

05/05/03

392 U.S. PTO

UTILITY PATENT APPLICATION TRANSMITTAL

Attorney Docket No.	OPTOLUM-002
First Inventor	JOEL M DRY
Title	LIGHT EMITTING DIODE LIGHT SOURCE
Express Mail Label No.	EU788250044US

(Only for new nonprovisional applications under 37 CFR 1.53(b))

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

- ☐ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
- ☒ Applicant claims small entity status.
See 37 CFR 1.27.
- ☒ Specification [Total Pages 18]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
- ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 2]
- Oath or Declaration [Total Pages 1]
 - ☐ Newly executed (original or copy)
 - ☒ Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 18 completed)
 - ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
- ☐ Application Data Sheet. See 37 CFR 1.76

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 - ☐ paper
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ACCOMPANYING APPLICATION PARTS

- ☐ Assignment Papers (cover sheet & document(s))
- ☐ 37 CFR 3.73(b) Statement of Power of Attorney (when there is an assignee)
- ☐ English Translation Document (if applicable)
- ☐ Information Disclosure Statement (IDS)/PTO-1449 [Copies of IDS Citations]
- ☐ Preliminary Amendment
- ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
- ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
- ☐ Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
- ☐ Other: _____

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP)

of prior application No.: 10, 156,810

Prior application information:

Examiner: TU TU V HO

Group Art Unit: 2818

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

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Telephone	602-463-2010	Fax	480-575-1321

Name (Print/Type)	DONALD J LENKSZUS	Registration No. (Attorney/Agent)	28,096
Signature		Date	5/5/2003

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES PATENT

Title: **LIGHT EMITTING DIODE LIGHT SOURCE**

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LIGHT EMITTING DIODE LIGHT SOURCE

RELATED APPLICATIONS

[0001] This application is a continuation of my co-pending application Serial No. 10/156,810 filed 05/29/2002.

FIELD OF THE INVENTION

[0002] This invention pertains to lighting sources, in general, and to a lighting source that utilizes Light Emitting Diodes (LED's), in particular.

BACKGROUND OF THE INVENTION

[0003] LED's have many advantages as light sources. However, in the past LED's have found application only as specialized light sources such as for vehicle brake lights, and other vehicle related lighting, and recently as flashlights. In these prior applications, the LED's are typically mounted in a planar fashion in a single plane that is disposed so as to be perpendicular to the viewing area. Typically the LED planar array is not used to provide illumination, but to provide signaling.

[0004] Recent attempts to provide LED light sources as sources of illumination have been few, and generally unsatisfactory from a general lighting standpoint.

[0005] It is highly desirable to provide a light source utilizing LED's that provides sufficient light output so as to be used as a general lighting source rather than as a signaling source.

[0006] One problem that has limited the use of LED's to specialty signaling and limited general illumination sources is that LED's typically generate significant amounts of heat. The heat is such that unless the heat is dissipated, the LED internal temperature will rise causing degradation or destruction of the LED.

[0007] It is therefore further desirable to provide an LED light source that efficiently conducts heat away from the LED's.

SUMMARY OF THE INVENTION

[0008] In accordance with the principles of the invention, an improved light source is provided. The light source includes an elongate thermally conductive member having an outer surface. A plurality of light emitting diodes is carried on the elongate member outer surface. At least some of the light emitting diodes are disposed in a first plane and others of said light emitting diodes are disposed in a second plane not coextensive with the first plane. Electrical conductors are carried by the elongate thermally conductive member and are connected to the plurality of light emitting diodes to supply electrical

power thereto. The elongate thermally conductive member conducts heat away from the light emitting diodes.

[0009] In accordance with one aspect of the invention, an illustrative embodiment of the invention utilizes light emitting diodes that emit white light. However, other embodiments of the invention may utilize light emitting diodes that are of different colors to produce monochromatic light or the colors may be chosen to produce white light or other colors.

[0010] In accordance with another aspect of the invention the elongate thermally conductive member transfers heat from the light emitting diodes to a medium within said elongate thermally conductive member. In the illustrative embodiment of the invention, the medium is air.

[0011] In accordance with another aspect of the invention, the elongate thermally conductive member has one or more fins to enhance heat transfer to the medium.

[0012] In accordance with another aspect of the invention the elongate thermally conductive member comprises a tube. In one embodiment of the invention, the tube has a cross-section in the shape of a polygon. In another embodiment of the invention, the tube has a cross-section having flat portions.

[0013] In accordance with another embodiment of the invention, the elongate thermally conductive member comprises a channel.

[0014] In accordance with the principles of the invention, the elongate thermally conductive member may comprise an extrusion, and the extrusion can be highly thermally conductive material such as aluminum.

[0015] In one preferred embodiment of the invention the elongate thermally conductive member is a tubular member. The tubular member has a polygon cross-section. However, other embodiments may have a tubular member of triangular cross-section.

[0016] In one embodiment of the invention, a flexible circuit is carried on a surface of said elongate thermally conductive member; the flexible circuit includes the electrical conductors.

[0017] In another aspect of the invention, the flexible circuit comprises a plurality of apertures for receiving said plurality of light emitting diodes. Each of the light emitting diodes is disposed in a corresponding one of the apertures and affixed in thermally conductive contact with said elongate thermally conductive member.

[0018] The elongate thermally conductive member includes a thermal transfer media disposed therein in a flow channel.

[0019] At least one clip for mounting the elongate thermally conductive member in a fixture may be included.

BRIEF DESCRIPTION OF THE DRAWING

[0020] The invention will be better understood from a reading of the following detailed description of a preferred embodiment of the invention taken in conjunction with the drawing figures, in which like reference indications identify like elements, and in which:

[0021] FIG. 1 is a planar side view of a light source in accordance with the principles of the invention;

[0022] FIG. 2 is a top planar view of the light source of FIG. 1;

[0023] Fig. 3 is a perspective view of the light source of FIG. 1 with mounting clips;

[0024] FIG. 4 is a planar side view of the light source of FIG. 3 showing mounting clips separated from the light source;

[0025] FIG. 5 is a top view of the light source and mounting clips of FIG. 4; and

[0026] FIG. 6 is a partial cross-section of the light source of FIG. 1.

DETAILED DESCRIPTION

[0027] A light source in accordance with the principles of the invention may be used as a decorative lighting element or may be utilized as a general illumination device. As shown in FIG. 1, a light source 100 in accordance with the invention includes an elongate thermally conductive member or heat sink 101. Elongate heat sink 101 is formed of a material that provides excellent thermal conductivity. Elongate heat sink 101 in the illustrative embodiment of the invention is a tubular aluminum extrusion. To improve the heat dissipative properties of light source 100, elongate heat sink 101 is configured to provide convective heat dissipation and cooling. As more clearly seen in FIG. 2, tubular heat sink 101 is hollow and has an interior cavity 103 that includes one or more heat dissipating fins 105. Fins 105 are shown as being triangular in shape, but may take on other shapes. Fins 105 are integrally formed on the interior of elongate heat sink 101. In the illustrative embodiment convective cooling is provided by movement of a medium 102 through elongate heat sink 101. The medium utilized in the illustrative embodiment is air, but may in some applications be a fluid other than air to provide for greater heat dissipation and cooling.

[0028] The exterior surface 107 of elongate heat sink 101 has a plurality of Light Emitting Diodes 109 disposed thereon. Each LED 109 in the illustrative embodiment comprises a white light emitting LED of a type that provides a high light output. Each LED 109 also generates significant amount of heat that must be dissipated to avoid thermal destruction of the LED. By combining a plurality of LEDs 109 on elongate heat

sink 101, a high light output light source that may be used for general lighting is provided.

[0029] Conductive paths 129 are provided to connect LEDs 109 to an electrical connector 111. The conductive paths may be disposed on an electrically insulating layer 131 or layers disposed on exterior surface 107. In the illustrative embodiment shown in the drawing figures, the conductive paths and insulating layer are provided by means of one or more flexible printed circuits 113 that are permanently disposed on surface 107. As more easily seen in FIG. 6, printed circuit 113 includes an electrically insulating layer 131 that carries conductive paths 129. As will be appreciated by those skilled in the art, other means of providing the electrically conductive paths may be provided.

[0030] Flexible printed circuit 113 has LED's 109 mounted to it in a variety of orientations ranging from 360 degrees to 180 degrees and possibly others depending on the application. Electrical connector 111 is disposed at one end of printed circuit 113. Connector 113 is coupleable to a separate power supply to receive electrical current. Flexible printed circuit 113, in the illustrative embodiment is coated with a non-electrically conductive epoxy that may be infused with optically reflective materials. Flexible printed circuit 113 is adhered to the tube 101 with a heat conducting epoxy to aid in the transmission of the heat from LEDs 109 to tube 101. Flexible printed circuit 113 has mounting holes 134 for receiving LEDs 109 such that the backs of LEDs 109 are in thermal contact with the tube surface 107.

[0031] Tubular heat sink 101 in the illustrative embodiment is formed in the shape of a polygon and may have any number of sides. Although tubular heat sink 101 in the illustrative embodiment is extruded aluminum, tubular heat sink 101 may comprise other thermal conductive material. Fins 105 may vary in number and location depending on particular LED layouts and wattage. In some instances, fins may be added to the exterior surface of tubular heat sink 101. In addition, apertures may be added to the tubular heat sink to enhance heat flow.

[0032] Light source 100 is mounted into a fixture and retained in position by mounting clips 121, 123 as most clearly seen in FIGs. 3, 4, and 5. Each of the clips is shaped so as to engage and retain light source 100. Each clip is affixed on one surface 122, 124 to a light fixture.

[0033] Although light source 100 is shown as comprising an elongate tubular heat sink, other extruded elongate members may be used such as channels.

[0034] In the illustrative embodiment shown, convection cooling by flow of air through tubular heat sink 101 is utilized such that cool or unheated air enters tubular heat sink 101 at its lower end and exits from the upper end as heated air. In higher wattage light sources, rather than utilizing air as the cooling medium, other fluids may be utilized. In particular, convective heat pumping may be used to remove heat from the interior of the heat sink.

[0035] In one particularly advantageous embodiment of the invention, the light source of the invention is configured to replace compact fluorescent lighting in decorative applications.

[0036] As will be appreciated by those skilled in the art, the principles of the invention are not limited to the use of light emitting diodes that emit white light. Different colored light emitting diodes may be used to produce monochromatic light or to produce light that is the combination of different colors.

[0037] Although the invention has been described in terms of illustrative embodiments, it is not intended that the invention be limited to the illustrative embodiments shown and described. It will be apparent to those skilled in the art that various changes and modifications may be made to the embodiments shown and described without departing from the spirit or scope of the invention. It is intended that the invention be limited only by the claims appended hereto.

WHAT IS CLAIMED IS:**CLAIM 1.** A light source comprising:

an elongate thermally conductive member having an outer surface;
a plurality of light emitting diodes carried on said elongate member outer surface
at least some of said light emitting diodes being disposed in a first plane and others of
said light emitting diodes being disposed in a second plane not coextensive with said first
plane;
electrical conductors carried by said elongate thermally conductive member and
connected to said plurality of light emitting diodes to supply electrical power thereto; and
said elongate thermally conductive member being configured to conduct heat
away from said light emitting diodes to fluid contained by said elongate thermally
conductive member;
said elongate thermally conductive member comprises one or more heat
dissipation protrusions.

CLAIM 2. A light source in accordance with claim 1, wherein:

at least one of said heat dissipation protrusions being carried on said elongate
member outer surface.

CLAIM 3. A light source in accordance with claim 2, wherein:

said elongate thermally conductive member is configured to conduct heat away from said light emitting diodes to fluid proximate said elongate member outer surface.

CLAIM 4. A light source in accordance with claim 3, wherein:

said fluid proximate said elongate member outer surface comprises air.

CLAIM 5. A light source in accordance with claim 4, wherein:

said fluid contained by said elongate thermally conductive member is a cooling medium other than air.

CLAIM 6. A light source in accordance with claim 3, wherein:

said elongate thermally conductive member comprises a tube.

CLAIM 7. A light source in accordance with claim 6, wherein:

said tube has a cross-section in the shape of a polygon.

CLAIM 8. A light source in accordance with claim 6, wherein:

said tube has a cross-section having flat portions.

CLAIM 9. A light source in accordance with claim 1, wherein:

said elongate thermally conductive member comprises a channel.

CLAIM 10. A light source in accordance with claim 3, wherein:

said elongate thermally conductive member comprises an extrusion.

CLAIM 11. A light source in accordance with claim 10, wherein:

said extrusion is an aluminum extrusion.

CLAIM 12. A light source in accordance with claim 10, wherein:

said elongate thermally conductive member is a tubular member.

CLAIM 13. A light source in accordance with claim 12, wherein:

said tubular member has a polygon cross-section.

CLAIM 14. A light source in accordance with claim 1, wherein:

said fluid is moved in said elongate thermally conductive member.

CLAIM 15. A light source in accordance with claim 1, wherein:

said elongate thermally conductive member comprises a thermal transfer media disposed therein.

CLAIM 16. A light source in accordance with claim 15, wherein:

said elongate thermally conductive member comprises a flow channel for said thermal transfer media.

CLAIM 17. A light source in accordance with claim 1, wherein:

each of said light emitting diodes emits white light.

CLAIM 18. A light source in accordance with claim 1, wherein:

at least some of said light emitting diodes emit colored light.

CLAIM 19. A light source comprising:

an elongate thermally conductive member having an outer surface;
at least one light emitting diodes carried on said elongate member outer surface;
one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting diodes to supply electrical power thereto;

said elongate thermally conductive member being configured to conduct heat away from said at least one light emitting diode to fluid contained by said elongate thermally conductive member; and

said elongate thermally conductive member comprises one or more heat dissipation protrusions.

CLAIM 20. A light source comprising:

an elongate thermally conductive member having an outer surface;
at least one light emitting diodes carried on said elongate member outer surface;
one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting diodes to supply electrical power thereto;

said elongate thermally conductive member being configured to conduct heat away from said at least one light emitting diode to fluid contained by said elongate thermally conductive member; and

said fluid is moved in said elongate thermally conductive member.

CLAIM 21. A light source comprising:

an elongate thermally conductive member having an outer surface;
a plurality of light emitting diodes carried on said elongate member outer surface
at least some of said light emitting diodes being disposed in a first plane and others of said light emitting diodes being disposed in a second plane not coextensive with said first plane;

electrical conductors carried by said elongate thermally conductive member and connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said light emitting diodes to fluid contained by said elongate thermally conductive member; and

said fluid is moved in said elongate thermally conductive member.

CLAIM 22. A light source comprising:

an elongate thermally conductive member having an outer surface;

a plurality of light emitting diodes carried on said elongate member outer surface at least some of said light emitting diodes being disposed in a first plane and others of said light emitting diodes being disposed in a second plane not coextensive with said first plane;

electrical conductors carried by said elongate thermally conductive member and connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said light emitting diodes to fluid contained by said elongate thermally conductive member; and

a coating carried on said elongate thermally conductive member.

CLAIM 23. A light source in accordance with claim 22, wherein:

said coating is infused with optically reflective material.

ABSTRACT OF THE DISCLOSURE

A light source that utilizes light emitting diodes that emit white light is disclosed. The diodes are mounted on an elongate member having at least two surfaces upon which the light emitting diodes are mounted. The elongate member is thermally conductive and is utilized to cool the light emitting diodes. In the illustrative embodiment, the elongate member is a tubular member through which a heat transfer medium flows.

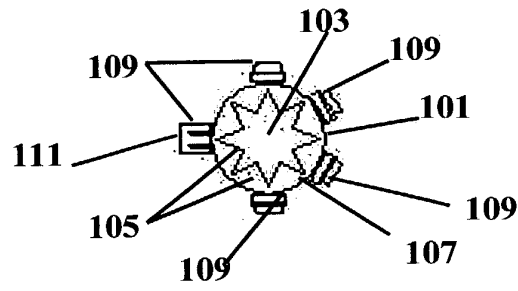


FIG. 2

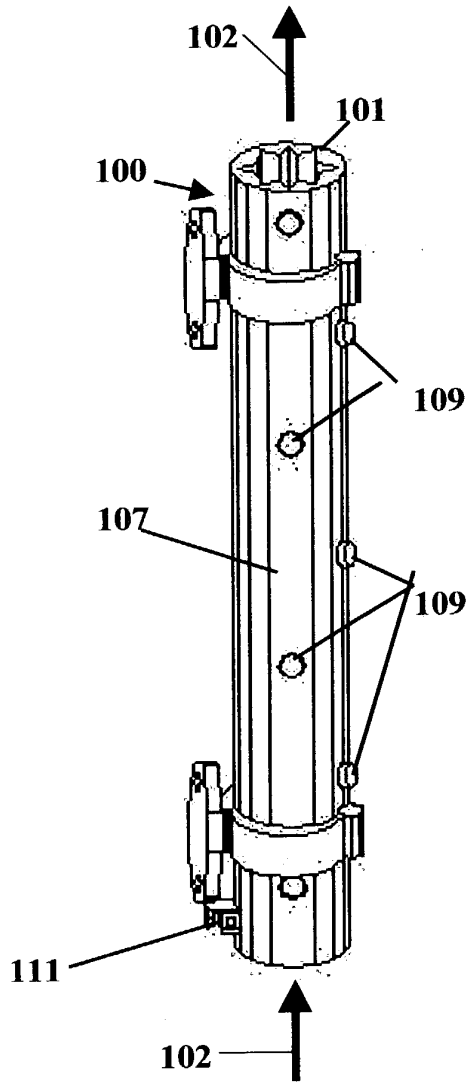


FIG. 3

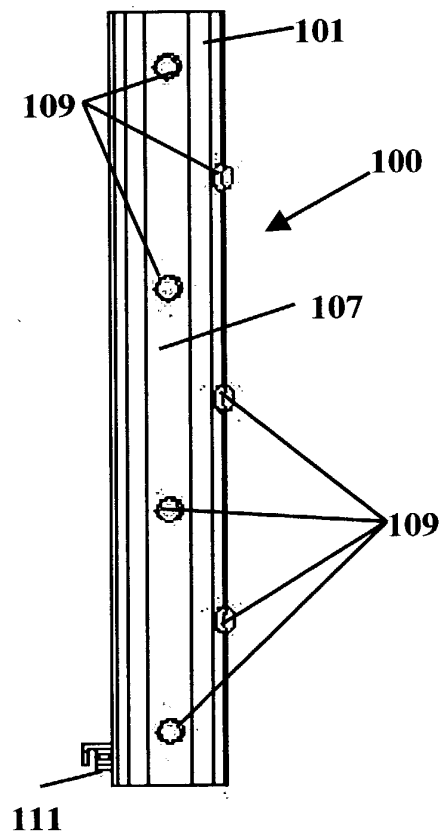
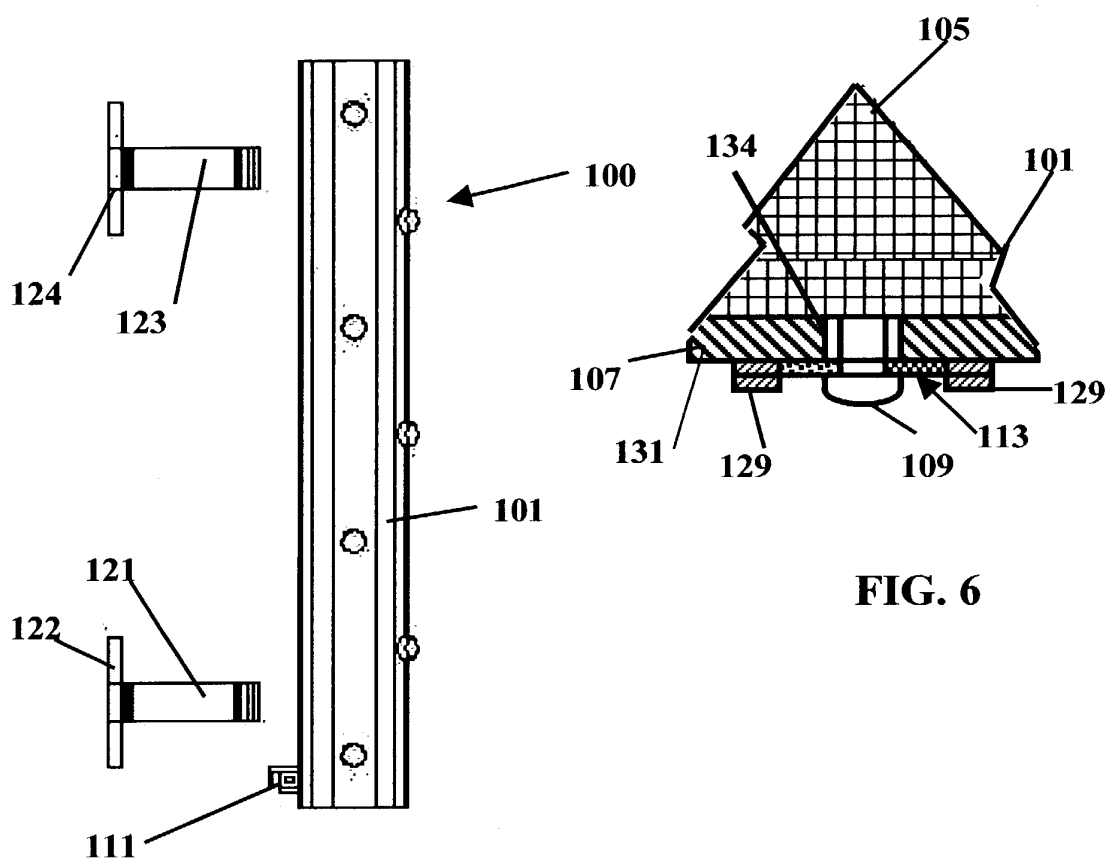
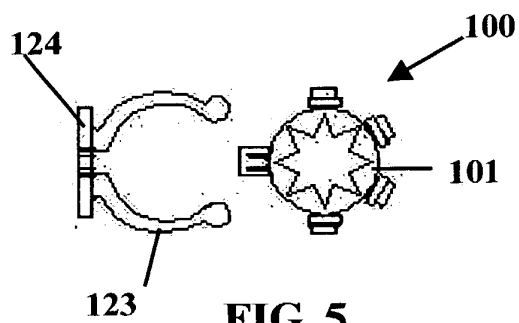


FIG. 1



Attorney Docket No.: OPTOLUM-1
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: :
JOEL M. DRY :
Filed: Herewith :
Title: LIGHT EMITTING DIODE LIGHT SOURCE :
Serial No.: not yet assigned :

DECLARATION

As a below named inventor, I hereby declare that:

Type of Declaration

This declaration is made in an original application for utility patent.

Inventorship and Specification Identification

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am an original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled

LIGHT EMITTING DIODE LIGHT SOURCE,

filed on even date herewith.

Acknowledgment of Review of Papers and Duty of Candor

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims thereof.

I acknowledge the duty to disclose information that is material to the examination of this application, in accordance with Title 37, Code of Federal Regulations, section 1.56(a).

Declaration

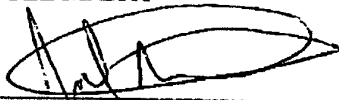
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature

Full name of inventor:

JOEL M. DRY

Inventor's signature:



Date:

MAY 28, 2002

Country of Citizenship:

U.S.A.

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NEW ORLEANS, LOUISIANA 70118

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OPTOLUM-002

First Inventor

JOEL M DRY

Title

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(Should be specifically itemized)
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19. CORRESPONDENCE ADDRESS

☐ Customer Number or Bar Code Label

(Insert Customer No. or Attach bar code label here)

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28,096

Signature

Date

5/5/2003

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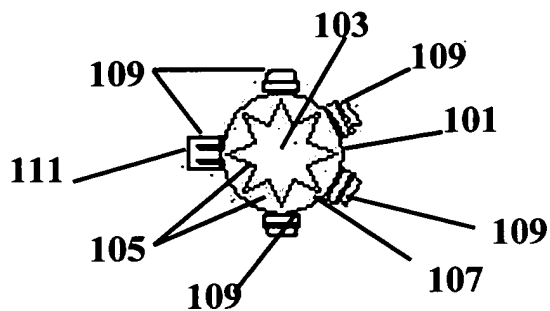


FIG. 2

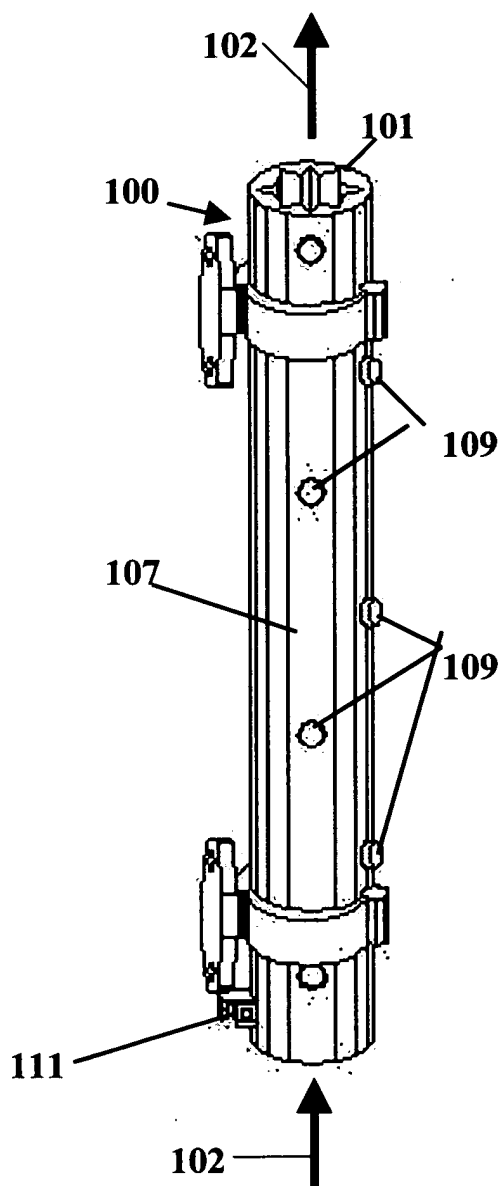


FIG. 3

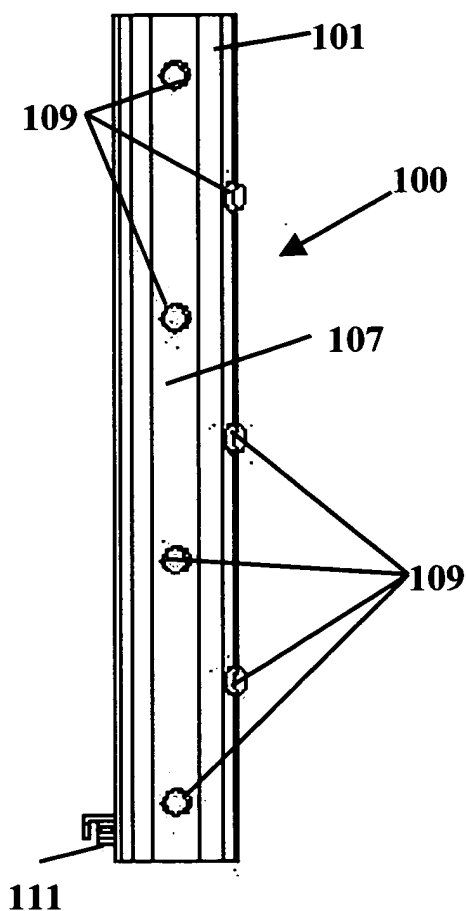


FIG. 1

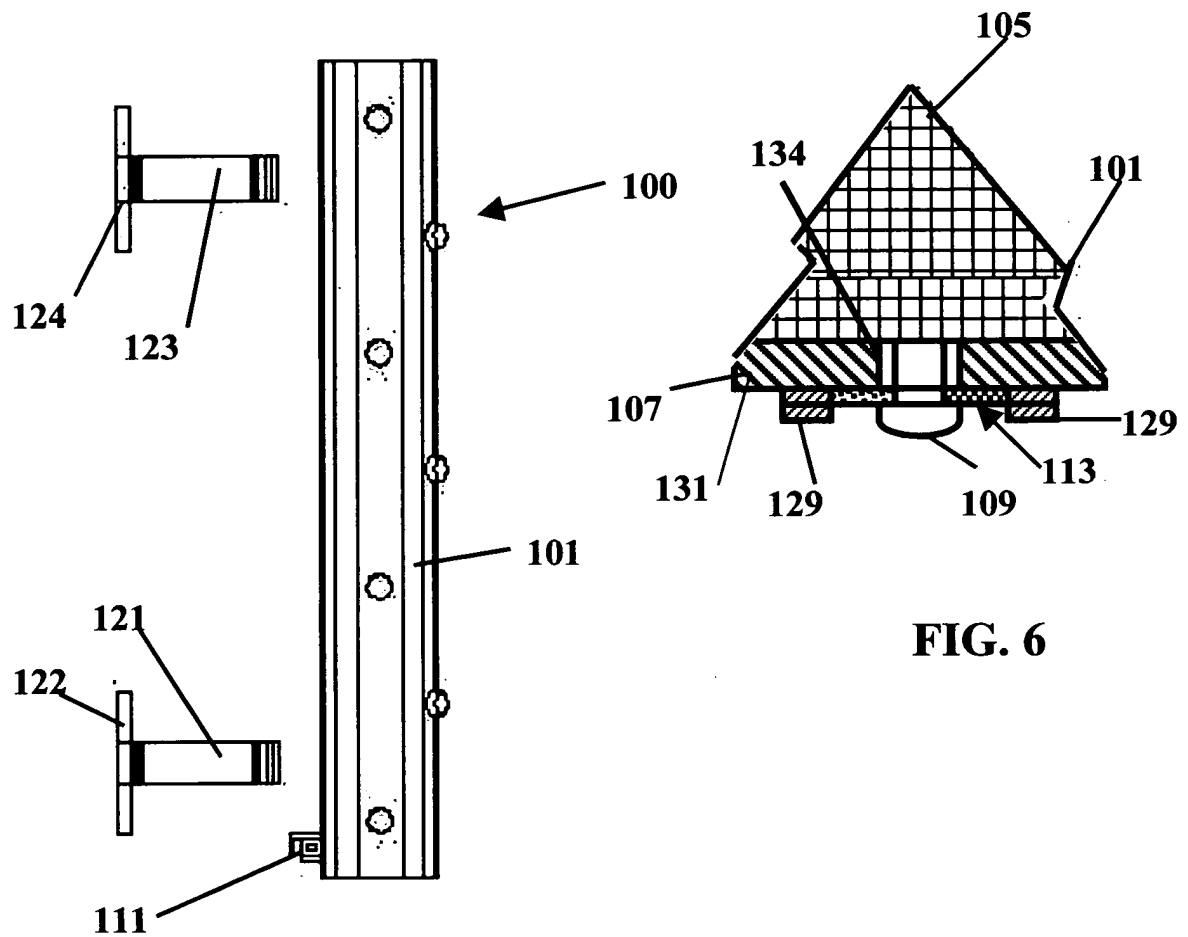
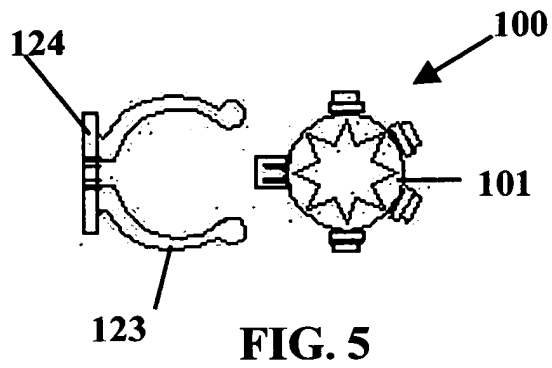


FIG. 6

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**APPLICATION FOR UNITED STATES PATENT**

***Title:* LIGHT EMITTING DIODE LIGHT SOURCE**

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LIGHT EMITTING DIODE LIGHT SOURCE

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[0001] This application is a continuation of my co-pending application Serial No. 10/156,810 filed 05/29/2002.

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[0002] This invention pertains to lighting sources, in general, and to a lighting source that utilizes Light Emitting Diodes (LED's), in particular.

BACKGROUND OF THE INVENTION

[0003] LED's have many advantages as light sources. However, in the past LED's have found application only as specialized light sources such as for vehicle brake lights, and other vehicle related lighting, and recently as flashlights. In these prior applications, the LED's are typically mounted in a planar fashion in a single plane that is disposed so as to be perpendicular to the viewing area. Typically the LED planar array is not used to provide illumination, but to provide signaling.

[0004] Recent attempts to provide LED light sources as sources of illumination have been few, and generally unsatisfactory from a general lighting standpoint.

[0005] It is highly desirable to provide a light source utilizing LED's that provides sufficient light output so as to be used as a general lighting source rather than as a signaling source.

[0006] One problem that has limited the use of LED's to specialty signaling and limited general illumination sources is that LED's typically generate significant amounts of heat. The heat is such that unless the heat is dissipated, the LED internal temperature will rise causing degradation or destruction of the LED.

[0007] It is therefore further desirable to provide an LED light source that efficiently conducts heat away from the LED's.

SUMMARY OF THE INVENTION

[0008] In accordance with the principles of the invention, an improved light source is provided. The light source includes an elongate thermally conductive member having an outer surface. A plurality of light emitting diodes is carried on the elongate member outer surface. At least some of the light emitting diodes are disposed in a first plane and others of said light emitting diodes are disposed in a second plane not coextensive with the first plane. Electrical conductors are carried by the elongate thermally conductive member and are connected to the plurality of light emitting diodes to supply electrical

power thereto. The elongate thermally conductive member conducts heat away from the light emitting diodes.

[0009] In accordance with one aspect of the invention, an illustrative embodiment of the invention utilizes light emitting diodes that emit white light. However, other embodiments of the invention may utilize light emitting diodes that are of different colors to produce monochromatic light or the colors may be chosen to produce white light or other colors.

[0010] In accordance with another aspect of the invention the elongate thermally conductive member transfers heat from the light emitting diodes to a medium within said elongate thermally conductive member. In the illustrative embodiment of the invention, the medium is air.

[0011] In accordance with another aspect of the invention, the elongate thermally conductive member has one or more fins to enhance heat transfer to the medium.

[0012] In accordance with another aspect of the invention the elongate thermally conductive member comprises a tube. In one embodiment of the invention, the tube has a cross-section in the shape of a polygon. In another embodiment of the invention, the tube has a cross-section having flat portions.

[0013] In accordance with another embodiment of the invention, the elongate thermally conductive member comprises a channel.

[0014] In accordance with the principles of the invention, the elongate thermally conductive member may comprise an extrusion, and the extrusion can be highly thermally conductive material such as aluminum.

[0015] In one preferred embodiment of the invention the elongate thermally conductive member is a tubular member. The tubular member has a polygon cross-section. However, other embodiments may have a tubular member of triangular cross-section.

[0016] In one embodiment of the invention, a flexible circuit is carried on a surface of said elongate thermally conductive member; the flexible circuit includes the electrical conductors.

[0017] In another aspect of the invention, the flexible circuit comprises a plurality of apertures for receiving said plurality of light emitting diodes. Each of the light emitting diodes is disposed in a corresponding one of the apertures and affixed in thermally conductive contact with said elongate thermally conductive member.

[0018] The elongate thermally conductive member includes a thermal transfer media disposed therein in a flow channel.

[0019] At least one clip for mounting the elongate thermally conductive member in a fixture may be included.

BRIEF DESCRIPTION OF THE DRAWING

[0020] The invention will be better understood from a reading of the following detailed description of a preferred embodiment of the invention taken in conjunction with the drawing figures, in which like reference indications identify like elements, and in which:

[0021] FIG. 1 is a planar side view of a light source in accordance with the principles of the invention;

[0022] FIG. 2 is a top planar view of the light source of FIG. 1;

[0023] Fig. 3 is a perspective view of the light source of FIG. 1 with mounting clips;

[0024] FIG. 4 is a planar side view of the light source of FIG. 3 showing mounting clips separated from the light source;

[0025] FIG. 5 is a top view of the light source and mounting clips of FIG. 4; and

[0026] FIG. 6 is a partial cross-section of the light source of FIG. 1.

DETAILED DESCRIPTION

[0027] A light source in accordance with the principles of the invention may be used as a decorative lighting element or may be utilized as a general illumination device. As shown in FIG. 1, a light source 100 in accordance with the invention includes an elongate thermally conductive member or heat sink 101. Elongate heat sink 101 is formed of a material that provides excellent thermal conductivity. Elongate heat sink 101 in the illustrative embodiment of the invention is a tubular aluminum extrusion. To improve the heat dissipative properties of light source 100, elongate heat sink 101 is configured to provide convective heat dissipation and cooling. As more clearly seen in FIG. 2, tubular heat sink 101 is hollow and has an interior cavity 103 that includes one or more heat dissipating fins 105. Fins 105 are shown as being triangular in shape, but may take on other shapes. Fins 105 are integrally formed on the interior of elongate heat sink 101. In the illustrative embodiment convective cooling is provided by movement of a medium 102 through elongate heat sink 101. The medium utilized in the illustrative embodiment is air, but may in some applications be a fluid other than air to provide for greater heat dissipation and cooling.

[0028] The exterior surface 107 of elongate heat sink 101 has a plurality of Light Emitting Diodes 109 disposed thereon. Each LED 109 in the illustrative embodiment comprises a white light emitting LED of a type that provides a high light output. Each LED 109 also generates significant amount of heat that must be dissipated to avoid thermal destruction of the LED. By combining a plurality of LEDs 109 on elongate heat

sink 101, a high light output light source that may be used for general lighting is provided.

[0029] Conductive paths 129 are provided to connect LEDs 109 to an electrical connector 111. The conductive paths may be disposed on an electrically insulating layer 131 or layers disposed on exterior surface 107. In the illustrative embodiment shown in the drawing figures, the conductive paths and insulating layer are provided by means of one or more flexible printed circuits 113 that are permanently disposed on surface 107. As more easily seen in FIG. 6, printed circuit 113 includes an electrically insulating layer 131 that carries conductive paths 129. As will be appreciated by those skilled in the art, other means of providing the electrically conductive paths may be provided.

[0030] Flexible printed circuit 113 has LED's 109 mounted to it in a variety of orientations ranging from 360 degrees to 180 degrees and possibly others depending on the application. Electrical connector 111 is disposed at one end of printed circuit 113. Connector 113 is coupleable to a separate power supply to receive electrical current. Flexible printed circuit 113, in the illustrative embodiment is coated with a non-electrically conductive epoxy that may be infused with optically reflective materials. Flexible printed circuit 113 is adhered to the tube 101 with a heat conducting epoxy to aid in the transmission of the heat from LEDs 109 to tube 101. Flexible printed circuit 113 has mounting holes 134 for receiving LEDs 109 such that the backs of LEDs 109 are in thermal contact with the tube surface 107.

[0031] Tubular heat sink 101 in the illustrative embodiment is formed in the shape of a polygon and may have any number of sides. Although tubular heat sink 101 in the illustrative embodiment is extruded aluminum, tubular heat sink 101 may comprise other thermal conductive material. Fins 105 may vary in number and location depending on particular LED layouts and wattage. In some instances, fins may be added to the exterior surface of tubular heat sink 101. In addition, apertures may be added to the tubular heat sink to enhance heat flow.

[0032] Light source 100 is mounted into a fixture and retained in position by mounting clips 121, 123 as most clearly seen in FIGs. 3, 4, and 5. Each of the clips is shaped so as to engage and retain light source 100. Each clip is affixed on one surface 122, 124 to a light fixture.

[0033] Although light source 100 is shown as comprising an elongate tubular heat sink, other extruded elongate members may be used such as channels.

[0034] In the illustrative embodiment shown, convection cooling by flow of air through tubular heat sink 101 is utilized such that cool or unheated air enters tubular heat sink 101 at its lower end and exits from the upper end as heated air. In higher wattage light sources, rather than utilizing air as the cooling medium, other fluids may be utilized. In particular, convective heat pumping may be used to remove heat from the interior of the heat sink.

[0035] In one particularly advantageous embodiment of the invention, the light source of the invention is configured to replace compact fluorescent lighting in decorative applications.

[0036] As will be appreciated by those skilled in the art, the principles of the invention are not limited to the use of light emitting diodes that emit white light. Different colored light emitting diodes may be used to produce monochromatic light or to produce light that is the combination of different colors.

[0037] Although the invention has been described in terms of illustrative embodiments, it is not intended that the invention be limited to the illustrative embodiments shown and described. It will be apparent to those skilled in the art that various changes and modifications may be made to the embodiments shown and described without departing from the spirit or scope of the invention. It is intended that the invention be limited only by the claims appended hereto.

WHAT IS CLAIMED IS:**CLAIM 1.** A light source comprising:

an elongate thermally conductive member having an outer surface;

a plurality of light emitting diodes carried on said elongate member outer surface
at least some of said light emitting diodes being disposed in a first plane and others of
said light emitting diodes being disposed in a second plane not coextensive with said first
plane;

electrical conductors carried by said elongate thermally conductive member and
connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat
away from said light emitting diodes to fluid contained by said elongate thermally
conductive member;

said elongate thermally conductive member comprises one or more heat
dissipation protrusions.

CLAIM 2. A light source in accordance with claim 1, wherein:

at least one of said heat dissipation protrusions being carried on said elongate
member outer surface.

CLAIM 3. A light source in accordance with claim 2, wherein:

said elongate thermally conductive member is configured to conduct heat away from said light emitting diodes to fluid proximate said elongate member outer surface.

CLAIM 4. A light source in accordance with claim 3, wherein:

said fluid proximate said elongate member outer surface comprises air.

CLAIM 5. A light source in accordance with claim 4, wherein:

said fluid contained by said elongate thermally conductive member is a cooling medium other than air.

CLAIM 6. A light source in accordance with claim 3, wherein:

said elongate thermally conductive member comprises a tube.

CLAIM 7. A light source in accordance with claim 6, wherein:

said tube has a cross-section in the shape of a polygon.

CLAIM 8. A light source in accordance with claim 6, wherein:

said tube has a cross-section having flat portions.

CLAIM 9. A light source in accordance with claim 1, wherein:

said elongate thermally conductive member comprises a channel.

CLAIM 10. A light source in accordance with claim 3, wherein:

said elongate thermally conductive member comprises an extrusion.

CLAIM 11. A light source in accordance with claim 10, wherein:

said extrusion is an aluminum extrusion.

CLAIM 12. A light source in accordance with claim 10, wherein:

said elongate thermally conductive member is a tubular member.

CLAIM 13. A light source in accordance with claim 12, wherein:

said tubular member has a polygon cross-section.

CLAIM 14. A light source in accordance with claim 1, wherein:

said fluid is moved in said elongate thermally conductive member.

CLAIM 15. A light source in accordance with claim 1, wherein:

said elongate thermally conductive member comprises a thermal transfer media disposed therein.

CLAIM 16. A light source in accordance with claim 15, wherein:

said elongate thermally conductive member comprises a flow channel for said thermal transfer media.

CLAIM 17. A light source in accordance with claim 1, wherein:

each of said light emitting diodes emits white light.

CLAIM 18. A light source in accordance with claim 1, wherein:

at least some of said light emitting diodes emit colored light.

CLAIM 19. A light source comprising:

an elongate thermally conductive member having an outer surface;
at least one light emitting diodes carried on said elongate member outer surface;
one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting diodes to supply electrical power thereto;

said elongate thermally conductive member being configured to conduct heat away from said at least one light emitting diode to fluid contained by said elongate thermally conductive member; and

said elongate thermally conductive member comprises one or more heat dissipation protrusions.

CLAIM 20. A light source comprising:

an elongate thermally conductive member having an outer surface;
at least one light emitting diodes carried on said elongate member outer surface;
one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting diodes to supply electrical power thereto;

said elongate thermally conductive member being configured to conduct heat away from said at least one light emitting diode to fluid contained by said elongate thermally conductive member; and

said fluid is moved in said elongate thermally conductive member.

CLAIM 21. A light source comprising:

an elongate thermally conductive member having an outer surface;
a plurality of light emitting diodes carried on said elongate member outer surface
at least some of said light emitting diodes being disposed in a first plane and others of said light emitting diodes being disposed in a second plane not coextensive with said first plane;

electrical conductors carried by said elongate thermally conductive member and connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said light emitting diodes to fluid contained by said elongate thermally conductive member; and

said fluid is moved in said elongate thermally conductive member.

CLAIM 22. A light source comprising:

an elongate thermally conductive member having an outer surface;

a plurality of light emitting diodes carried on said elongate member outer surface at least some of said light emitting diodes being disposed in a first plane and others of said light emitting diodes being disposed in a second plane not coextensive with said first plane;

electrical conductors carried by said elongate thermally conductive member and connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said light emitting diodes to fluid contained by said elongate thermally conductive member; and

a coating carried on said elongate thermally conductive member.

CLAIM 23. A light source in accordance with claim 22, wherein:

said coating is infused with optically reflective material.

ABSTRACT OF THE DISCLOSURE

A light source that utilizes light emitting diodes that emit white light is disclosed. The diodes are mounted on an elongate member having at least two surfaces upon which the light emitting diodes are mounted. The elongate member is thermally conductive and is utilized to cool the light emitting diodes. In the illustrative embodiment, the elongate member is a tubular member through which a heat transfer medium flows.

Attorney Docket No.: OPTOLUM-1
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: :
JOEL M. DRY :
Filed: Herewith :
Title: LIGHT EMITTING DIODE LIGHT SOURCE :
Serial No.: not yet assigned :

DECLARATION

As a below named inventor, I hereby declare that:

Type of Declaration

This declaration is made in an original application for utility patent.

Inventorship and Specification Identification

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am an original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled

LIGHT EMITTING DIODE LIGHT SOURCE,

filed on even date herewith.

Acknowledgment of Review of Papers and Duty of Candor

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims thereof.

I acknowledge the duty to disclose information that is material to the examination of this application, in accordance with Title 37, Code of Federal Regulations, section 1.56(a).

Declaration

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signature

Full name of inventor:

JOEL M. DRY

Inventor's signature:



Date:

MAY 28, 2002

Country of Citizenship:

U.S.A.

Residence (City & State):

NEW ORLEANS, LOUISIANA

Post Office Address:

1457 CALHOUN STREET
NEW ORLEANS, LOUISIANA 70118

PATENT APPLICATION FEE DETERMINATION RECORD

Effective January 1, 2003

Application or Docket Number

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	23	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	23 minus 20 =	*
INDEPENDENT CLAIMS	5 minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)		(Column 2)	(Column 3)	
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	Minus	**	=
	Independent	*	Minus	***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

	(Column 1)		(Column 2)	(Column 3)	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	Minus	**	=
	Independent	*	Minus	***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

	(Column 1)		(Column 2)	(Column 3)	
AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	Minus	**	=
	Independent	*	Minus	***	=
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐

RATE	FEE
BASIC FEE	375.00
X\$ 9=	27.00
X42=	84.00
+140=	
TOTAL	486.00

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	750.00
X\$18=	
X84=	
+280=	
TOTAL	

SMALL ENTITY

RATE	ADDI- TIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

OR OTHER THAN SMALL ENTITY

RATE	ADDI- TIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

RATE	ADDI- TIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

RATE	ADDI- TIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

RATE	ADDI- TIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

RATE	ADDI- TIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	



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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/430,732	05/05/2003	Joel M. Dry	OPTOLUM-002

DONALD J LENKSZUS
 PO Box 3064
 CAREFREE, AZ 85377-3064

CONFIRMATION NO. 3781

FORMALITIES LETTER



OC000000010515258

Date Mailed: 07/17/2003

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted***Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
Applicant must submit \$ 375 to complete the basic filing fee for a small entity.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

Items Required To Avoid Processing Delays:

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- Additional claim fees of **\$111** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **\$551** for a Small Entity

- **\$375** Statutory basic filing fee.
- **\$65** Late oath or declaration Surcharge.
- Total additional claim fee(s) for this application is **\$111**
 - **\$27** for 3 total claims over 20 .
 - **\$84** for 2 independent claims over 3 .

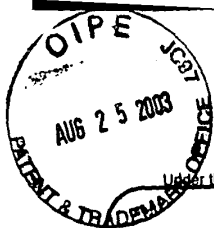
A copy of this notice MUST be returned with the reply.

nd

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PART 3 - OFFICE COPY



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PTO/SB/21 (08-03)

Approved for use through 08/30/2003. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	10/430,732	
	Filing Date	05/05/2003	
	First Named Inventor	JOEL M DRY	
	Art Unit	2818	
	Examiner Name		
Total Number of Pages in This Submission	11	Attorney Docket Number	OPTOLUM-002

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Technology Center (TC)
<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	Assignment cover/assignment
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> CD, Number of CD(s) _____	Formalities Letter
<input type="checkbox"/> Certified Copy of Priority Document(s)	Remarks EXPRESS MAIL ER156297199US	Declaration
<input checked="" type="checkbox"/> Response to Missing Parts/Incomplete Application		Postcard to acknowledge receipt
<input checked="" type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	DONALD J LENKSZUS, PC	
Signature		
Date	08/25/2003	

CERTIFICATE OF TRANSMISSION/MAILING		
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.		
Typed or printed name	DONALD J LENKSZUS	
Signature		Date 08/25/2003

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AUG 25 2003

FEE TRANSMITTAL

for FY 2003

Effective 01/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT

(\$) 591

Complete if Known

Application Number 10/430,732
 Filing Date 05/05/2003
 First Named Inventor JOEL M. DRY
 Examiner Name
 Art Unit 2818
 Attorney Docket No. OPTOLUM-002

METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit card ☐ Money Order ☐ Other ☐ None
☐ Deposit Account:
 Deposit
 Account
 Number
 Deposit
 Account
 Name

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Credit any overpayments☐ Charge any additional fee(s) during the pendency of this application☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 750	2001 375	Utility filing fee	375
1002 330	2002 165	Design filing fee	
1003 520	2003 260	Plant filing fee	
1004 750	2004 375	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1)			(\$) 375

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
23	-20** = 3	9	27
Independent Claims	5	-3** = 2	42
Multiple Dependent			111

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 84	2201 42	Independent claims in excess of 3
1203 280	2203 140	Multiple dependent claim, if not paid
1204 84	2204 42	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$) 111

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	65
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for <i>ex parte</i> reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 410	2252 205	Extension for reply within second month	
1253 930	2253 465	Extension for reply within third month	
1254 1,450	2254 725	Extension for reply within fourth month	
1255 1,970	2255 985	Extension for reply within fifth month	
1401 320	2401 160	Notice of Appeal	
1402 320	2402 160	Filing a brief in support of an appeal	
1403 280	2403 140	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,300	2453 650	Petition to revive - unintentional	
1501 1,300	2501 650	Utility issue fee (or reissue)	
1502 470	2502 235	Design issue fee	
1503 630	2503 315	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	40
1809 750	2809 375	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 750	2810 375	For each additional invention to be examined (37 CFR 1.129(b))	
1801 750	2801 375	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 105

SUBMITTED BY

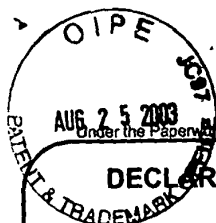
(Complete if applicable)

Name (Print/Type) DONALD J LENKSZUS Registration No. 28,096 Telephone 602-463-2010
 Signature [Signature] (Attorney/Agent) Date 08/25/2003

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



PTO/SB/01 (06-03)
Approved for use through 07/31/2003. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

☐ Declaration Submitted With Initial Filing **OR** ☒ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number	OPTOLUM-002
First Named Inventor	JOEL M. DRY
COMPLETE IF KNOWN	
Application Number	10/430,732
Filing Date	05/05/2003
Art Unit	2818
Examiner Name	

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LIGHT EMITTING DIODE LIGHT SOURCE

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) **05/05/2003** as United States Application Number or PCT International

Application Number **10/430,732** and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

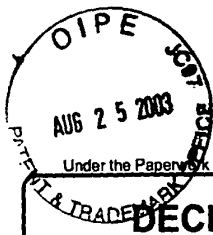
Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority		Certified Copy Attached?	
			Not Claimed		Yes	No
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☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

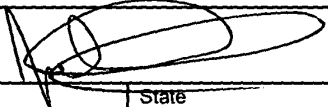
This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 21 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



PTO/SB/01 (06-03)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

DECLARATION — Utility or Design Patent Application

Direct all correspondence to: <input type="checkbox"/> Customer Number: <input type="text"/>				OR <input checked="" type="checkbox"/> Correspondence address below	
Name DONALD J LENKSZUS					
Address PO BOX 3064					
City CAREFREE		State AZ		ZIP 85377-3064	
Country USA		Telephone 602-463-2010		Fax 480-575-1321	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.					
NAME OF SOLE OR FIRST INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any]) JOEL M.				Family Name or Surname DRY	
Inventor's Signature 				Date 8-22-03	
Residence: City WINTERS		State TEXAS		Country USA	
Citizenship USA					
Mailing Address 99 JOHN STREET, SUITE 926					
City NEW YORK		State NEW YORK		ZIP 10038	
Country USA					
NAME OF SECOND INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])				Family Name or Surname	
Inventor's Signature				Date	
Residence: City		State		Country	
Citizenship					
Mailing Address					
City		State		ZIP	
Country					
<input type="checkbox"/> Additional inventors or a legal representative are being named on the _____ supplemental sheet(s) PTO/SB/02A or 02LR attached hereto.					

[Page 2 of 2]



Attorney Docket No.: OPTOLUM-002
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: :
JOEL M. DRY :
Filed: 05/05/2003 :
Title: LIGHT EMITTING DIODE LIGHT SOURCE:
Serial No.: 10/430,732

POWER OF ATTORNEY

OPTOLUM, INC. is the owner of the above-identified patent, pursuant to an Assignment from the owners of record, JOEL M. DRY to OPTOLUM, INC. In accordance with 37 C.F.R. § 3.73(b), a copy of the Assignment is attached hereto. A copy of the Assignment has also been filed or is being filed contemporaneously herewith for recordation with the Assignment Branch.

OPTOLUM, INC. hereby revokes all previous powers of attorney and appoints

Donald J. Lenkszus, Reg. No. 28,096
DONALD J. LENKSZUS, P.C.
P.O. BOX 3064
CAREFREE, AZ 85377
telephone (602) 463-2010
facsimile (480) 575- 1321

as its attorney with full powers of substitution, revocation and association, to transact all business in the United States Patent and Trademark Office in connection with the above-identified patent application.

Please direct all correspondence regarding this patent application to Donald J. Lenkszus at the above address and telephone number.

Dated: AUGUST 22, 2003

OPTOLUM, INC.

By: 

Name: JOEL M. DRY
Title: CEO

ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, I,

JOEL DRY, an individual residing at 99 John Street, Suite 926 New York, NY 10038 (referred to as **ASSIGNOR**) hereby assigns, transfers, and delivers to

OPTOLUM, INC. an Arizona corporation, having a principal place of business located at 4115 N. 62nd St, Scottsdale, Arizona 85251, its successors and assigns (collectively referred to herein as "**ASSIGNEE**")

all right, title and interest in and to any and all subject matter of the invention(s) disclosed in the application for United States Patent titled

LIGHT EMITTING DIODE LIGHT SOURCE

filed in the U.S. Patent and Trademark Office on May 5, 2003, as Serial Number 10/430,732 and in and to said application, all continuations, continuations in part and divisions thereof, and the exclusive right to make application for patents, reissues, renewals and extensions thereof, and in and to all patents and all Convention and Treaty rights of all kinds, in the United States of America and all other countries throughout the world, for all such subject matter. ASSIGNOR requests the applicable official having authority to issue patents or corresponding rights to issue same on the subject matter of the said invention(s) to ASSIGNEE and, if called upon by ASSIGNEE or its legal representatives, ASSIGNOR agrees to promptly sign all documents necessary to secure all such patents and rights and for issuance of same to ASSIGNEE.

ASSIGNOR confirms that no agreement has been entered into conflict with this Assignment. of ASSIGNOR further agrees to provide information within ASSIGNOR'S knowledge or belief, and do all other relevant things that ASSIGNEE or its legal representatives deem necessary or desirable and request of ASSIGNOR in connection with obtaining or maintaining any such patents, or in order to perfect ASSIGNEE's ownership of the right, title and interest conveyed by this Assignment, or in connection with this Assignment, without payment of any further consideration on the understanding, however, that ASSIGNEE will bear all reasonable expenses actually incurred for or in connection with such matters. This Assignment and the obligations assumed by ASSIGNOR shall be binding on ASSIGNOR's heirs and personal representatives.

Date: AUGUST 22, 2003


Joel Dry



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.
10/430,732	05/05/2003	Joel M. Dry	OPTOLUM-002	3781

7590 06/10/2004
DONALD J LENKSZUS
PO Box 3064
CAREFREE, AZ 85377-3064

EXAMINER


HO, TU TU V

ART UNIT PAPER NUMBER

2818

DATE MAILED: 06/10/2004

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

Office Action Summary	Application No. 10/430,732	Applicant(s) DRY, JOEL M.	
	Examiner Tu-Tu Ho	Art Unit 2818	

-- 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) 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 the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- 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 05 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ 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

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2003 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).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

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) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Cree Ex. 1011

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. **Claims 1-22** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,573,536 (the '536 patent).

Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 1-20 of the present invention is a similar version of the claimed invention in claims 1-23 of the above-identified U.S. Patent with similar intended scope.

Referring to **claim 5**, the claims of the '536 patent recite an LED light source comprising an elongated thermally conductive member having LED's on an outer surface of the elongated thermally conductive member, wherein the outer surface of the elongated thermally conductive member carries heat dissipation protrusions, which work in harmony with the air in the vicinity of the outer surface of the elongated thermally conductive member to transport heat away from

the LED's. However, the claims do not specify a cooling medium other than air. Nevertheless, at the time the invention was made, Abtahi et al., in U.S. Patent 5,890,794 (the '794 patent) - in disclosing a light source comprising an elongate insulating member 42 (Figures 3 and 5) having an outer surface, a plurality of light emitting diodes carried on the elongate member outer surface, at least some of the light emitting diodes being disposed in a first plane and others of the light emitting diodes being disposed in a second plane not coextensive with the first plane, electrical conductors carried by the elongate insulating member and connected to the plurality of light emitting diodes to supply electrical power thereto, and the elongate insulating member being configured to conduct heat away from the light emitting diodes to fluid contained by the elongate insulating member 42 and transparent cover 64 - teach that to provide cooling for the operating LED packages beyond the level of ambient cooling conventionally provided, a non-corrosive, visibly transparent fluid 110, other than air, is introduced into the space contained by the elongate insulating member 42 and transparent cover 64 (column 7, last full paragraph). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the device embraced by the claims of the '536 patent to include a cooling medium other than air as claimed by the present invention. One would have been motivated to make such a modification in view of the suggestion in the '794 patent that introduction of such a medium would provide cooling for the operating LED packages beyond the level of that provided by air.

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v.*

Art Unit: 2818

Eagle Mfg. Co., 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

4. **Claims 22-23** are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 32-33 of copending Application No. 10/430,696.

This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. Patent 5,861,703 to Losinski discloses a low-profile axial-flow single-blade piezoelectric fan.

b. U.S. Patent 6,274,924 to Carey et al. discloses a light emitting die assembly comprising: metal leads, an insulating body attached to the metal leads, the insulating body having a cavity, a heat sink connected to the insulating body and positioned relative to the cavity for being thermally coupled to a die, and a lens positioned relative to the cavity for transmitting light emitted from the die.

Art Unit: 2818


c. U.S. Patent 6,411,046 to Muthu discloses an LED light source having control circuit and sensing element to control output and intensities of the LEDs.

d. U.S. Patent 6,611,110 to Fregoso discloses a photopolymerization apparatus comprising a single high-power LED light source controlled by a driving circuit and a thermal monitor.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu-Tu Ho whose telephone number is (571) 272-1778. The examiner can normally be reached on 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.


Tu-Tu Ho
June 03, 2004


David Nelms
Supervisory Patent Examiner
Technology Center 2800

Notice of References Cited	Application/Control No. 10/430,732	Applicant(s)/Patent Under Reexamination DRY, JOEL M.	
	Examiner Tu-Tu Ho	Art Unit 2818	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,861,703	01-1999	Losinski, Armand	310/330
	B	US-5,890,794	04-1999	Abtahi et al.	362/294
	C	US-6,274,924	08-2001	Carey et al.	257/676
	D	US-6,411,046	06-2002	Muthu, Subramanian	315/309
	E	US-6,573,536	06-2003	Dry, Joel M.	257/88
	F	US-6,611,110	08-2003	Fregoso, Gilbert	315/224
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims



Application No.

10/430,732

Examiner

Tu-Tu Ho

Applicant(s)

DRY, JOEL M.

Art Unit

2818

✓	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted


N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim	Date
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Claim	Date
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Search Notes 	Application No.		Applicant(s)	
	10/430,732		DRY, JOEL M.	
	Examiner		Art Unit	
	Tu-Tu Ho		2818	

SEARCHED			
Class	Subclass	Date	Examiner
257	88	06/04	TH
362	555	↓	↓
	294		
	373		

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
East, attached	06/04	TH

EAST: [10156810 light source with LED.wsp:1]

File View Edit Tools Window Help

☐ L11: (16448) 7 same 8
☐ L12: (18) 11 same 5
☐ L13: (569211) (led light near emitting)
☐ L14: (6025) high adj 2 13
☐ L15: (6) 11 same 14
☐ L32: (15664) peltier
☐ L33: (332910) fan
☐ L34: (418602) ((lighting lumi\$6 illumi\$6) near general light adj source))
☐ L35: (552666) (led light adj emitting) led)
☐ L36: (14) (32 and 33) near 0 4
☐ L37: (3) 36 and 34
☐ L38: (4) 36 and 35
☐ L41: (24) 10 12 15
☐ L42: (25) 41 3
☐ L43: (16) (5,861,7030
☐ L44: (1352433) fluid
☐ L45: (3) 43 and 44
☐ L46: (4) 10/430698 10/430696 10/430732 10/156810
☐ L47: (117) 9 and 5
☐ L48: (27) 47 and 44
☐ L49: (640) 9 and 34
☐ L50: (145) 49 and 44
☐ L51: (42) 50 and 33
☐ L52: (250438) 34 ti 34 ab
☐ L53: (7) 51 and 52

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☒ Highlight all hit terms initially

51 and 52

June 2007

	U	Inventor	Document ID	Issue D/Pa	Title	Current Q	Current XRef	Retrieval Cl	S	C	P	J	Image Doc	D/P
1	<input type="checkbox"/>	D'Silva, Edmund	US 6158319 A	20001211	System to identify the status of bags that have been s	83/397	83/418		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6158319	<input type="checkbox"/>
2	<input type="checkbox"/>	D'Silva, Edmund	US 5557098 A	19980912	System to identify bags disinfected by irradiation whi	250/222.1	250/223B		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5557098	<input type="checkbox"/>
3	<input type="checkbox"/>	Pastrick, Todd	US 200201720	20021141	Lighted vehicular exterior rearview mirror system	362/484	362/511		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020172	<input type="checkbox"/>
4	<input type="checkbox"/>	Pastrick, Todd	US 200100243	20010941	Vehicle exterior mirror system with signal light	362/484			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20010024	<input type="checkbox"/>
5	<input type="checkbox"/>	Pastrick, Todd	US 6416208 B	20020742	Vehicle exterior mirror system with signal light	362/484	362/141		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6416208	<input type="checkbox"/>
6	<input type="checkbox"/>	Pastrick, Todd	US 6276821 B	20010842	Vehicle exterior mirror system with signal light	362/484	362/141		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6276821	<input type="checkbox"/>
7	<input type="checkbox"/>	Takeshima, Yas	US 5856897 A	19980815	Automatic plant growing and harvesting system	47/60	47/1.01R		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5856897	<input type="checkbox"/>

☐ Hit ☐ Details ☐ Hit List

Ready

JUN 23 2004

Attorney Docket OPTOLUM-002

OFFICIAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

JOEL DRY

Serial No.: 10/430,732

Filed: 05/05/2003

Title: LIGHT EMITTING DIODE LIGHT SOURCE

Group Art No.: 2818

Examiner: Tu Tu Ho

Commissioner of Patents

PO Box 1450

Alexandria, VA 22313-1450

AMENDMENT

Responsive to the Office Action dated 06/10/2004, please amend the above-identified application as follows:

IN THE CLAIMS:

CLAIM 1 (ORIGINAL). A light source comprising:

an elongate thermally conductive member having an outer surface;

a plurality of light emitting diodes carried on said elongate member outer surface
at least some of said light emitting diodes being disposed in a first plane and others of
said light emitting diodes being disposed in a second plane not coextensive with said first
plane;

electrical conductors carried by said elongate thermally conductive member and
connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat
away from said light emitting diodes to fluid contained by said elongate thermally
conductive member;

said elongate thermally conductive member comprises one or more heat
dissipation protrusions.

CLAIM 2 (ORIGINAL). A light source in accordance with claim 1, wherein:

at least one of said heat dissipation protrusions being carried on said elongate
member outer surface.

CLAIM 3 (ORIGINAL). A light source in accordance with claim 2, wherein:

said elongate thermally conductive member is configured to conduct heat away from said light emitting diodes to fluid proximate said elongate member outer surface.

CLAIM 4 (ORIGINAL). A light source in accordance with claim 3, wherein:

said fluid proximate said elongate member outer surface comprises air.

CLAIM 5 (ORIGINAL). A light source in accordance with claim 4, wherein:

said fluid contained by said elongate thermally conductive member is a cooling medium other than air.

CLAIM 6 (ORIGINAL). A light source in accordance with claim 3, wherein:

said elongate thermally conductive member comprises a tube.

CLAIM 7 (ORIGINAL). A light source in accordance with claim 6, wherein:

said tube has a cross-section in the shape of a polygon.

CLAIM 8 (ORIGINAL). A light source in accordance with claim 6, wherein:

said tube has a cross-section having flat portions.

CLAIM 9 (ORIGINAL). A light source in accordance with claim 1, wherein:
said elongate thermally conductive member comprises a channel.

CLAIM 10 (ORIGINAL). A light source in accordance with claim 3, wherein:
said elongate thermally conductive member comprises an extrusion.

CLAIM 11 (ORIGINAL). A light source in accordance with claim 10, wherein:
said extrusion is an aluminum extrusion.

CLAIM 12 (ORIGINAL). A light source in accordance with claim 10, wherein:
said elongate thermally conductive member is a tubular member.

CLAIM 13 (ORIGINAL). A light source in accordance with claim 12, wherein:
said tubular member has a polygon cross-section.

CLAIM 14 (ORIGINAL). A light source in accordance with claim 1, wherein:

said fluid is moved in said elongate thermally conductive member.

CLAIM 15 (ORIGINAL). A light source in accordance with claim 1, wherein:

said elongate thermally conductive member comprises a thermal transfer media disposed therein.

CLAIM 16 (ORIGINAL). A light source in accordance with claim 15, wherein:

said elongate thermally conductive member comprises a flow channel for said thermal transfer media.

CLAIM 17 (ORIGINAL). A light source in accordance with claim 1, wherein:

each of said light emitting diodes emits white light.

CLAIM 18 (ORIGINAL). A light source in accordance with claim 1, wherein:

at least some of said light emitting diodes emit colored light.

CLAIM 19 (CURRENTLY AMENDED). A light source comprising:

an elongate thermally conductive member having an outer surface;

at least one light emitting ~~diodes~~ diode carried on said elongate member outer surface;

one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting ~~diodes~~ diode to supply electrical power thereto;

said elongate thermally conductive member being configured to conduct heat away from said at least one light emitting diode to fluid contained by said elongate thermally conductive member; and

said elongate thermally conductive member comprises one or more heat dissipation protrusions.

CLAIM 20 (CURENTLY AMENDED). A light source comprising:

an elongate thermally conductive member having an outer surface;

at least one light emitting ~~diodes~~ diode carried on said elongate member outer surface;

one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting ~~diodes~~ diode to supply electrical power thereto;

said elongate thermally conductive member being configured to conduct heat away from said at least one light emitting diode to fluid contained by said elongate thermally conductive member; and

said fluid is moved in said elongate thermally conductive member.

CLAIM 21 (ORIGINAL). A light source comprising:

an elongate thermally conductive member having an outer surface;

a plurality of light emitting diodes carried on said elongate member outer surface at least some of said light emitting diodes being disposed in a first plane and others of said light emitting diodes being disposed in a second plane not coextensive with said first plane;

electrical conductors carried by said elongate thermally conductive member and connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said light emitting diodes to fluid contained by said elongate thermally conductive member; and

said fluid is moved in said elongate thermally conductive member.

CLAIM 22 (ORIGINAL). A light source comprising:

an elongate thermally conductive member having an outer surface;

a plurality of light emitting diodes carried on said elongate member outer surface at least some of said light emitting diodes being disposed in a first plane and others of said light emitting diodes being disposed in a second plane not coextensive with said first plane;

electrical conductors carried by said elongate thermally conductive member and connected to said plurality of light emitting diodes to supply electrical power thereto; and

said elongate thermally conductive member being configured to conduct heat away from said light emitting diodes to fluid contained by said elongate thermally conductive member; and

a coating carried on said elongate thermally conductive member.

CLAIM 23 (ORIGINAL). A light source in accordance with claim 22, wherein:
said coating is infused with optically reflective material.

REMARKS

Claims 1-23 are in the application as filed.

Claims 1-22 stand rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent 6,573,536.

The Examiner's basis for the rejection is that the claims in the present invention are a "similar version" of the claimed invention in claims 1-23 of the '536 patent

Claims 22 and 23 additionally stand provisionally rejected under 35 USC 101 as claiming the same invention as that of claims 32-33 of copending Application No. 10/430,696.


Claim 32 of the copending application is being amended concurrent herewith to include "a fluid moving device in fluid communication with said elongate thermally conductive member to move said fluid". Since claim 33 depends from claim 32, the amendment removes the 35USC 101 basis for double patenting based upon claims in the copending application.

Claims 19 and 20 have been amended to correct minor errors.

A terminal disclaimer is filed herewith.

It is believed that the claims in the application are now in condition for allowance. Reexamination and reconsideration are requested. It is also requested that the claims be allowed and this application be passed to issue. An early notice of allowance would be appreciated.

Respectfully submitted,

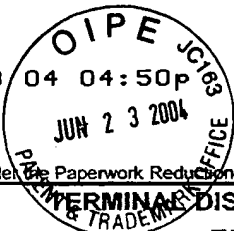

Donald J. Lenkszus
Reg No 28,096

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DONALD J. LENKSZUS, REG. NO. 28,096



Jun 23 04 04:50P

DONALD J LENKSZUS, P.C.

480-595-7695

p. 13

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Docket Number (Optional)

OPTOLUM-002

In re Application of: JOEL DRY

Application No.: 10/430,732

Filed: 05/05/2003

For: LIGHT EMITTING DIODE LIGHT SOURCE

The owner*, OPTOLUM, INC., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 6,573,536. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

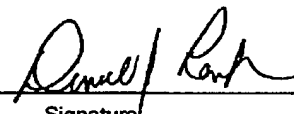
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record.


Signature

6/23/2004
Date

DONALD J. LENKSZUS

Typed or printed name

602-463-2010

Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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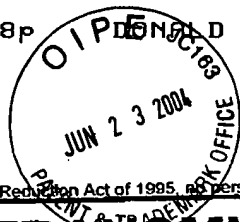
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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 55

Complete if Known

Application Number	10/430,732
Filing Date	05/05/2003
First Named Inventor	JOEL DRY
Examiner Name	TU TU HO
Art Unit	2818
Attorney Docket No.	OPTOLUM-002

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☐ Deposit Account:Deposit
Account
Number
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The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Credit any overpayments☐ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
SUBTOTAL (1)			(\$) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
	-20** =	X	
Independent Claims	-3** =	X	
Multiple Dependent			

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$) 0

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1480 130	1480 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	
Other fee (specify) <u>Terminal Disclaimer Fee</u>			55.00
*Reduced by Basic Filing Fee Paid			
SUBTOTAL (3)			(\$) 55.00

SUBMITTED BY

Name (Print/Type) DONALD J LENKSZUS

Registration No. 28,096

(Complete if applicable)

Telephone 602-463-2010

Signature

Date 06/23/2004

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TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	10/430,732	
	Filing Date	05/05/2003	
	First Named Inventor	JOEL DRY	
	Art Unit	2818	
	Examiner Name	TU TU HO	
Total Number of Pages in This Submission	13	Attorney Docket Number	OPTOLUM-002

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Signature	<i>Donald J Lenkszus</i>
Date	JUNE 23, 2004

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Serial Number *10430732*	Application No. 10/430,732	Applicant(s) DRY	

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The term of this patent shall not extend beyond the expiration date of U.S. Patent No:	6,573,536				
The term of this patent subsequent to the adjacent date has been disclaimed.					
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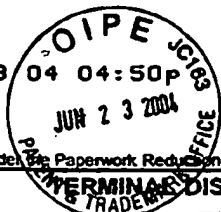
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Docket Number: OPTOLUM-002
APPROVED

JUL 07 2004

TECHNOLOGY CENTER
SPECIAL PROGRAM

In re Application of: JOEL DRY

Application No.: 10/430,732

Filed: 05/05/2003

For: LIGHT EMITTING DIODE LIGHT SOURCE

The owner, OPTOLUM, INC., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 and 173, as presently shortened by any terminal disclaimer, of prior Patent No. 6,573,536. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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2. ☒ The undersigned is an attorney or agent of record.

RENEE PRESTON 
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 2800

Signature

Date

DONALD J. LENKSZUS

Typed or printed name

602-463-2010

Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

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PATENT APPLICATION FEE DETERMINATION RECORD						Application or Docket Number 10430732	
CLAIMS AS FILED – PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA		RATE	FEE		
BASIC FEE (37 CFR 1.16(a))					\$ _____	OR	\$ _____
TOTAL CLAIMS (37 CFR 1.16(c))	minus 20 =	*		X \$ _____ =		OR	X \$ _____ =
INDEPENDENT CLAIMS (37 CFR 1.16(b))	minus 3 =	*		X \$ _____ =		OR	X \$ _____ =
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(d))				+ \$ _____ =		OR	+ \$ _____ =
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		OR	TOTAL

CLAIMS AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
Total (37 CFR 1.16(c))	23	Minus	23	=	X \$ _____ =		OR	X \$ _____ =	
Independent (37 CFR 1.16(b))	5	Minus	5	=	X \$ _____ =		OR	X \$ _____ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ \$ _____ =		OR	+ \$ _____ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
Total (37 CFR 1.16(c))	*	Minus	**	=	X \$ _____ =		OR	X \$ _____ =	
Independent (37 CFR 1.16(b))	*	Minus	***	=	X \$ _____ =		OR	X \$ _____ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ \$ _____ =		OR	+ \$ _____ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	MINUS	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
Total (37 CFR 1.16(c))	*	Minus	**	=	X \$ _____ =		OR	X \$ _____ =	
Independent (37 CFR 1.16(b))	*	Minus	***	=	X \$ _____ =		OR	X \$ _____ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ \$ _____ =		OR	+ \$ _____ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

- If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
- ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
- *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

CLAIMS ONLY							Application Number 10430732		Filing Date 5-5-83	
							Applicant(s)			
							* May be used for additional claims or amendments			
CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT					
	Indep	Depend	Indep	Depend	Indep	Depend	Indep	Depend	Indep	Depend
1	/									
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Total Indep	5									
Total Depend	18									
Total Claims	23									
Total Indep										
Total Depend										
Total Claims										



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

NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 07/22/2004

DONALD J LENKSZUS
PO Box 3064
CAREFREE, AZ 85377-3064

EXAMINER

HO, TU TU V

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 07/22/2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/430,732	05/05/2003	Joel M. Dry	OPTOLUM-002	3781

TITLE OF INVENTION: LIGHT EMITTING DIODE LIGHT SOURCE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$665	\$300	\$965	10/22/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHT THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPO PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THE STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee Transmittal and pay the PUBLICATION FEE (if required) and 1 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issued on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is the patentee's responsibility to ensure timely payment of maintenance fees when due.

Cree Ex. 1011

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail

**Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (703) 746-4000**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590 07/22/2004

DONALD J LENKSZUS
PO Box 3064
CAREFREE, AZ 85377-3064

Note: A certificate of mailing can only be used for domestic mailings of Fee(s) Transmittal. This certificate cannot be used for any other accompany papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/430,732	05/05/2003	Joel M. Dry	OPTOLUM-002	3781

TITLE OF INVENTION: LIGHT EMITTING DIODE LIGHT SOURCE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$665	\$300	\$965	10/22/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
HO, TU TU V	2818	257-088000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent); ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is not claiming SMALL ENTITY status. See, e.g., 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party interest as shown by the records of the United States Patent and Trademark Office.

(Authorized Signature)

(Date)

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 14 Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Cree Ex. 1011

TRANSMIT THIS FORM WITH FEE(S)

Page 81



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.
10/430,732	05/05/2003	Joel M. Dry	OPTOLUM-002	3781
7590 07/22/2004				
DONALD J LENKSZUS PO Box 3064 CAREFREE, AZ 85377-3064				
EXAMINER HO, TU TU V				
ART UNIT			PAPER NUMBER	
2818				
DATE MAILED: 07/22/2004				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

AK

Notice of Allowability	Application No.	Applicant(s)	
	10/430,732	DRY, JOEL M.	
	Examiner	Art Unit	
	Tu-Tu Ho	2818	

-- **The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to TD filed 06/23/2004.
2. ☒ The allowed claim(s) is/are 1-23.
3. ☒ The drawings filed on 05 May 2003 are accepted by the Examiner.
4. ☐ 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 the:
 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)).

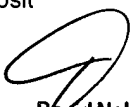
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |


David Nelms
 Supervisory Patent Examiner
 Technology Center 2800

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 06/23/2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 6,573,536 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Amendment

2. Applicant's Amendment filed 06/23/2004 has been reviewed and placed of record in the file.

Allowable Subject Matter

3. Claims 1-23 are allowable over the prior art of record.

The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach or render obvious a light source having all exclusive all limitations as recited in claims 1, 19, 20, 21, and 22, including an elongate thermally conductive member having an outer surface, at least one light emitting diode carried on the elongate member outer surface, one or more electrical conductors carried by said elongate thermally conductive member and connected to said at least one light emitting diode to supply electrical power thereto, characterized in that the at least one light emitting diode is carried on the elongate member outer surface; that the elongate thermally conductive member is configured to conduct heat away from the at least one light emitting diode to fluid contained by the elongate thermally conductive member; and that the

Art Unit: 2818

elongate thermally conductive member comprises one or more heat dissipation protrusions or that the fluid is moved in the elongate thermally conductive member or a coating is carried on the elongate thermally conductive member.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu-Tu Ho whose telephone number is (571) 272-1778. The examiner can normally be reached on 6:30 am - 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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).



Tu-Tu Ho
July 12, 2004


David Nelms
Supervisory Patent Examiner
Technology Center 2800

Issue Classification 	Application No.	Applicant(s)	
	10/430,732	DRY, JOEL M.	
	Examiner	Art Unit	
	Tu-Tu Ho	2818	

ISSUE CLASSIFICATION															
ORIGINAL				CROSS REFERENCE(S)											
CLASS	SUBCLASS			CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)										
257	88			362	555	294	373								
INTERNATIONAL CLASSIFICATION															
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<i>Tu-Tu Ho</i> 07/04 (Assistant Examiner) (Date)				 David Nelms Supervisory Patent Examiner Technology Center 2800 (Primary Examiner) (Date) 7/04				Total Claims Allowed: 23 <table border="1"> <tr> <td>O.G. Print Claim(s)</td> <td>O.G. Print Fig.</td> </tr> <tr> <td>1</td> <td>2</td> </tr> </table>				O.G. Print Claim(s)	O.G. Print Fig.	1	2
O.G. Print Claim(s)	O.G. Print Fig.														
1	2														
<i>Christine Moore</i> 1/21/04 (Legal Instruments Examiner) (Date)															

<input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant										<input type="checkbox"/> CPA		<input checked="" type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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6	6		36		66		96		126		156		186		
7	7		37		67		97		127		157		187		
8	8		38		68		98		128		158		188		
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10	10		40		70		100		130		160		190		
11	11		41		71		101		131		161		191		
12	12		42		72		102		132		162		192		
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21	21		51		81		111		141		171		201		
22	22		52		82		112		142		172		202		
23	23		53		83		113		143		173		203		
	24		54		84		114		144		174		204		
	25		55		85		115		145		175		205		
	26		56		86		116		146		176		206		
	27		57		87		117		147		177		207		
	28		58		88		118		148		178		208		
	29		59		89		119		149		179		209		
	30		60		90		120		150		180		210		

Index of Claims 		Application No. 10/430,732 Examiner Tu-Tu Ho	Applicant(s) DRY, JOEL M. Art Unit 2818
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✓ Rejected = Allowed	- (Through numeral) Cancelled + Restricted	N Non-Elected I Interference	A Appeal O Objected
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Claim	Date	Claim	Date	Claim	Date
Final	Original	Final	Original	Final	Original
1	8/2/04	51		101	
2		52		102	
3		53		103	
4		54		104	
5		55		105	
6		56		106	
7		57		107	
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49		99		149	
50		100		150	

[illegible]

Tu-Tu Ho

2818

[illegible]

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
257	88	07/04	TH

[illegible]

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(703) 746-4000

Express Mail No. E4979259315US
or Fax

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590 07/22/2004

DONALD J LENKSZUS
PO Box 3064
CAREFREE, AZ 85377-3064

10/05/2004 LWONDIME 00000029 10430732

01 FC:2501 685.00 DP
02 FC:1504 300.00 DP



Note: A certificate of mailing can only be used for domestic mailings of Fee(s) Transmittal. This certificate cannot be used for any other accompany papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

DONALD J. LENKSZUS	(Depositor's name)
<i>[Signature]</i>	(Signature)
10/01/2004	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/430,732	05/05/2003	Joel M. Dry	OPTOLUM-002	3781

TITLE OF INVENTION: LIGHT EMITTING DIODE LIGHT SOURCE

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$665	\$300	\$965	10/22/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
HO, TU TU V	2818	257-088000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. Donato J. Lenkszus
2. _____
3. _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

OPTOLUM, INC

PHOENIX, ARIZONA

Please check the appropriate assignee category or categories (will not be printed on the patent); ☐ individual ☒ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☒ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☒ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is not claiming SMALL ENTITY status. See, e.g., 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other part interest as shown by the records of the United States Patent and Trademark Office.

(Authorized Signature)

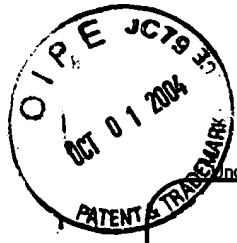
(Date)

[Signature] 10/1/2004

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 14 Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/430,732	
	Filing Date	05/05/2003	
	First Named Inventor	JOEL DRY	
	Art Unit	2818	
	Examiner Name	TU TU HO	
Total Number of Pages in This Submission	4	Attorney Docket Number	OPTOLUM-002

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): CHECK IN AMOUNT OF \$985 RETURN POSTCARD
<div>Remarks</div> <div>EXPRESS MAIL NO. EU979259315US</div>		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	DONALD J LENKSZUS, PC
Signature	
Date	OCTOBER 1, 2004

CERTIFICATE OF TRANSMISSION/MAILING	
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.	
Typed or printed name	DONALD J LENKSZUS
Signature	
Date	OCT 1, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(c))

Patent Number	Issue Date (YYYY-MM-DD)	Application Number	Filing Date (YYYY-MM-DD)	Docket Number (if applicable)
6831303	2004-12-14	10430732	2003-05-05	OPTOLUM-002

CAUTION: Maintenance fee (and surcharge, if any) payment must correctly identify: (1) the patent number and (2) the application number of the actual U.S. application leading to issuance of that patent to ensure the fee(s) is/are associated with the correct patent. 37 CFR 1.366(c) and (d).

SMALL ENTITY

☒ Patentee claims, or has previously claimed, small entity status. See 37 CFR 1.27.

LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS

☐ Patentee is no longer entitled to small entity status. See 37 CFR 1.27(g)

NOT Small Entity

- | | Fee | Code |
|-----------------------|-----------|--------|
| <input type="radio"/> | 3 ½ year | (1551) |
| <input type="radio"/> | 7 ½ year | (1552) |
| <input type="radio"/> | 11 ½ year | (1553) |

Small Entity

- | | Fee | Code |
|----------------------------------|-----------|--------|
| <input checked="" type="radio"/> | 3 ½ year | (2551) |
| <input type="radio"/> | 7 ½ year | (2552) |
| <input type="radio"/> | 11 ½ year | (2553) |

SURCHARGE

The surcharge required by 37 CFR 1.20(i)(2) (Fee Code 1558) must be paid as a condition of accepting unintentionally delayed payment of the maintenance fee.

MAINTENANCE FEE (37 CFR 1.20(e)-(g))

The appropriate maintenance fee must be submitted with this petition.

STATEMENT

THE UNDERSIGNED CERTIFIES THAT THE DELAY IN PAYMENT OF THE MAINTENANCE FEE TO THIS PATENT WAS UNINTENTIONAL

PETITIONER(S) REQUEST THAT THE DELAYED PAYMENT OF THE MAINTENANCE FEE BE ACCEPTED AND THE PATENT REINSTATED

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

37 CFR 1.378(d) states: "Any petition under this section must be signed by an attorney or agent registered to practice before the Patent and Trademark Office, or by the patentee, the assignee, or other party in interest."

I certify, in accordance with 37 CFR 1.4(d)(4) that I am

- ☒ An attorney or agent registered to practice before the Patent and Trademark Office
- ☐ A sole patentee
- ☐ A joint patentee; I certify that I am authorized to sign this submission on behalf of all the other patentees.
- ☐ A joint patentee; all of whom are signing this e-petition
- ☐ The assignee of record of the entire interest

Patent Practitioner

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature

Signature	/Donald J Lenkszus/	Date (YYYY-MM-DD)	2009-02-10
Name	DONALD J LENKSZUS	Registration Number	28096

This collection of information is required by 37 CFR 1.378(c). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **This form can only be used when in conjunction with EFS-Web. If this form is mailed to the USPTO, it may cause delays in reinstating the patent.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	10430732			
Filing Date:	05-May-2003			
Title of Invention:	LIGHT EMITTING DIODE LIGHT SOURCE			
First Named Inventor/Applicant Name:	Joel M. Dry			
Filer:	DONALD LENKSZUS			
Attorney Docket Number:	OPTOLUM-002			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Maintenance Fee Due at 3.5 years	2551	1	490	490
Surcharge after Expiration-Unintentional	1558	1	1640	1640
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:			Page 95	

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2130



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Patent No.	6831303	:
Issue Date:	December 14, 2004	:
Application No.	10430732	:DECISION GRANTING PETITION
Filed:	May 5, 2003	:UNDER 37 CFR 1.378(c)
Attorney Docket No.	OPTOLUM-002	:

This is a decision on the electronic petition, filed February 10, 2009, under 37 CFR 1.378(c) to accept the unintentionally delayed payment of the 3.5 year maintenance fee for the above-identified patent.

The petition is **GRANTED**.

The maintenance fee is accepted, and the above-identified patent reinstated as of February 10, 2009. This decision also constitutes notice that the fee has been accepted. An electronic copy of the petition and this decision has been created as an entry in the Image File Wrapper. Nevertheless, petitioner should print and retain an independent copy.

Telephone inquiries related to this electronic decision should be directed to the Electronic Business Center at 1-866-217-9197.

Electronic Acknowledgement Receipt

EFS ID:	4769573
Application Number:	10430732
Patent Number:	6831303
Confirmation Number:	3781
Petition Issued Date:	February 10,2009
Title of Invention:	LIGHT EMITTING DIODE LIGHT SOURCE
First Named Inventor/Applicant Name:	Joel M. Dry
Correspondence Address:	DONALD J LENKSZUS - PO Box 3064 - CAREFREE AZ 85377-3064 US - -
Filer:	DONALD LENKSZUS
Filer Authorized By:	
Attorney Docket Number:	OPTOLUM-002
Receipt Date:	10-FEB-2009
Filing Date:	05-MAY-2003
Time Stamp:	17:33:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Cree Ex 1011 Submitted With Payment	yes	Page 98
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Payment Type	Credit Card
Payment was successfully received in RAM	\$ 2130
RAM confirmation Number	2909
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	sb0066e_fill.pdf	746275 d4ec1260c0ce2bcbdb8deca335f52b72491e97587	no	3

Warnings:

Information:

2	Fee Worksheet (PTO-06)	fee-info.pdf	31843 e8f6afa074046b2b4a08c150008f9c8ed1e18876	no	2
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Warnings:

Information:

Total Files Size (in bytes):	778118
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.