

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 12 January 2013**

Case Number: T 2088/09 - 3.4.02

Application Number: 99955178.1

Publication Number: 1031063

IPC: G02C7/02

Language of the proceedings: EN

Title of invention:
SHAPED OPHTHALMIC LENSES

Applicant:
Carl Zeiss Vision Australia Holdings Ltd.

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 2088/09 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 12 January 2013

Appellant: Carl Zeiss Vision Australia Holdings Ltd.
(Applicant) Sherriffs Road
Lonsdale, SA 5160 (AU)

Representative: Stevens, Jason Paul
Dehns
St Bride's House
10 Salisbury Square
London
EC4Y 8JD (GB)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted on 9 June 2009 refusing European patent application No. 99955178.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

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

Summary of Facts and Submissions

- I. The appellant lodged an appeal against the decision of the examining division refusing European patent application 99955178.1. This patent application relates to prescription type shaped ophthalmic lenses.

According to the decision, the subject-matter of the claims according to the Main, First, Second and Third Auxiliary Requests then on file did not involve an inventive step within the meaning of Article 56 EPC having regard to the disclosure in document D2 (WO-A-97/35224), from which disclosure the subject-matter of the independent claim only differed by the selection of a parameter which the skilled person would carry out in an obvious manner.

- II. With the letter containing the grounds of appeal the appellant requested to set aside the decision and to grant a patent on the basis of the sets of claims according to a Main or First to Third Auxiliary Requests filed with this letter. The appellant also filed an auxiliary request for oral proceedings.
- III. In an Annex to the summons to oral proceedings pursuant to Article 15(1) RPBA the board questioned the admissibility of the Main and the First Auxiliary Request. With respect to the Second Auxiliary Request the board pointed to deficiencies with respect to Article 84 EPC 1973 and indicated that a set of claims and an amended description in which these objections were overcome could possibly form an allowable basis for a patentable invention.

IV. With a letter dated 12 November 2012 the appellant filed replacement sets of claims according to a Main and an Auxiliary Request and amended description pages including the following application documents for consideration by the board:

Claims: 1 to 67 of the Main Request, filed with the letter dated 12 November 2012;

Description: pages 1 to 44, filed with the letter dated 12 November 2012;

Drawings: sheets 1/39 to 39/39, filed with the letter dated 11 September 2003.

V. The wording of independent claim 1 of the Main Request reads as follows:

" A prescription optical lens element with non-zero mean through power including
a first surface; and
a second surface of complementary curvature;
both surfaces exhibiting significant deviation in curvature from a conventional, relatively flat lens shape; characterized in that

the first and second surfaces in combination define an optical zone exhibiting substantially constant mean through power in the visual fixation field of the wearer;

the front surface has a surface power which increases in a temporal direction by at least 3.0 D;

the rear surface has a surface power which increases in a temporal direction by at least 3.0 D,

the lens element has substantially constant mean through power to within ± 0.75 D; and

the deviating surfaces exhibit a substantially smooth change of curvature, at least along a horizontal

meridian, across at least a portion of the visual fixation field of the wearer, with substantially no visible discontinuity; and

the lens element has a sagittal depth Z of at least approximately 10 mm ".

The wording of independent claim 58 reads as follows:

" A method of making a prescription optical lens element according to Claim 1 which method includes providing

a mathematical or geometrical representation of a first surface exhibiting a deviation in curvature from a conventional, relatively flat lens shape; and

a mathematical or geometrical representation of the profile of a second surface of complementary curvature; the first and second surfaces in combination defining an optical zone exhibiting substantially constant mean through power;

forming a lens element corresponding to the representations of the first and second surfaces ".

Claims 2 to 57 and claims 59 to 67 are dependent claims.

The claims of the Auxiliary Request are not relevant for the purpose of the present Decision.

VI. The appellant's arguments may be summarised as follows:

Claim 1 of the new Main Request is similar to the claim addressed in the decision under appeal but now specifies that both surfaces of the optical lens

element exhibit substantial deviation in curvature from a conventional, relatively flat lens shape.

The patent application was refused on the objection that the independent claims did not involve an inventive step. In particular it was stated that document D2 discloses a prescription optical lens with non-zero mean through power, which differed from the subject matter of claim 1 only in that the surface power of the front and back surfaces increase in a temporal direction by at least 3.0 D. In support of that statement reference was made to Figures 1, 5, 6, and 19 to 25 of D2. In particular, Figures 5 and 6 (along with Figure 1) would show that the front surface and the rear surface has a surface power which increases in a temporal direction. In this respect it is submitted that Figures 5 and 6 show lens wafers for lamination and do not provide any disclosure of the change in curvature across the lens surface. These Figures 5 and 6 relate to Example 4 on page 27 to 28 of document D2. At lines 1 and 2 of page 28, it is stated that the wafers of Example 4 have "conventional optics in central zones of about 55 mm in diameter". As such, these lenses have no change of curvature along any meridian over any portion of the visual fixation field. As would be known by the skilled person, the visual fixation field is at most 40° of eye rotation corresponding to the radius of around 20 mm. The lens described in Example 4 of D2 and schematically represented in Figures 5 and 6 have conventional optics out to a radius of 27.5 mm, i.e. >50° eye rotation. Thus, the change in surface curvature of the lens of Example 4 of D2 only occurs outside the visual fixation field in the zone for peripheral vision. In contrast claim 1 requires that the deviating surfaces of the claimed lens exhibit a substantially smooth change of

curvature, at least along a horizontal meridian, across at least a portion of the visual fixation field of the wearer. Also Figure 1 of D2 is merely a schematic illustration showing light paths through a lens surface bearing a sunglass tint and does not provide any disclosure of the change in curvature across the lens surface. Finally, Figure 19 illustrates an optical lens element including a "temporal generally plano extension of modified curvature". The lens of Figure 19 is described in Example 13 on page 36, line 6 of D2, which relates to a "torus surface lens element". A torus lens surface is a conventional lens surface, which is not a lens having "surfaces exhibiting significant deviation in curvature from a conventional, relatively flat lens shape", as required by claim 1. In relation to Figures 21 to 25, it is clear from the brief description of these Figures (at line 24 of page 25 of D2) that the back surface of the lenses represented in the figures have a standard spherical or toric back surface. Therefore, in contrast to the contention in the decision under appeal it is not correct that the only difference between the subject matter of claim 1 and the disclosure of D2 would be that the surface power of the front and back surfaces increases in a temporal direction by at least 3.0 D.

As such, the problem to be solved cannot merely be reduced down to choosing a value for the temporal increase in surface power. Rather, there are a number of differences between the subject matter of claim 1 and the disclosure of D2:

(i) D2 does not disclose the feature of claim 1 requiring that "the deviating surface(s) of the claimed lens exhibit a substantially smooth change of curvature at least along a horizontal meridian, across at least a portion of the visual fixation field of the wearer";

(ii) D2 does not disclose lenses having front and back surfaces having a surface power which increases in a temporal direction by at least 3.0 D;

(iii) D2 relies on the frame wrap to provide the shield feature in the peripheral temporal zone, while the lens element which is the subject of the claims is capable of providing the shield feature without the wrap along the optical axis.

As would be understood by the skilled person, lens wrap (that is, decentring or tilting the lens with respect to the visual axis of the eye) does nothing to the physical features of the lens, such as lens shape. All that decentring or tilting the lens does is change the orientation of the lens in space. The physical features of the lens are not altered. The claims of the present patent application require that the lens surfaces exhibit significant deviation in curvature from a conventional, relatively flat lens shape, where the front and back surfaces having a surface power which increases in a temporal direction by at least 3.0 D. Accordingly, it is submitted that the claims of the present patent application are novel and inventive over document D2.

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments*
 - 2.1 In the decision no objections under Article 84 EPC or 123(2) EPC 1973 against the documents then on file were raised. The board is satisfied that the amendments

introduced during the appeal are also conform to these requirements of the Convention.

3. *Patentability*

3.1 *Novelty - Claim 1*

3.1.1 The only document addressed during the examining proceedings for discussing the issue of patentability was document D2. It was recognised that the subject-matter of the claims then on file was novel over the disclosure in this document.

3.1.2 Document D2 discloses a prescription optical lens element with non-zero mean through power (see claim 1 of document D2) including a first surface and a second surface of complementary curvature (page 8, l. 11 and 1.18); and wherein both surfaces exhibit significant deviation in curvature from a conventional, relatively flat lens shape, with the proviso that this feature only applies to the lens elements disclosed in D2 inasmuch as the peripheral temporal zone may have a modified surface, e.g. a plano extension (e.g. page 36, l.8; Examples 15 - 18; claim 5).

3.1.3 To the board's understanding, the lens elements disclosed in document D2 have substantially constant mean through power to within ± 0.75 D within the visual fixation field (being at most 40° of eye rotation, as pointed out by the appellant, see page 5, first para; and page 24 last para of the published patent application; see also D2, page 3, l. 13 and 14).

With respect to the further features of claim 1:

3.1.4 According to the appellant, the lenses of document D2 do not exhibit significant deviation in curvature from a conventional, relatively flat lens shape in the visual fixation field. Nor was the feature that "...the deviating surfaces exhibit a substantially smooth change of curvature, at least along a horizontal meridian, across at least a portion of the visual fixation field of the wearer, with substantially no visible discontinuity" known from document D2.

The examining division had argued that this feature was known from D2, making reference to the passages at page 8, 1. 8 - 10; and page 20, 1. 15 - 25.

The board does not concur with the assessment of these passages of D2: according to page 8, 1. 4 and 5 the prescription zone (which includes the visual fixation field) is represented by a front surface which includes a spherical or toric component designed to provide the desired prescription in the prescription zone (and a back surface modified to complement the front surface). Therefore within this zone the radius of curvature is constant. The passage in lines 8 - 10 referred to by the examining division defines the peripheral temporal zone which is not part of the visual fixation field.

Similarly, to the board's understanding, the passage at page 20 from line 5 of D2 describes the portion of the lens element for $R \geq R_0$, wherein R_0 defines the periphery of the temporal region (see page 19, 1. 26) and therefore the portion outside the visual fixation field.

Therefore this feature is not known from document D2.

3.1.5 The lenses of document D2 do not exhibit the feature that the front and the rear surfaces have a surface power which increases in a temporal direction by at least 3.0 D. This feature had been recognised in the decision as representing a difference over the prior art lenses of document D2. Still, the examining division had argued with reference to Figures 1, 5 and 6 and to the passage at page 28, l. 1 - 3, that the feature "the front surface and the rear surface has a surface power which increases in a temporal direction" *as such* was known from D2, and that the feature was only novel by virtue of the value of 3.0 D.

However, both these Figures 5 and 6, as well as the passage relating to "Example 4" at page 28, refer to wafers which are to be laminated (page 27, "Example 4", from line 25), therefore this statement about the wafers does not allow a conclusion about the finished lens elements. Furthermore, Figure 1 only shows an illustration of "light paths through a lens surface bearing a sunglass tint" (page 22, l. 2 and 3) and does not allow to draw any conclusions at all.

3.1.6 With respect to the feature that "...the lens element has a sagittal depth Z of at least approximately 10 mm" the examining division had made reference to Figures 19 to 25 of document D2. Indeed in these Figures the temporal part of the lenses show such sagittal depth values. However, as pointed out by the appellant, in the prescription zones the lenses shown in Figures 19 - 25 have conventional (spherical or toric) surfaces.

3.1.7 It is concluded that the subject-matter of claim 1 differs from the lens elements disclosed in document D2 at least by the features that

- the deviating surfaces exhibit a substantially smooth change of curvature, at least along a horizontal meridian, across at least a portion of the visual fixation field of the wearer, with substantially no visible discontinuity; and
- the front and the rear surfaces have a surface power which increases in a temporal direction by at least 3.0 D.

It is added that, although in addressing novelty each individual feature of the claim may be addressed for its occurrence in a single embodiment in the prior art, in a prescription lens element the claimed features are interrelated and must therefore be considered as a whole. Therefore, addressing individual features in isolation may only be carried out in the same embodiment.

3.1.8 The further documents are less relevant. Therefore the subject-matter of claim 1 is novel.

3.2 *Inventive step*

3.2.1 The technical problem addressed in the present patent application may be seen in providing protective prescription lens elements of a general wrap-around or shielding type without the disadvantages of the lenses disclosed in document D2 (amongst others: step changes in curvature; design discontinuities; visible plano extension in the peripheral portion, see page 1, l. 19 to page 2, l. 28 of the published patent application).

3.2.2 The design of the wrap-around eyewear in document D2 is based on the concept of an optical lens element with optical surfaces for forming a prescription zone providing true correction (see D2, claim 1; and page 3,

1. 13 and 14), which elements include a spherical or toric component (claim 2); and wherein the wrap-around effect is accomplished by mounting the lens elements by rotating them temporally about a vertical axis through the optical centre, see claim 3. See also Example 6 on pages 30 to 32 and Figures 12a - 12k, in which Example the lenses are rotated to -20° , respectively $+20^\circ$ to the vertical in order to better fit to the temporal part of the head (Figure 12a: view from top).

3.2.3 Whereas document D2 teaches to start from conventional (spherical or toric) surface shapes in the prescription zone and to modify the curvatures in the peripheral temporal zone (claims 4, 5, 6), the concept of the lenses of the present patent application is to shape the lenses by co-varying surfaces, see page 5, l. 16 - 23.

As defined in claim 1, both surfaces exhibit significant deviation in curvature from a conventional, relatively flat lens; these surfaces exhibit a substantially smooth change of curvature, at least along a horizontal meridian, across at least a portion of the visual fixation field of the wearer, with substantially no visible discontinuity; the front and the rear surfaces have a surface power which increases in a temporal direction by at least 3.0 D; and the lens element has a sagittal depth of at least approximately 10 mm.

3.2.4 These combined features enable to design a lens element with the desired behaviour. Since these features in combination are not known or suggested in document D2, which relies on a rather different concept, the subject-matter of claim 1 is not obvious having regard to the disclosure in document D2.

- 3.2.5 The further documents cited in the International or Supplementary European Search Report, do also not disclose or hint at the particular prescription type shaped ophthalmic lens elements as defined in claim 1.
- 3.2.6 Therefore the subject-matter of claim 1 is novel and involves an inventive step.
- 3.2.7 Claim 58 is directed to a method of making a prescription optical lens element according to claim 1. Since the lens element defined in claim 1 is novel and inventive the same applies to a method of making this lens.
- 3.2.8 Claims 2 to 57 and claims 59 to 67 are dependent claims and are equally allowable.
4. For the above reasons, the board finds that the appellant's Request meets the requirements of the EPC and that a patent can be granted on the basis thereof.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent based on the following documents:

Claims: 1 to 67 of the Main Request, filed with the letter dated 12 November 2012;
Description: pages 1 to 44, filed with the letter dated 12 November 2012;
Drawings: sheets 1/39 to 39/39, filed with the letter dated 11 September 2003.

The Registrar:

The Chairman:



M. Kiehl

A.G. Klein

Decision electronically authenticated