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(54) Title: PIVOTING THERMAL TRANSFER JOINT

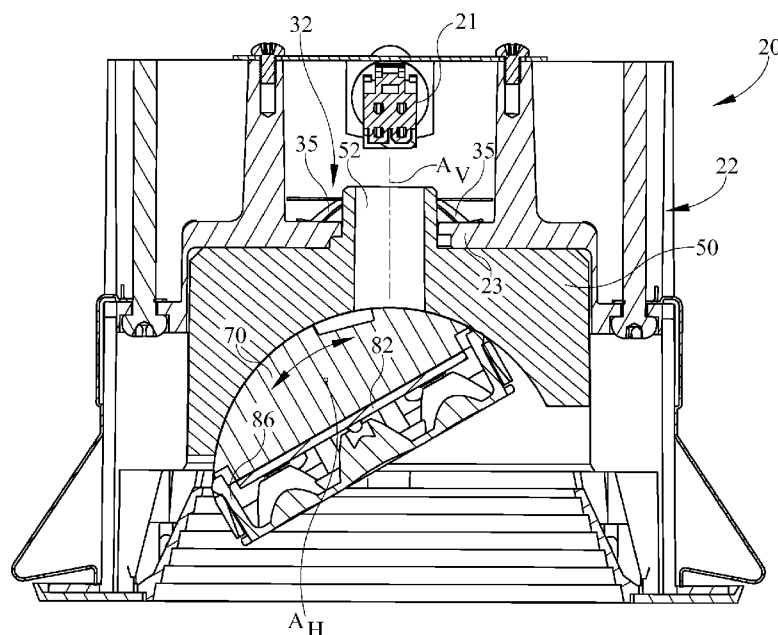


FIG. 8

(57) Abstract: A recessed luminaire thermal management assembly (20) includes a recessed luminaire can (22) having an open lower end (26) and an upper end (24) with at least one side-wall (28) extending between the open lower end and the closed upper end, an intermediate heat sink (50) connected to the luminaire can, the intermediate sink being rotatable through a horizontal plane, a source heat sink (70) being movable through a vertical plane, the source heat sink transferring heat to the luminaire can through the intermediate sink.



GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *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))*

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

10 May 2013

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. F21V29/00 F21S8/02
ADD.

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)
F21V F21S

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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2010/097733 A1 (KONINKL PHILIPS ELECTRONICS NV [NL]; VERBRUGH STEFAN M [NL]) 2 September 2010 (2010-09-02) page 15, line 7 - page 16, line 4 figures 2a, 2b, 2c, 2d -----	1-9
X	DE 10 2008 005697 A1 (ZUMTOBEL LIGHTING GMBH [AT]) 30 July 2009 (2009-07-30) paragraph [0025] - paragraph [0026] figure 1 -----	1-9
A	EP 1 881 262 A1 (VALEO VISION [FR]) 23 January 2008 (2008-01-23) abstract figure 1 -----	1-9



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

"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 another 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

28 September 2012

Date of mailing of the international search report

05/03/2013

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2012/052956

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:

see additional 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 an additional fees, this Authority did not invite payment of 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.:

1-9

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

A recessed luminaire thermal management assembly, comprising: a recessed luminaire heat sink housing having an open lower end and an upper end with at least one sidewall extending between said open lower end and said closed upper end; an intermediate heat sink connected to said luminaire can, said intermediate sink being movable at least partially within a substantially horizontal plane; and a source heat sink being movable through a substantially vertical plane, said source heat sink transferring heat to said intermediate sink at one of a first arcuate thermal interface and through said intermediate heat sink to said luminaire heat sink housing at a second thermal interface.

2. claims: 10-17

A pivoting heat transfer assembly for a luminaire, comprising: a heat sink can having an upper end, an open lower end and a plurality of fins; a first spring structure connecting said heat sink can to an intermediate sink, said intermediate sink being rotatable about a substantially vertical axis; a source heat sink being disposed against said intermediate heat sink, said source heat sink being movable about a substantially horizontal axis; an LED circuit board connected to said source heat sink; wherein said source heat sink transfers heat directly to said intermediate heat sink and said intermediate heat sink transfers heat directly to said heat sink can.

3. claims: 18-20

A pivoting thermal transfer assembly, comprising: a first sink being movable in a first direction; a second sink being movable in a second direction and connected to said first sink along an arcuate thermal transfer interface, said arcuate thermal transfer interface allowing transfer of thermal energy from one of said first sink to said second sink; wherein said first direction is through a first plane and said second direction is through a second plane and further wherein said first direction and said second direction are substantially perpendicular; a third sink being a heat sink can, said can housing said first and second sinks.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/052956

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010097733 A1	02-09-2010	CN 102333989 A EP 2401547 A1 JP 2012518882 A US 2012075857 A1 WO 2010097733 A1	25-01-2012 04-01-2012 16-08-2012 29-03-2012 02-09-2010
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