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[Continued on next page]

(54) Title: UNDERWATER SENSOR APPARATUS

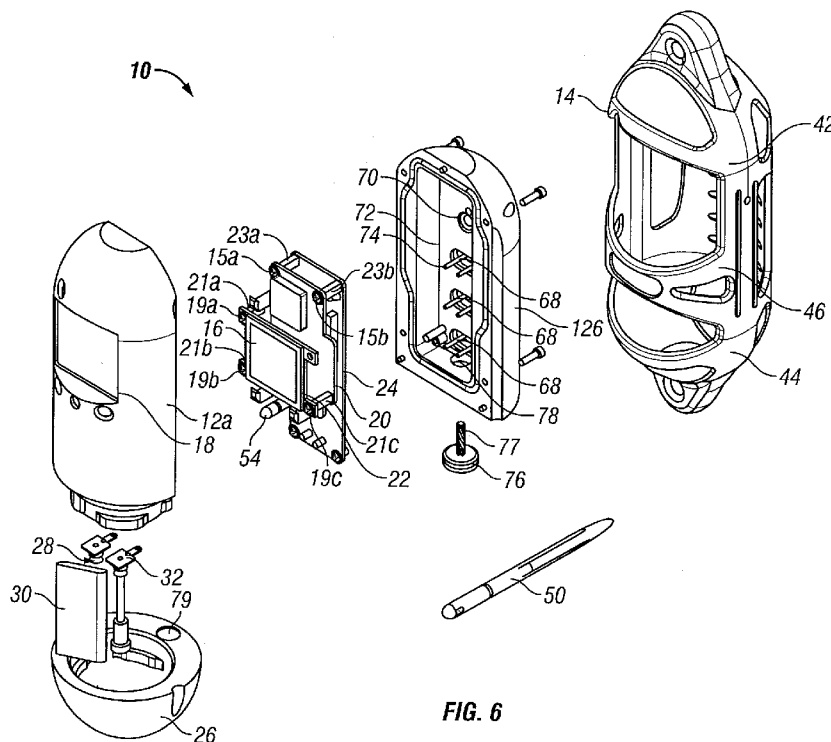


FIG. 6

(57) Abstract: An underwater sensor device comprises a submersible housing including one or more housing components, one or more sensors for monitoring and collecting water characteristics, a controller for controlling operations of the one or more sensors and an graphical user interface mounted to the housing that displays the water environmental data. The housing defines a channel that extends through one of the housing components, and at least one of the sensors is mounted to the housing and extends into the channel. The controller is disposed within the housing and is operatively connected to the one or more sensors.

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— *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))*



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER		
<i>G01V 9/00(2006.01)i, B63C 11/48(2006.01)i, H05K 5/00(2006.01)i, G01V 13/00(2006.01)i</i>		
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) G01V 9/00; G01V 1/38; G01K 7/24; B63C 11/48; G01K 1/02; G01N 33/24; G01D 11/30; G01N 27/06		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean utility models and applications for utility models Japanese utility models and applications for utility models		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: submersible housing, sensor, controller, display		
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 5200706 A (TAKAAKI YADA) 06 April 1993 See the abstract, figures 1-5, and claims 1-15	14-17, 20 1-13, 18, 19
A	JP 06023752 B2 (TOGAMI ELECTRIC MFG CO., LTD.) 30 March 1994 See the abstract and figure 3	1-20
A	US 4122428 A (RAY E. MORROW, JR.) 24 October 1978 See the abstract and figures 1-4	1-20
A	JP 09-043004 A (OKI ELECTRIC IND CO., LTD.) 14 February 1997 See the abstract and figures 1-6	1-20
A	US 2004-0042341 A1 (STIG RUNE LENNART TENGHAMN et al.) 04 March 2004 See the abstract and figure 2	1-20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family 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 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 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 <p style="text-align: center;">19 OCTOBER 2011 (19.10.2011)</p>	Date of mailing of the international search report <p style="text-align: center;">20 OCTOBER 2011 (20.10.2011)</p>	
Name and mailing address of the ISA/KR  Korean Intellectual Property Office Government Complex-Daejeon, 189 Cheongsu-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer <p style="text-align: center;">JUNG Sug Woo</p> Telephone No. 82-42-481-8443	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/027244

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:

- I. Claims 1-13 are directed to an apparatus for monitoring and collecting water environmental data.
- II. Claims 14-19 are directed to a sensor apparatus.
- III. Claim 20 is directed to an underwater sensor device.

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 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

Information on patent family members

International application No.

PCT/US2011/027244

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