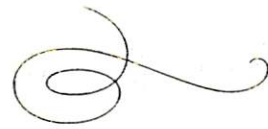
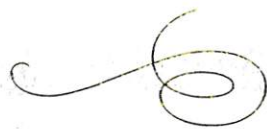


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The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America, importing the invention into the United States of America, and if the invention is a process, the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(1) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Ander Lane

DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE



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(12) **United States Patent**
Yamamoto

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- (54) **AUTOMATIC WATER QUALITY SURVEILLANCE APPARATUS**
- (71) Applicants: **KANKYO ELECTRONICS CO., LTD.**, Fukuoka (JP); **Takahiro Yamamoto**, Fukuoka (JP)
- (72) Inventor: **Takahiro Yamamoto**, Fukuoka (JP)
- (73) Assignees: **KANKYO ELECTRONICS CO., LTD.**, Fukuoka (JP); **Takahiro Yamamoto**, Fukuoka (JP)

(58) **Field of Classification Search**
 CPC A01K 61/10; A01K 63/04; A01K 63/065; C12Q 1/04; C12Q 2304/40; G01N 27/125; G01N 33/186; G06T 7/0004; G06T 2207/10016; G06T 2207/30108; G08B 21/18; H04N 7/183
 See application file for complete search history.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **15/699,753**
 (22) Filed: **Sep. 8, 2017**

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C12Q 1/04 (2006.01)
H04N 7/18 (2006.01)
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Primary Examiner — Edward Park
 (74) *Attorney, Agent, or Firm* — Nakanishi IP Associates, LLC

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- (52) **U.S. Cl.**
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(57) **ABSTRACT**
 Provided is a small and simple automatic water quality surveillance apparatus that can automatically sense toxic substances, oil, mold, or the like contained in raw water. The apparatus includes an odor-sensing water tank through which the raw water circulates. The tank further includes an odor sensor sensing an odor, such as an oily odor, a mold odor, and so on. Upon having sensed the toxic substances, oil, mold, or the like, an alarm is automatically issued thereby.

7 Claims, 33 Drawing Sheets

