



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/435,052	05/04/2009	Lloyd H. Wood	0370.0900C (959646)	2530
99499	7590	11/13/2012	EXAMINER	
Edell, Shapiro, & Finnan, LLC 9801 Washingtonian Blvd. Suite 750 Gaithersburg, MD 20878			VAN ROY, TOD THOMAS	
			ART UNIT	PAPER NUMBER
			2828	
			NOTIFICATION DATE	DELIVERY MODE
			11/13/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

epatent@usiplaw.com

Office Action Summary	Application No.	Applicant(s)	
	12/435,052	WOOD, LLOYD H.	
	Examiner	Art Unit	
	TOD T. VAN ROY	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 September 2012.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 1,3-10 and 12-15 is/are pending in the application.
 - 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1,3-10 and 12-15 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 - Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 - Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 4) Other: _____.

Art Unit: 2828

DETAILED ACTION

Response to Amendment

The Examiner acknowledges the amending of claims 1, 12, and the cancellation of claims 11 and 17-20.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-10 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US 2008/0002981) in view of Kozubal et al. (US 7925167), Wahlberg et al. (US 2007/0178834) and Holder et al. (US 2006/0158887).

Art Unit: 2828

With respect to claim 1, Valley teaches a system, comprising: a first satellite (fig.2 #24") in a geostationary orbit ([0023]); and a second satellite (fig.2 #24) in substantially the same orbit as the first satellite to form a satellite cluster (fig.2 [0023-24]), the second satellite having at least one transmitter configured to transmit optical signals to an optical receiver of the first satellite to enable an intersatellite link between the first and second satellites (abstract). Valley does not teach the use of LEDs to facilitate the optical communications link, the link to extend between 3 satellites in geostationary orbit in the same slot, or at least one of the satellites includes a communications polyhedron spaced from the satellite, the polyhedron being substantially spherical and comprising a plurality of conical reflectors each having an LED at a focal point thereof and arranged together such that outward faces thereof share edges and such that all directions are visible from the communications polyhedron. Wahlberg teaches at least 3 satellites (fig.1) in geostationary orbit in the same slot ([0035]). Kozubal teaches satellite communications using LEDs (abstract), mentions the importance of satellite to satellite communications (col.12 lines 64-67), and a communications polyhedron spaced from the satellite (fig.1 polyhedron shaped outer casing inherently spaced from internal satellite components, note no precise spacing claimed), the polyhedron being substantially spherical (fig.1), and such that all directions are visible from the communications polyhedron (fig.1 shape provides for access to all directions). Holder teaches an LED light source (fig.8) comprising a plurality of conical reflectors (fig.8 sides of individual LED casings) each having an LED at a focal point thereof ([0044]) and arranged together such that outward faces thereof

Art Unit: 2828

share edges (fig.8). It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the system of Valley to include at least a third satellite such that all 3 satellites are in geostationary orbit in the same slot as taught by Wahlberg in order to enable spatial redundancy and increase data capacity (Wahlberg, [0043]). Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the optical transmitters on each satellite of Valley with the LED based optical transmitters of Kozubal in order to avoid strict alignment control found in laser transmitters (Kozubal, col.2 lines 53-58), as well as other hurdles associated with radio transmitters (Kozubal, col.1 lines 34-52), and use a transmitter not needing precise alignment and control (Kozubal, col.3-4 lines 65-19). Additionally, it would have been obvious to encase the at least the main body of one of the satellites in a polyhedron shaped communications shell as taught by Kozubal in order to provide line of sight communications in numerous directions. Finally, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the single LED emitters of Kozubal with the array type emitters and conical casings of Holder in order to provide increased light output, collection efficiency, and directionality as taught by Holder (Holder, [0051]).

With respect to claim 3, Kozubal teaches the at least one LED is one of a plurality of LEDs arranged in a communication cone of the satellites (fig.2 LEDs arranged in cone shape).

With respect to claim 4, Valley, when modified by Kozubal and Holder, further teaches a plurality of communications reflectors respectively having arranged therein a

Art Unit: 2828

plurality of LEDs (a segment of the conical reflector arrays can be considered the communications reflectors).

With respect to claim 5, Valley, when modified by Kozubal and Holder, further teaches the communications reflectors are arranged laterally around each satellite (note lateral spacing of faces in fig.1 and LEDs in fig.2 of Kozubal).

With respect to claim 6, Kozubal further teaches a LED drive circuit (fig.10).

With respect to claim 7, Kozubal further teaches the LED drive circuit is configured to drive a plurality of LEDs (fig.10).

With respect to claim 8, Valley, Wahlberg and Kozubal teach the system outlined above, and Kozubal further teaches a photodetector configured to receive optical signals (fig.2 #22). Valley and Kozubal do not teach the photodetector detects light from the other satellites. It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the system of Valley and Kozubal to incorporate a photodetector to detect the LED light signal in order to complete the communications circuit.

With respect to claim 9, Kozubal further teaches an optical filter tuned to wavelengths of light emitted by the at least one LED (col.24 lines 16-19). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the taught spectral filter of Kozubal into the satellite system in order to reject unwanted frequencies.

With respect to claim 10, Valley further teaches the optical signals include communication information ([0009]).

With respect to claim 12, Valley, Wahlberg and Kozubal teach the device as outlined in the above claims, and further that a plurality of light emitting diodes (LEDs) arranged around an outside of the satellites (Kozubal fig.1 each face #20); a communication control module configured to determine whether data received at the satellite is to be communicated to another satellite via an intersatellite link (ISL) (Valley, function of system to rely info from first to second satellite, determination always positive).

With respect to claim 13, Kozubal teaches the plurality of LEDs are arranged in groups, where each group is arranged around the satellites (fig.1 each face #20).

With respect to claim 14, Kozubal teaches the at least one LED is one of a plurality of LEDs arranged in a communication cone of the other satellites (fig.2 LEDs arranged in cone shape).

With respect to claim 15, Valley, when modified by Kozubal, teaches the satellites are configured to orient itself or the LEDs mounted thereon such that at least one of the plurality of LEDs is facing a direction of the another satellite (Valley, fig.2, inherent to enable communication).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2828

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOD T. VAN ROY whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Stultz can be reached on (571)272-2339. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TOD T VAN ROY/
Primary Examiner, Art Unit 2828