the claimed apparatus is present. This disclosure is therefore consistent with the overall teaching.

The fact that the contested feature has been introduced at a (possibly late) point during the examination procedure cannot in itself substantiate a missing original disclosure.

In conclusion, compared to the application as filed or the earlier application as filed, the introduction of

the feature "*substantially the same polarization state*" does not present new information to the skilled reader. The subject-matter of the patent does therefore not extend beyond the content of the application as filed or the earlier application.

1.2 Further features

In the present appeal case the statement of grounds of appeal was filed on 25 February 2020, i.e. after the date of entry into force (1 January 2020) of the new Rules of Procedure of the Boards of Appeal (RPBA 2020).

According to Article 12(2) RPBA 2020, a party's appeal case should be directed to the requests, facts, objections, arguments and evidence on which the decision under appeal was based. However, in its statement of grounds of appeal the appellant for the first time brought forward objections of a lack of original disclosure with respect to features relating to the reflective element and the primary and secondary paths. Therefore, they do not meet the requirements of Article 12(2) RPBA 2020 and are, according to Article 12(4) RPBA 2020, to be regarded as an amendment to the appellant's case.

Furthermore, the appellant did not demonstrate that these objections were admissibly raised and maintained in the opposition proceedings leading to the decision under appeal. Therefore, according to Article 12(4) RPBA 2020, any such amendment may be admitted only at the discretion of the board. Contrary to the requirement under Article 12(4), third sentence, RPBA 2020, the appellant did not provide any reasons why it submitted the amendment only in the appeal proceedings.

What is more, under Article 12(6), second sentence, RPBA 2020 the board "*shall not admit ... objections ... which should have been submitted ... in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance*". The board is of the opinion that the appellant could and should have submitted the newly raised objections already in the first-instance proceedings. The appellant did not set out any circumstances (and the board fails to see any) which would justify the admittance of the new objections.

In view of the above, the need for procedural economy and the fact that these objections appear *prima facie* not to prejudice maintenance of the patent, the board, exercising its discretion under Article 12(2), (4) and (6) RPBA 2020, does not admit the objections raised by the appellant for the first time in the grounds of appeal into the proceedings.

1.3 The board therefore comes to the conclusion that the ground for opposition according to Article 100(c) EPC does not prejudice the maintenance of the European patent.

2. Sufficient disclosure - Article 100(b) EPC

The board agrees with the opposition division's finding that the European patent discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2.1 "*Same polarization state*"

2.1.1 The appellant argued that it was not clear what was meant by the term "*same polarization state*" in independent claims 1 and 11.

The patent (see paragraph [0020]) disclosed that the light beams labelled P and S related to beams with orthogonal polarization states, i.e. horizontal versus vertical linear polarization. Starting from this principle, the disclosure of Figure 3 and the corresponding description was in contradiction with what was claimed because the image light output beams after the polarization modulators 304 and 307 were shown as being P and S beams, i.e. beams with orthogonal linear polarization states.

In addition, the patent (see paragraph [0028]) labelled the entire optical paths as either P or S, even though circularly polarized beams were claimed.

Because of this and the fact that the description did not indicate in which way the polarization states of two image beams having circular polarization might differ, the skilled person would not understand what the term "*same polarization state*" meant for two circularly polarized image beams.

Furthermore, the patent (see paragraph [0018]) defined only two types of polarization: linear and circular, the latter encompassing any type of non-linear polarization. Therefore, any two circularly polarized image light beams presented the same state of polarization, as the description did not indicate how the polarization states of two image light beams having circular polarization might differ from one another.

Finally, document E7, a Wikipedia entry on optical polarization, supported the skilled reader's interpretation of the wording "*same polarization state*" to mean that both image light output beams were circularly polarized, but not that they were circularly polarized and of the same rotational direction.

The appellant further argued that the description did not disclose any technical elements which enabled the skilled person to realise circularly polarized image light output beams having the "*same polarization state*" as claimed.

The appellant also disputed the opposition division's finding that the patent as a whole led to the interpretation of the expression "*same polarization state*" as relating to circularly polarized image light output beams which rotate in the same direction, as no passage of the text disclosed the polarization state of one image light output beam relative to the other.

- 2.1.2 The appellant's arguments with respect to the feature "*same polarization state*" are not convincing for the following reasons.

The alleged interpretation of the wording "*same polarization state*" meaning either circular or linear polarization, but not a specific type of circular polarization, cannot be agreed with. In a different context, it may be that the wording "*same polarization state*" could have the alleged meaning. However, in the context of the present patent the skilled reader would not interpret this wording that way, since such interpretation would clearly go against the teaching of the present patent, which is based on a time sequenced switching between right- and left-handed circular

polarization. This is precisely what allows for a selection of images for the appropriate eye by equipping the viewer's eyes with right- and left-handed circular polarization filters respectively (see paragraphs [0012] to [0015]).

The reference to the Wikipedia article E7 as evidence that the skilled reader would understand the wording "*same polarization state*" to mean only that both beams are circularly polarized, but not that they are of the same rotational direction (right- or left-handed), cannot be followed for the following reasons. The skilled person knows that a circularly polarized light occurs in two possible states: right- or left-handed circular polarization. Furthermore, it is clear from the unambiguous teaching of the present patent as a whole (see in particular paragraphs [0012] to [0015]) that, in order to provide a working embodiment, at any point in time the circularly polarized light in both output beams has to be of the same polarization state in the sense that the polarization states are "the same" in the sense of either right- or left-handed.

In conclusion, the feature "*same polarization state*" is clear to the skilled person.

Furthermore, the board is of the opinion that the patent discloses an embodiment comprising all necessary technical elements to achieve the claimed polarization.

The board notes that the description of the patent does not use the abbreviations P and S for linear orthogonal polarization states as such but for image light splitted into a primary (P) and secondary (S) path with (initially) orthogonal polarization states (see paragraph [0020], lines 48 to 55, or paragraph [0024]).

According to the patent (see paragraphs [0020] to [0023]) and Figure 3 the polarization of one of the two light beams (denoted P (primary) and S (secondary) in the patent) is rotated with respect to the other, so that both image light output beams have the same polarization state when reaching the screen. It is clear from the patent (see paragraphs [0012], [0015] and [0022]) and the claims that the light in the two paths is modulated by two polarization modulators into circularly polarized image light of the same polarization state.

With respect to the generalizations presented in paragraph [0018] in contrast to the claimed restriction to circularly polarized light, the board notes that this is rather a question of Article 84 EPC than of insufficient disclosure, as the content of paragraph [0018] does not render the overall disclosure unclear to such an extent that the skilled person could not carry out the invention as claimed.

2.2 Further arguments

With respect to the appellant's arguments relating to the term "substantially the same polarization state" (emphasis added by the board) and a possibly non-working embodiment (if the light emitted by the projector was already linearly polarized) the board notes that these arguments have not been brought forward during the first-instance opposition proceedings. Furthermore, these arguments seem to be unconvincing as they rather relate to a lack of clarity or added subject-matter than to insufficient disclosure.

For the same reasons as set out above (see point 1.2) the board therefore, exercising its discretion under Article 12(4) and (6) RPBA 2020, does not admit the objections as to lack of sufficient disclosure raised by the appellant for the first time in the grounds of appeal into the proceedings.

2.3 The board therefore comes to the conclusion that the ground for opposition according to Article 100(b) EPC does not prejudice the maintenance of the European patent.

3. Priority - Article 87(1) EPC

3.1 Priority document

The subject-matter claimed in the earlier application (E9) has a clear basis in the priority document (E8), as the figures and the relevant parts of the description are identical in both documents. This was not contested by the opponent.

3.2 First application

The board agrees with the opposition division's finding that E1-Prio did not disclose the use of circularly polarized light and that therefore E1-Prio could not be considered as the first application for the present patent within the meaning of Article 87(1) EPC.

3.2.1 The appellant argued that E1, claiming, amongst others, priority from document E1-Prio, was the "first application" for the opposed patent. Therefore, the present patent could not validly claim priority from document E8.

With reference to numerous decisions from the case law relating to the determination of the content of the relevant prior art (see Case Law of the Boards of Appeal of the European Patent Office, Ninth Edition, July 2019, I.C.4) the appellant argued that document E1-Prio had to be read as a whole and in view of the state of the art for 3D projectors at the time of filing of E1-Prio. At that time it was a technical reality that 3D projectors used circular polarized image light output beams. This was also confirmed by the disclosure of document E6, which was cited as prior art in E1-Prio.

Furthermore, E1-Prio explicitly related to the improvement of brightness of a projector intended for use in a cinema, e.g. a projector as described in E6. Therefore, the use of linearly polarized image light output beams was ruled out.

In addition, as the disclosure of the description of E1-Prio with respect to the polarization state of the image light output beam was generic, it encompassed linear as well as circular polarization. At the time of filing of E1-Prio the use of circular polarization in 3D projectors was the standard and projectors with linearly polarized image light output beams were obsolete and would not be considered by the skilled person. It was therefore perfectly clear to the skilled person that E1-Prio used a circularly polarized image light output beam.

With respect to figures 2 and 3 of E1-Prio the appellant argued that these figures, which disclosed a linear polarization, showed only a partial view of the overall projector system. The disclosure of these

figures should not be taken in isolation but read in view of the context of commonly used 3D projectors. Therefore, the skilled person would necessarily convert the intermediate linear polarization shown in these figures into a circular polarization in order to arrive at circularly polarized image light output beam.

In conclusion, E1-Prio explicitly disclosed a circularly polarized image light output beam.

The appellant further argued that E1-Prio disclosed, if not explicitly, then at least implicitly, a circular output polarization. Again, considering E1-Prio in the context of the state of the art and E6, the skilled person would exclusively consider projectors with circularly polarized image light output beams. E1-Prio aimed at improving the luminosity by using a dual beam path and therefore did not explicitly disclose characteristics of the projector unrelated to this solution, i.e. the polarization state of the image light output beams. However, at the filing date of E1-Prio, the skilled person would not consider a polarization other than circular for the image light output beams of a 3D projector. It would make no sense to them to improve the brightness of 3D projectors while making them unsuitable for use in 3D cinemas, by using linear polarization in the image light output beams.

Therefore, E1-Prio disclosed the presence of a circularly polarized image light output beam at least implicitly for the skilled person with a mind willing to understand and taking into account their common general knowledge and the prior art cited in E1-Prio.

3.2.2 The respondent argued that El-Prio did not disclose circular output polarization with respect to any embodiment shown in El-Prio. It was clear from the description and all figures in El-Prio that all embodiments used linearly polarized image light output beams. This was immediately clear from the definition of the circle and double arrow marks in each of the figures and the description (see paragraph [0003]) which stated that "*[t]he light emerging from the projection lens is randomly polarized, depicted in Figure 1 as both S- and P-polarized light. The light passes through a linear polarizer, resulting in a single polarization state after the polarizer. The orthogonal polarization state is absorbed (or reflected) ...*".

The respondent further argued that the appellant's arguments appeared to involve the skilled person modifying the embodiments disclosed by El-Prio such that the output polarizations become circular. This was however of no relevance for the determination of the content of El-Prio for the question of priority.

3.2.3 The board is not convinced by the appellant's arguments for the following reasons.

El-Prio does not explicitly disclose the claimed subject-matter because none of the embodiments of El-Prio discloses a 3D projector system utilizing a two-path system with circularly polarized image light output beams. All embodiments and Figures in El-Prio, in particular Figure 1 which shows "*a conventional implementation of polarization control*" (see paragraph [0002]), disclose output light with orthogonal linear polarization states (see the circle and double arrow marks in each of the figures). The board notes in this

respect that in the field of wave optics the labelling "*O S-polarized*" and "*↑ P-polarized*" is unambiguously understood as denoting two linear polarization states which are orthogonal to each other. The fact that the current patent redefines S and P as meaning "secondary path" and "primary path" (see paragraph [0020] of the patent) has no bearing on the disclosure of E1-Prio. Therefore, E1-Prio clearly and unambiguously discloses the use of linear polarization throughout the document.

Furthermore, the board is of the opinion that E1-Prio does not implicitly disclose a two-path system with circularly polarized image light output beams either. Neither the reference to prior art document E6 (see E1, paragraph [0002]), which itself uses circular polarization, nor the alleged standards used at the time of filing of E1-Prio, can be a valid basis for an implicit teaching which is in contradiction to the teaching of E1-Prio which clearly and unambiguously discloses the use of linear polarization (see E1-Prio, Figures 1 to 3).

The board therefore comes to the conclusion that document E1-Prio does not disclose, neither explicitly nor implicitly, the use of circularly polarized image light output beams in 3D projectors utilizing a two path system. Therefore, the patent enjoys the right of priority from document E8 as "*first application*" under Article 87(1) EPC.

4. Novelty - Articles 100(a) and 54(3) EPC

4.1 The appellant argued that document E1 claimed, amongst others, priority from E1-Prio, which was filed on 29 September 2006, i.e. before the priority date of the

contested patent. As E1-Prio disclosed a polarization conversion system utilizing circularly polarized image light output beams, E1 validly claimed priority for this subject-matter. In conclusion, document E1 was prior art under Article 54(3) EPC.

- 4.2 The board is not convinced by this argument. As found above (see point 3.2.3, last paragraph), document E1-Prio fails to disclose the use of circularly polarized image light output beams in 3D projectors utilizing a two path system. Therefore, document E1 cannot validly claim the priority date of E1-Prio for this subject-matter. As a consequence, document E1 is not prior art under Article 54(3) EPC for the claimed subject-matter and thus cannot prejudice novelty of the invention as claimed.

No further documents have been brought forward by the appellant to challenge novelty of the subject-matter of claim 1.

The board therefore comes to the conclusion that the subject-matter of the patent is novel and that the ground for opposition according to Articles 100(a) and 54(1) EPC does not prejudice the maintenance of the European patent.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



L. Gabor

R. Bekkering

Decision electronically authenticated