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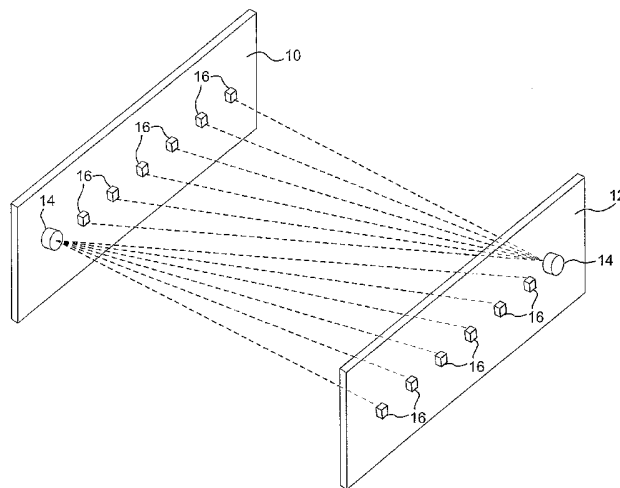
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26 October 2006

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.

(54) Title: OPTICAL VEND-SENSING SYSTEM FOR CONTROL OF VENDING MACHINE



(57) Abstract: A light curtain device for use in a vending machine which has at least one mechanism arranged for initiating operation upon selection by a customer for vending an article into a vend space through which the article falls into a customer-accessible hopper. The light curtain device has first and second emitter/detector arrays, each having at least one emitter (14) and a plurality of detectors (16). The arrays are positionable and arrangeable within the vending machine so that electromagnetic radiation emitted by the at least one emitter (14) of the first array may be detected by at least some of the plurality of detectors of the second array (16), and so that electromagnetic radiation emitted by the at least one emitter (14) of the second array may be detected by at least some of the plurality of detectors (16) of the first array. Thus, articles falling through the vend space of the vending machine will interrupt electromagnetic radiation between at least one emitter (14) and at least one detector (16).

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/24278

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G01V 8/10**(2006.01),**8/20**(2006.01);**G07F 11/00**(2006.01)

USPC: 250/221,222.1,223R;340/555,556;700/231,232,244;221/2,7,9

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)

U.S. : 250/221,222.1,223R,223B,224;340/555,556,679;700/231,232,236,243,244;221/2,7,9

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 practicable, search terms used)
EAST - PG-PUB, USPAT, DERWENT, EPO, JPO, USOCR

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2001/0000408 A1 (HAIR et al) 26 April 2001 (26.04.2001), paragraphs [0046] to [0048].	1-13
Y	US 2002/0117509 A1 (WHITTEN et al) 29 August 2002 (29.08.2002), paragraphs [0023] to [0028].	1-13
Y	US 2002/0179620 A1 (MASON II) 05 December 2002 (05.12.2002), paragraphs [0020] to [0043].	1-13
Y	US 2003/0122367 A1 (CHEN) 21 August 03 (21.08.2003), paragraphs [0026] to [0037].	1-13
Y	US 3,746,863 (PRONOVOST) 17 July 1973 (17.07.1973), column 3, lines 7-65.	1-13
Y	US 4,252,250 (TOTH) 24 February 1981 (24.02.1981), column 3, line 23 to column 4, line 52.	1-13
Y	US 6,384,402 B1 (HAIR, III et al) 07 May 2002 (07.05.02), column 5, line 7 to column 7, line 22.	1-13

Further documents are listed in the continuation of Box C.

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

"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

"E" earlier application or patent published on or after the international filing date

"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

"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)

"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

"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

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document member of the same patent family

Date of the actual completion of the international search

25 July 2006 (25.07.2006)

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INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US05/24278

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,640,994 B2 (CHEN) 04 November 2003 (04.11.2003), column 3, line 53 to column 6, line 4.	1-13
Y	US 6,708,079 B2 (MASON, II) 16 March 2004 (16.03.2004), column 3, line 39 to column 6, line 63.	1-13
Y, E	US 6,920,372 B2 (NICKERSON et al) 19 July 2005 (19.07.2005), column 6, line 35 to column 7, line 39.	1-13
Y	US Re. 33,668 (GRAY) 20 August 1991 (20.08.1991), column 2, line 53 to column 4, line 31.	1-13

INTERNATIONAL SEARCH REPORT

International application No.

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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:
Please See Continuation 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 additional fees, this Authority did not invite payment of any additional fees.
 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.: 1-13
- 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

International application No.
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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-13, drawn to a vending machine with first and second emitter/detector arrays, each having a plurality of detectors.

Group II, claim(s) 14-19, drawn to a light curtain having at least one detector and an emitter mounted on a movable mechanism.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the only common features are the vending machine mechanisms (in the preamble) and at least one emitter and detector, which are not a single general inventive concept towards a point of novelty.