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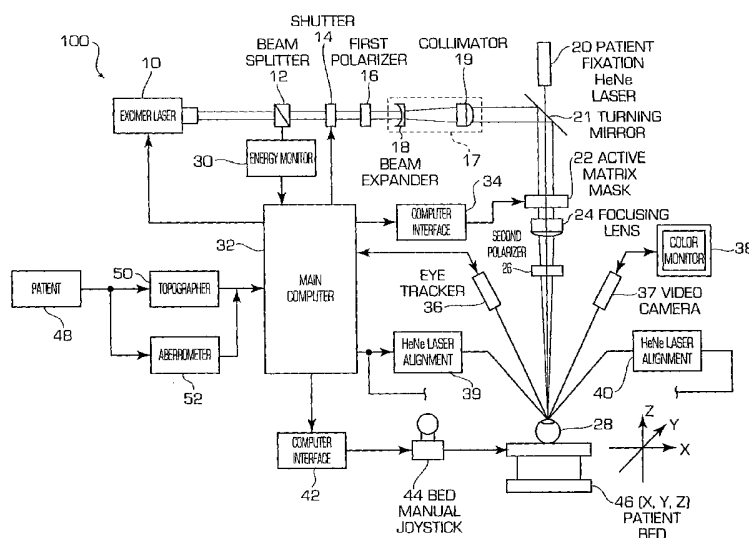
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- Published:
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[Continued on next page]

(54) Title: LIQUID CRYSTAL MASK FOR OPHTHAMOLOGICAL LASER SURGERY



(57) Abstract: A system and method particularly suited for controlled ablation of the cornea, using ultraviolet laser radiation, with the cornea sculpturing action resulting from a computer driven digital programmed distribution of excimer flux density across a controllable liquid crystal matrix mask to achieve a desired volume and shape of ablation for the correction of the curvature of the cornea. The optical mask, in one embodiment, is based on an arrayable matrix of individual optical pixel cells with two optical states between fully transparent to fully opaque or mirror like to the UV light. The system provides a highly versatile system for correcting known corneal defects in both regular and irregular corneas by simply executing computer customized patterns in very short time and with great precision and detail.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Int. nal Application No
PCT/IB 01/01426

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F9/01 G03F1/14 G03F7/20

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 7 G03F A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 082 755 A (LIU YUNG S) 21 January 1992 (1992-01-21) column 5, line 20 - line 35 column 6, line 47 - line 56 ---	1-39
X	US 5 105 215 A (LIU YUNG S) 14 April 1992 (1992-04-14) the whole document ---	1-39
A	WO 91 10170 A (MANUFACTURING SCIENCES INC) 11 July 1991 (1991-07-11) ---	
A	WO 98 57604 A (SAARLOOS PAUL PHILLIP VAN ;LIONS EYE INST AUSTRALIA INC (AU)) 23 December 1998 (1998-12-23) ---	
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° 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 document 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

23 August 2002

Date of mailing of the international search report

05/09/2002

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INTERNATIONAL SEARCH REPORT

Int al Application No

PCT/IB 01/01426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 632 330 A (NIPPON ELECTRIC CO) 4 January 1995 (1995-01-04) the whole document ---	
A	EP 0 947 158 A (NIDEK KK) 6 October 1999 (1999-10-06) the whole document ---	28-39
A	US 5 928 221 A (SASNETT MICHAEL W ET AL) 27 July 1999 (1999-07-27) the whole document -----	28-39

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 01/01426

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 40-42
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

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 an additional fee, this Authority did not invite payment of any additional fee.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int'l Application No

PCT/IB 01/01426

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