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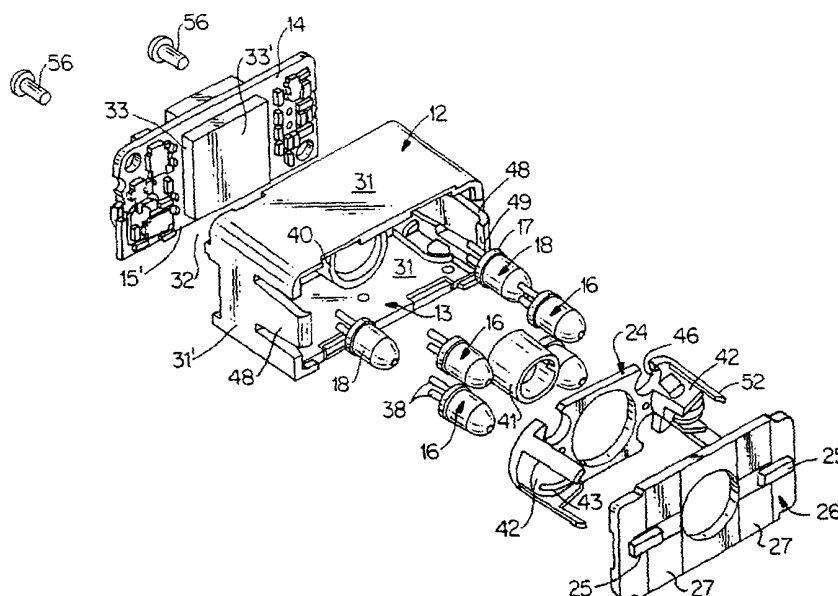
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[Continued on next page]

(54) Title: IMAGING MODULE FOR OPTICAL READER



(57) Abstract: The present invention is an imaging module (10) including a frame (12) supporting various optical components and a circuit board (14), which, in one embodiment, carries essentially an entirety of illumination (16) and aiming (18) LEDs of the module. The frame may include resilient fingers (48) which enable the frame to receive certain optical components in a snap-fit arrangement. Further, the module may be arranged so that the outer walls (31) and (31') of the module provide a containment for preventing structural damage to sensitive and fragile internal components of the module.

WO 01/26036 A3



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INTERNATIONAL SEARCH REPORT

Int. Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06K7/10

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 G06K

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, PAJ, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 621 203 A (SPITZ GLENN ET AL) 15 April 1997 (1997-04-15) column 6, line 65 -column 7, line 11 column 11, line 30-42 ---	1,6 11,14, 15,18, 20,25,26
X A	US 5 777 314 A (ROUSTAEI ALEXANDER) 7 July 1998 (1998-07-07) column 5, line 30 -column 6, line 8; figures 1,2 --- -/--	1 6,11,14, 15,18, 20,25,26



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.

Z document member of the same patent family

Date of the actual completion of the international search

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 548 951 A (SYMBOL TECHNOLOGIES INC) 30 June 1993 (1993-06-30) column 1, line 24-31 column 2, line 56 -column 3, line 6 column 10, line 16-35; figure 3 ----	1 6,11,14, 15,18, 20,25,26
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 00/27289

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.:
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 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:

see additional 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 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.

FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-10,18,19

An imaging module having a frame, a circuit board mounted to said frame, an image sensor, at least one illumination light source, and a back plate receiving and aligning of said image sensor carried by said circuit board

2. Claims: 11-13

An imaging module having a frame, a circuit board mounted to said frame, an image sensor, and at least one illumination light source, wherein said module includes at least one planar optical element and said frame comprises sidewalls having resilient fingers formed therein for receiving and securing said optical component in said frame

3. Claim : 14

An imaging module having a frame, a circuit board mounted to said frame, an image sensor, and at least one illumination light source, wherein said circuit board carries said image sensor and essentially all image sensor signal processing and decoding circuitry

4. Claims: 15-17

An imaging module having a frame, a circuit board mounted to said frame, an image sensor, and at least one illumination light source; said frame including substantially rigid top, bottom, and side sidewalls wherein said sidewalls and said circuit board define outer walls of said module

5. Claims: 20-24

An imaging module having a frame, a circuit board mounted to said frame, an image sensor, at least one illumination light source, a pair of aiming light sources, and a pair of slit apertures disposed forwardly of said aiming light sources

6. Claim : 25

An imaging module having a a circuit board, an image sensor, a light source having leads wherein said leads are abutted against a side of said image sensor and mounted to said circuit board so that a portion of said light source opposes a top surface of the image sensor

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

7. Claims: 26-28

An optical reader comprising imaging assembly and illumination assembly wherein the illumination assembly includes at least two rows of LEDs and an illumination optical assembly comprising diffusors and wedges for diffusing and directing light towards the target

INTERNATIONAL SEARCH REPORT

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