

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 September 2006 (08.09.2006)

PCT

(10) International Publication Number
WO 2006/093751 A3

(51) International Patent Classification:
A47F 3/04 (2006.01)

(74) Agent: **BURDICK, Harold**; 6676 Gunpark Drive, Suite E, Boulder, CO 80301 (US).

(21) International Application Number:
PCT/US2006/006247

(22) International Filing Date:
22 February 2006 (22.02.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/069,378 1 March 2005 (01.03.2005) US

(71) Applicant (for all designated States except US): **GEUKE, Bradley** [US/US]; 39553 Rangeview Drive, Ault, Colorado 80610 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

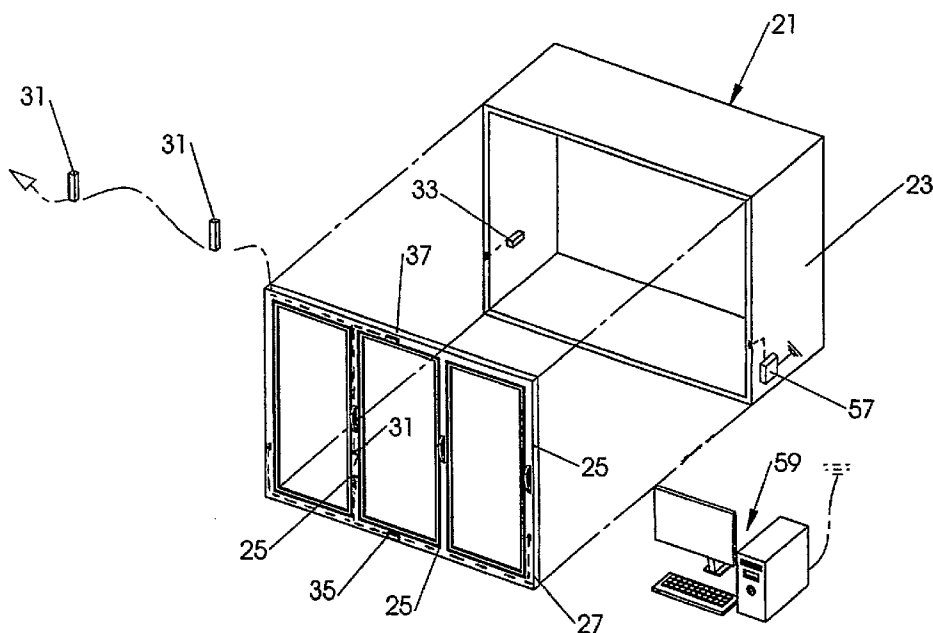
(72) Inventors; and

(75) Inventors/Applicants (for US only): **MURRAY, Brent** [US/US]; 1311 Ruby Way, Longmont, Colorado 80504 (US). **BERTSCH, Patrick** [US/US]; 1982 E. 129th Drive, Thornton, Colorado 80241 (US). **MAJZNER, Robert** [US/US]; 1060 Stonehaven Avenue, Broomfield, Colorado 80020 (US).

Published:
— with international search report

[Continued on next page]

(54) Title: REFRIGERATION UNIT CONDENSATION PREVENTION



(57) Abstract: Apparatus, systems and methods are disclosed for efficient elimination of door and frame condensation at widely utilized commercial freezer/refrigeration display cases. The apparatus includes a local controller unit connected with an array of case sensors including an internal case temperature sensor, an external case frame temperature sensor and a dew point sensor. The case frame temperature sensor and dew point sensor are housed to thermally isolate sensing elements thereof from effects of frame temperature changes and ambient air temperature in the vicinity of a sensing element, and to limit heat transfer by the housing to the sensing elements thereby improving sensing accuracy and apparatus performance.



(88) Date of publication of the international search report:

21 December 2007

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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/06247

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **A47F 3/04**(2006.01)

USPC: 62/150,176.6,248,275

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. : 62/150, 176.6, 248, 275, 176.2

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, E	US 7,137,262 B2 (CARTER) 21 November 2006, column 5, lines 1-20.	1-20
A	US 6,301,913 B1 (SCHULAK et al) 16 October 2001, see the entire document.	1-20
A	US 4,261,179 A (DAGEFORD) 14 April 1981, see the entire document.	1-20
A	US 5,778,689 A (BEATENBOUGH) 14 July 1998, see the entire document.	1-20

☐ 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	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

24 April 2007 (24.04.2007)

Date of mailing of the international search report

24 SEP 2007

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Cheryl J. Tyler

Telephone No. (571) 272-2975

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/06247

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.:
- 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.

Form PCT/ISA/210 (continuation of first sheet(2)) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US06/06247

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I, claim(s) 1-13, drawn to a condensation control apparatus for a refrigerated case.

Group II, claim(s) 14-20, drawn to a method of controlling condensation on a refrigerated display case.

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 process as claimed can be practiced by another and materially different apparatus such as one that does not require housing means for establishing thermal isolation of the sensing units.