Title: METHODS AND APPARATUS FOR IMPROVING VISION

Abstract: Transmittance of light through a pupil or to the retina of a patient's eye is controlled to improve night vision. In one example, this involves providing an ocular device in the form of a contact lens having a central, disk shaped clear window having a diameter that is custom designed based high-order aberrations in an eye and less than the diameter of the patient's pupil at night. The ocular device also has an annular portion that surrounds the disk shaped window portion. The annular portion comprises material that provides reduced light transmittance to provide controlled light transmission at pupil periphery at night and to the retina of a patient. Such controlled light transmittance can reduce photon noise that otherwise can exacerbate halos and ghosts that one can experience at night and/or it can improve night vision contrast. In the case of a contact lens and corneal inlay, light transmittance is controlled across the cornea. In the case of an intraocular lens, light transmittance is controlled across the pupil.
INTERNATIONAL SEARCH REPORT

International application No
PCT/US07/12761

A  CLASSIFICATION OF SUBJECT MATTER
IPC  G02C 7/02(2006 01),7/04(2006 01),7/10(2006 01)

USPC  351/160R,163,165
According to International Patent Classification (IPC) or to both national classification and IPC

B  FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
US  351/160R,163,165

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
351/164,162

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C  DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category *</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 5,662,706 (Legerton et al) 02 September 1997 (02 09 1997), Figure 1, column 1, lines 57-59, column 3, lines 3-8 and 64, column 4, lines 56-60</td>
<td>26-30 and 34-41</td>
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<td>Y</td>
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<td>31-33</td>
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</tbody>
</table>

☐ Further documents are listed in the continuation of Box C  ☐ See patent family annex

Later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X  document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y  document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

&  document member of the same patent family

Date of the actual completion of the international search
15 November 2007 (15 11 2007)

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Form PCT/ISA/210 (second sheet) (April 2005)
**Box No. II**  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [ ] Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. [ ] Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. [ ] Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III**  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Continuation Sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 26-41

**Remark on Protest**

[ ] The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(2)) (April 2005)