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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))

[Continued on next page]

(54) Title: HIGH INTENSITY WARNING LIGHT WITH REFLECTOR AND LIGHT-EMITTING DIODES

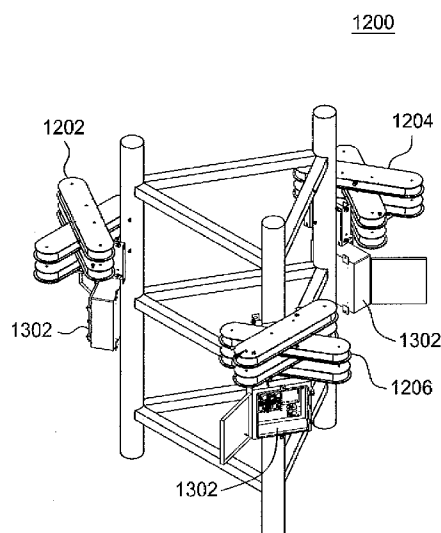


FIG. 1

(57) Abstract: The present invention is directed to a high intensity light module for warning aircraft of obstructions. In one embodiment, the high intensity light module for warning aircraft of obstructions includes a first plate, at least one reflector coupled to the first plate along a length of the first plate, a plurality of light emitting diodes (LEDs) coupled to the first plate, wherein the at least one reflector redirects light emitted by the plurality of LEDs substantially along a single side of the high intensity light module, a lens coupled around a perimeter of the first plate and a second plate coupled to the lens around a perimeter of the second plate and coupled to the first plate via one or more standoffs.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/32575

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F21S 4/00 (2012.01)

USPC - 362/249.02

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(8): F21S 4/00 (2012.01)

USPC: 362/249.02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IPC(8): F21S 4/00 (2012.01) (keyword limited, see terms below)

USPC: 340/815.45, 982, 983; 362/227, 235, 236, 240, 249.01, 249.02, 247, 317, 341, 477, 800 (keyword limited, see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST (PGPB, USPT, EPAB, JPAB), Google Scholar, Thomson Innovation. Search terms used: LED, light, emitting, diode, reflector, warning, alert, notify, aircraft, airplane, lens, standoff, stand-off, stand, off, separator, plate, gasket, seal, parallel, top, bottom, focal, stack, beam, spreading, intensity, high, rectangular, John Peck, Sam Acacia,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US 2009/0207605 A1 (Fields) 20 August 2009 (20.08.2009) Fig 1, 5, para [0021], [0024], [0025], [0033], [0035], [0036]	1-5 and 10 ----- 6-9
Y	US 5,130,761 A (Tanaka) 14 July 1992 (14.07.1992) Fig 1a, 1b	6
Y	US 2010/0328960 A1 (Wang) 30 December 2010 (30.12.2010) Fig 1, para [0019], [0021]	7
Y	US 2008/0049422 A1 (Trenchard et al.) 28 February 2008 (28.02.2008) para. [0044]-[0112], Fig. 1-21	1-10
Y	US 2009/0213592 A1 (Zhang et al.) 27 August 2009 (27.08.2009) para. [0015]-[0023], Fig. 1, 2	1-10
A	US 2006/0198141 A1 (Peck et al.) 07 September 2006 (07.09.2006) entire document	1-10
A	US 2011/0044038 A1 (Mo) 24 February 2011 (24.02.2011) entire document	1-10

☐ Further documents are listed in the continuation of Box C.

* 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

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/32575

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:

Group I: Claims 1-10, drawn to a high intensity light module for warning aircraft of obstructions.

Group II: Claims 11-20, drawn to a high intensity light module for warning aircraft of obstructions.

The inventions listed as Groups I-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 technical feature of Group I is the reflector, which is not present in Group II. The technical feature of Group II is the second high intensity light module is stacked on top of the first high intensity light module,, which is not present in Group I.

Although Groups I and II do share the common technical feature of a high intensity light module comprising a first plurality of light emitting diodes (LEDs), said technical feature does not represent an improvement over the prior art of US 7,497,593 B2 (Wang) that teaches a rotational obstruction and beacon signaling apparatus with light emitting diodes (LEDs) employed to provide a flashed emission pattern with high luminous intensity (Abstract). Accordingly, unity of invention is lacking under PCT Rule 13.1.

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 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.:
Group I: Claims 1-10

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.