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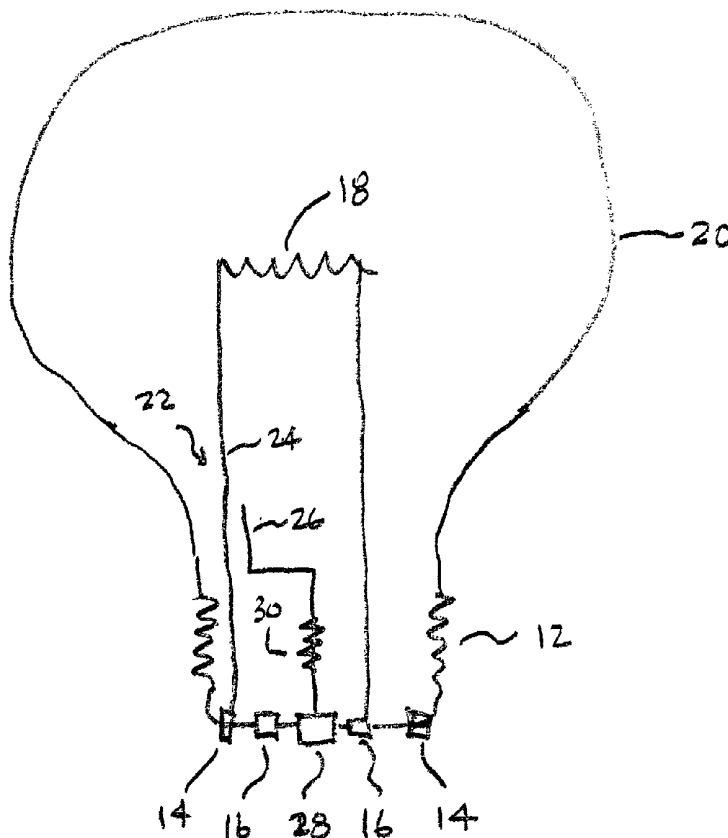
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[Continued on next page]

(54) Title: INDEPENDENT DUAL-FUNCTION LIGHT BULB



(57) Abstract: A light bulb (10) comprises a base (12) including at least first (14), second (16), and third (28) electrical contacts. An optically-transmissive envelope (20) is hermetically sealed to the base (12) and contains a noble gas. At least one filament is disposed within the optically-transmissive envelope (12) and is electrically coupled between the first (14) and second (16) electrical contacts. At least one non-incandescent electric light source is also disposed within the optically-transmissive envelope (12) and is functionally independent from the filament (18) and electrically coupled between the first (14) and third (28) electrical contacts.



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SPECIFICATION  
INDEPENDENT DUAL-FUNCTION LIGHT BULB

BACKGROUND OF THE INVENTION

## 10 1. Field of the Invention

The present invention relates to dual light source lamps. Specifically the present invention relates to a glow discharge lamp and an incandescent lamp that are disposed within the same envelope and function independently.

## 2. The Prior Art

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An incandescent lamp includes an incandescent filament (usually tungsten) disposed within an optically-transmissive envelope. The envelope contains an inert gas such as argon, nitrogen, neon or krypton to reduce the rate of evaporation of the filament material. A glow discharge lamp includes an optically transmissive envelope containing a noble gas and electrodes. When a voltage is applied between the electrodes, a glow discharge is formed.

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Incandescent light sources and glow discharge light sources have been used in a co-dependent manner in the lighting art. United States Patent No. 5,066,892 issued Nov. 19, 1991 to Bouchard discloses a glow discharge lamp having an incandescent filament for providing visible light during starting of the glow discharge lamp. United States Patent No. 5,066,892 issued Nov. 29, 1991 to Kuever discloses an incandescent lamp having a glow  
25 discharge lamp in a separate sealed compartment within the same envelope as the incandescent lamp that acts as an indicator light upon rupture of the incandescent filament.

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One disadvantage to lamps that incorporate dual light sources is that the glow discharge illumination is a function dependent upon the incandescent filament. In combination incandescent/fluorescent lighting systems such as the ones disclosed in United States Patent No. 4,100,462 issued Jul. 11, 1978 to McLellan and United States Patent No. 5,309,061 issued May 3, 1994 to Bouchard the fluorescent lighting means is dependent on the incandescent lamp.

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Incandescent lamps burn hot and may present a fire hazard when used as a night light. Therefore, an independently functioning non-incandescent light source, such as a glow discharge lamp, disposed in the same envelope as an incandescent filament, would provides users with the opportunity to utilize two independent light sources within a single light bulb.

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## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view of a first embodiment of a dual-type light bulb according to the present invention.

FIG. 2 is a cross-sectional view of a second embodiment of a dual-type light bulb according to the present invention.

## DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Those of ordinary skill in the art will realize that the following description of the present invention is illustrative only and not in any way limiting. Other embodiments of the invention will readily suggest themselves to such skilled persons.

Referring first to FIG. 1, a diagram shows a first embodiment of a dual-type light bulb 10 according to the present invention for providing a plurality of light sources within the same envelope. A base 12, is threaded and configured to fit in a standard three way incandescent socket, and provides both support and electrical contacts 14 and 16 to filament 18. Electrical contact 14 may be electrically connected to the threaded shell of base 12, and electrical contact 16 may be an annular ring (thus shown as two cross sections in FIG. 1) electrically insulated from the shell of base 12 as is known in the art.

As will be appreciated by persons of ordinary skill in the art, filament 18 is a standard incandescent filament. Filament 18 is disposed in an optically-transmissive envelope 20, usually formed from a glass material. Envelope 20 contains a noble gas and is hermetically sealed to base 12 as is known in the art.

According to the present invention, glass envelope 12 also contains a glow-discharge lamp 22. According to the embodiment of the invention depicted in FIG. 1, the envelope 20 is filled with neon gas and the glow discharge lamp 22 comprises two electrodes. One of the electrodes 24 is electrically connected to electrical contact 14 disposed within base 12 and the other of the electrodes 26 is electrically connected to a third electrical contact 28 disposed within base 12. As is known in the art, a current-limiting resistor 30 may be placed in series with one of electrodes 24 and 26 and its respective electrical contact.

As will be appreciated by persons of ordinary skill in the art, the two light sources contained within envelope 12 are independent of one another unlike those disclosed in the prior art. The dual-type light bulb 10 may be employed in a lamp fixture that accepts and is wired for conventional three-way filament light bulbs. In addition, light bulb 10 of the present invention may be used in a three-way light socket that is wired such that current may

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be independently supplied to either the incandescent filament 18 or the glow-discharge lamp 22 by a simple switching arrangement.

According to another embodiment of the invention as depicted in FIG. 2, to which attention is now drawn, the optically transmissive envelope 20 contains a noble gas such as xenon surrounding an incandescent filament 18 as is known in the art, and glow-discharge lamp 22 is contained within a separately enclosed envelope 32.

While embodiments and applications of this invention have been shown and described, it would be apparent to those skilled in the art that many more modifications than mentioned above are possible without departing from the inventive concepts herein. The invention, therefore, is not to be restricted except in the spirit of the appended claims.

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What is claimed is:

1. A light bulb comprising:

a base including at least first, second, and third electrical contacts;

an optically-transmissive envelope hermetically sealed to said base and

10 containing a noble gas;

at least one filament disposed within said optically-transmissive envelope and electrically coupled between said first and second electrical contacts; and

at least one non-incandescent electric light source disposed within said optically-transmissive envelope and functionally independent from said filament and

15 electrically coupled between said first and third electrical contacts.

2. The light bulb of claim 1 wherein said at least one non-incandescent electric light source is a glow-discharge lamp and wherein said noble gas is neon.

3. The light bulb of claim 2 wherein said at least one non-incandescent electric light source comprises first and second spaced apart electrodes disposed within said optically  
20 transmissive envelope, one of said electrodes electrically coupled to said second electrical contact and the other one of said electrodes electrically coupled to said third electrical contact.

4. The light bulb of claim 2 wherein said at least one nonfilament electric light source comprises first and second spaced apart electrodes disposed in a second, noble gas  
25 containing hermetically sealed optically transmissive envelope within said optically transmissive envelope, one of said electrodes electrically coupled to said second electrical contact and the other one of said electrodes electrically coupled to said third electrical contact.

5. The light bulb of claim 4 wherein said second, noble gas containing  
30 hermetically sealed optically transmissive envelope contains neon gas.

6. A light bulb comprising:

a base means for providing electrical contacts;

a plurality of functionally independent illumination means coupled to said electrical contacts; and

35 a housing means for enclosing said plurality of functionally independent illumination means and for mechanically coupling them to said base.

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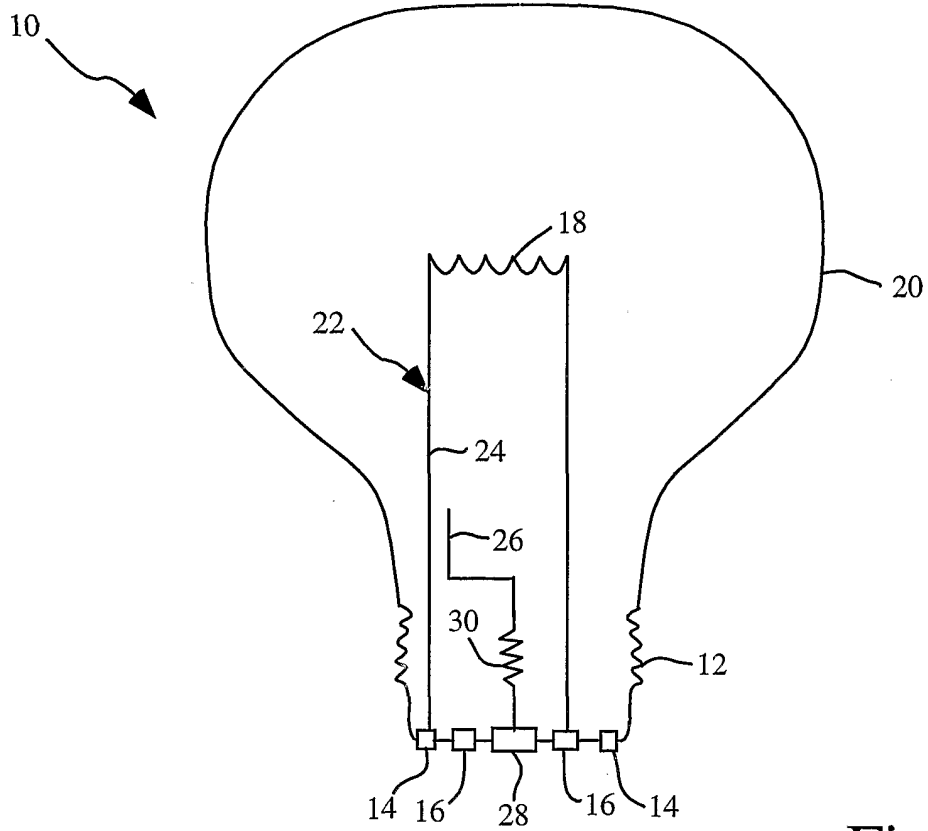


Fig. 1

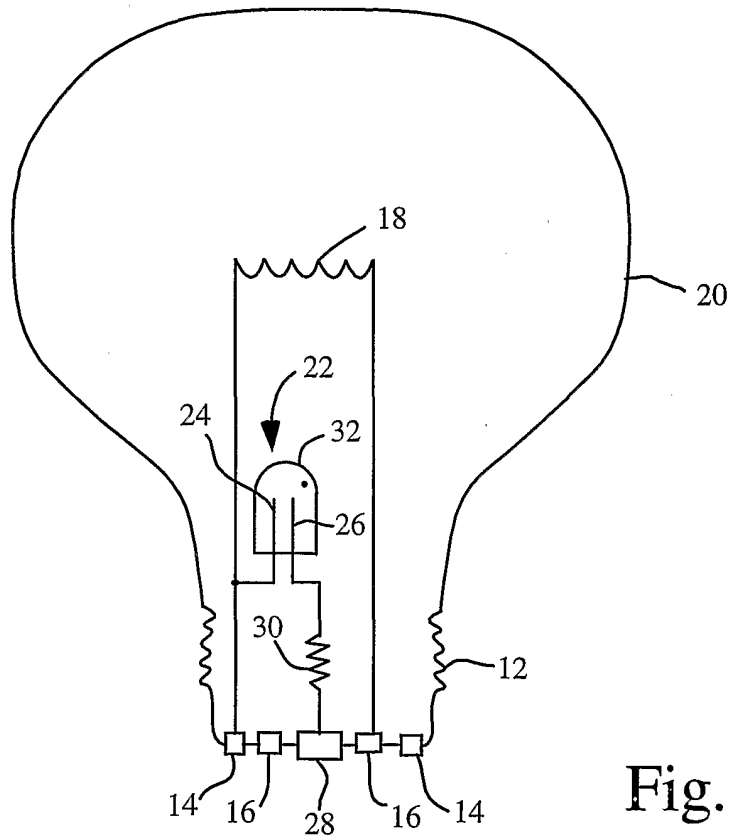


Fig. 2

INTERNATIONAL SEARCH REPORT

International Application No  
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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H01J61/96 H01J61/16 H01J61/64

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H01J

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	abstract; claim 4; figures 1,2,4 column 4, line 12 - line 13 column 5, line 4 - line 6	4
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A	column 2, line 3 - line 4; claim 2 figure 1	2-5
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Further documents are listed in the continuation of box C.  Patent family members are listed in annex.

° Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

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\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search  14 February 2002	Date of mailing of the international search report  26/02/2002
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer  Martín Vicente, M
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 International Application No  
 PCT/US 01/31632

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X A	US 4 151 445 A (DAVENPORT JOHN M ET AL) 24 April 1979 (1979-04-24) figure 1 ----	1,6 3,4
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Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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