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(71) Applicant: PHOTOVAC INCORPORATED [CA/CA]; 330 Cochrane Drive, Markham, Ontario L3R 8E5 (CA).

(72) Inventors: LEVESON, Richard, C.; 288 Newton Drive, Willowdale, Ontario M2M 2P8 (CA). LASLAVIC, John, D.; 9 Burin Court, Etobicoke, Ontario M9C 4Y3 (CA). BARKER, Nicholas, J.; Rural Route 1, Mariposa Township, Ontario K0M 2J0 (CA).

(74) Agents: MCGRAW, James et al.; Smart & Biggar, 55 Metcalfe Street, Suite 900, P.O. Box 2999, Station D, Ottawa, Ontario K1P 5Y6 (CA).

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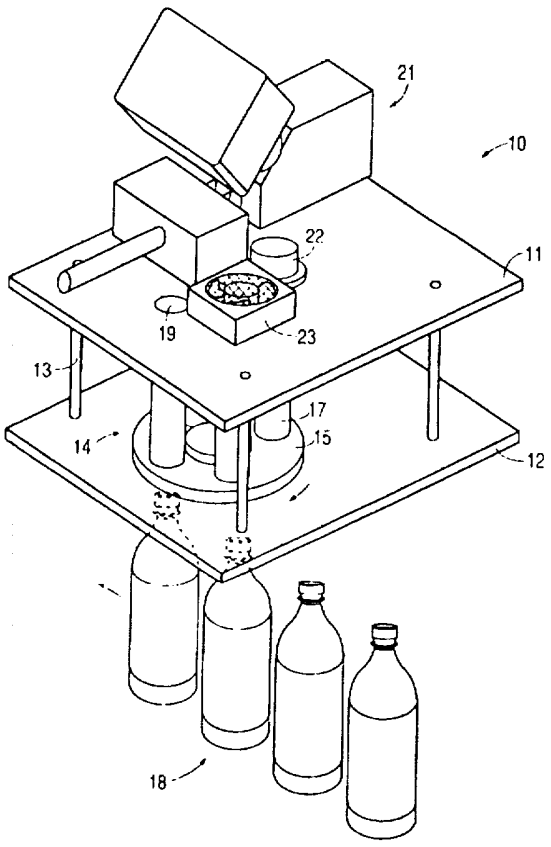
4 August 1994 (04.08.94)

(54) Title: SYSTEM FOR THE DETECTION OF NOXIOUS CONTAMINANTS IN BEVERAGE AND POTABLE WATER CONTAINERS

(57) Abstract

A device for detecting contaminants in returned bottles, particularly in a high-speed bottle line, is disclosed. In the preferred embodiment, a sample chamber is rotated on a carousel unit between top and bottom bulkheads. The surfaces of the bulkheads facing the chamber are flat and substantially parallel, and the chamber has two open ends which face the two bulkheads, respectively. A blast of air is directed into the mouth of the bottle to be sampled, forcing the contents of the bottle through an aperture in the lower bulkhead and into the sample chamber. In the preferred embodiment, the analyzer contains a UV absorption analyzer and a photoionization detector. The carousel unit contains four sample chambers which rotate between a sampling station, the two detectors, and a purge station. The analyzer is controlled by a computer which issues a reject instruction to a bottle reject mechanism if the level of contaminants detected by either detector exceeds a predetermined threshold. In an alternative embodiment, the level of chemically-bound ammonium radicals is detected by analyzing the same sample twice with one or two photoionization detectors. An alkaline substance is added to the sample between the measurements. Since the combination of an alkaline substance and ammonium radicals will free ammonia gas, a substantially higher reading during the second analysis indicates the presence of ammonium radicals.



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A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 G01N1/22 G01N35/02 G01N21/90 G01N21/33 G01N27/66

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 5 G01N

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 306 307 (COCA-COLA) 3 March 1989 see abstract see page 2, line 52 - line 59 see page 3, line 8 - line 10 see page 3, line 24 - line 33 see page 4, line 3 - line 25; figures --- -/--	1,6,7,9, 18,19, 23,26

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"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	Date of mailing of the international search report
10 March 1994	10. 06. 94

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016	THOMAS, M

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO,A,91 09307 (RESEARCH CORPORATION TECHNOLOGIES) 27 June 1991 see abstract see page 9, last paragraph - page 10, line 20; page 37, line 7 - line 26 see page 38, line 14 - line 30 see page 40, line 13 - line 16 see page 54, line 6 - line 25 see page 55, line 20 - page 56, line 6 see figures 11A,11B,11C	1,18,20, 21,28
A	US,A,4 830 192 (PLESTER) 16 May 1989 cited in the application see abstract see column 7, line 30 - line 33 see column 11, line 24 - line 27	1,3,8, 18,19, 22-24
A	US,A,4 413 185 (LEVESON) 1 November 1983 cited in the application see column 3, line 31 - line 46 see column 4, line 35 - column 5, line 4 see figure 1	6,8,19, 22,25
A	PATENT ABSTRACTS OF JAPAN vol. 9, no. 203 (P-381) 21 August 1985 & JP,A,60 066 155 (SHIMAZO SEISAKUSHO) 16 April 1985 see abstract	3,6,8, 19,22, 24,25
A	US,A,4 976 924 (MCANDLESS) 11 December 1990 see abstract see column 2, line 43 - line 54; figure 1	1,18,28
A	US,A,2 212 211 (PFUND) 17 February 1938 see page 2, left column, line 38 - right column, line 12; figure 1	4
A	WO,A,90 10217 (ATOCHEM) 7 September 1990 see abstract	19

INTERNATIONAL SEARCH REPORT

I national application No.
PCT/CA93/00517

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 o certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searcred 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:

1. Claims 1-9,18-29
2. Claims 10-13
3. Claims 14-17

For further information please see form PCT/ISA/206 mailed 290394.

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 searches 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.:

1-9,18-29

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
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