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- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))

[Continued on next page]

(54) Title: AN IMPROVED CONTACT LENS AND IMPROVED METHOD OF FABRICATION OF CONTACT LENSES

(57) **Abstract:** A method of generating data for use in fabricating a contact lens for an eye is provided. Posterior lens data defining a posterior lens surface for the lens is generated dependent on ocular surface data generated by a scanner to represent the ocular surface of an eye. Anterior lens data defining an anterior surface for the lens to define optical properties for the lens is then generated. The anterior lens data is generated dependent on the posterior surface data. The posterior lens data is generated dependent on scanned data representing the ocular surface of an eye. Also provided is a contact lens with support surfaces which contact the eye in use and supported surfaces formed in relief in the posterior lens surface and which are supported by the support surfaces to minimise or avoid contact between the lens and features on the ocular surface.

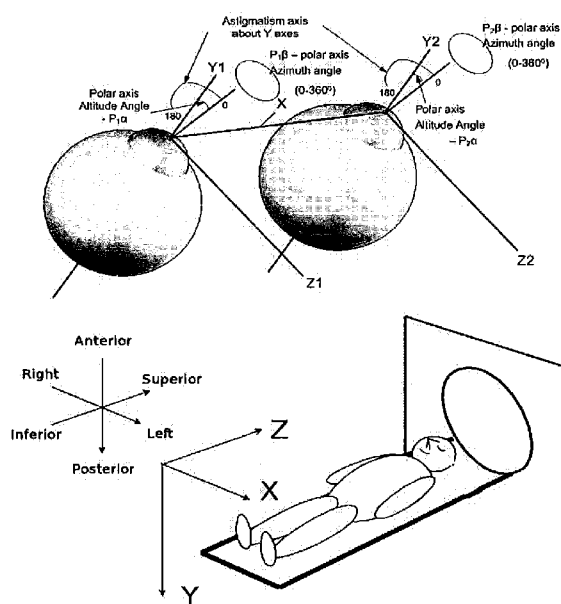


Figure 1



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19 March 2015

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ2014/000046

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G02C 7/04 (2015.01)

CPC - G02C 7/04 (2015.01)

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)

IPC(8) - A61B 3/10; B29D 11/00; G02C 7/04 (2015.01)

CPC - A61B 3/1015; G02C 7/028, 7/04 (2015.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 264/2.5; 351/160R, 177 (keyword delimited)

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

PatBase, YouTube, Google Patents, Google Scholar

Search terms used: contact, lens, fabrication, scanner, mold, data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,241,355 B1 (BARSKY) 05 June 2001 (05.06.2001) entire document	1, 3, 12-17, 20-21
Y		2, 18-19, 22-23
Y	US 2007/0195311 A1 (MORGAN et al) 23 August 2007 (23.08.2007) entire document	2, 18-19, 22-23
A	US 2004/0075807 A1 (HO et al) 22 April 2004 (22.04.2004) entire document	1-3, 12-24
A	US 6,340,229 B1 (LIEBERMAN et al) 22 January 2002 (22.01.2002) entire document	1-3, 12-24
A	US 2,501,190 A (POLICOFF) 21 March 1950 (21.03.1950) entire document	1-3, 12-24

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" 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

26 January 2015

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ2014/000046

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.: 4-11
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:
see extra 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 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.:
1-3, 12-24

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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ2014/000046

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees need to be paid.

Group I, claims 1-3, 12-24 are drawn to a method of generating data.

Group II, claims 25-27 are drawn to a method of preparing a mold.

Group III, claim 28 is drawn to an apparatus.

The inventions listed in Groups I, II and III do not relate to a single general inventive concept under PCT Rule 13.1, because under PCT Rule 13.2 they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I, a method of generating data comprising generating scanned lens data, are not present in Groups II, III; the special technical features of Group II, a method of preparing a mold including storing the mold in a cassette, and storing in the cassette a medium carrying data defining a visual axis data associated with the mold, are not present in Groups I, III; and the special technical features of Group III, an apparatus including an inner sleeve, an outer sleeve, and an evacuation conduit, are not present in Groups I, II.

Groups I-III share the technical features of a method of fabricating a contact lens comprising taking a mold of an ocular surface of an eye. However, these shared technical features do not represent a contribution over the prior art. Specifically, US 2,501,190 A to Policoff teaches of a method of fabricating a contact lens (Col. 1, Lns. 47-50 regarding manufacture of contact lenses) comprising taking a mold of an ocular surface of an eye (Col. 1, Lns. 47-50 regarding first take an exact casting or mold of the external contour of the eyeball; Fig. 1).

Since none of the special technical features of the Groups I, II, and III inventions are found in more than one of the inventions, unity is lacking.