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 [73] Assignee **The United States of America as represented**
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[54] **ARC LAMP WITH CONCENTRIC ELECTRODES**
 4 Claims, 1 Drawing Fig.

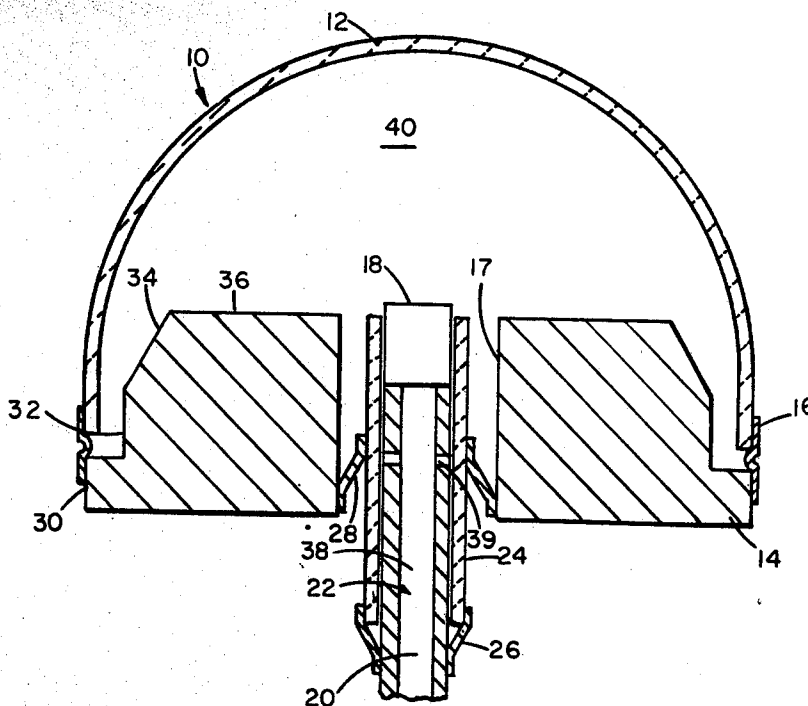
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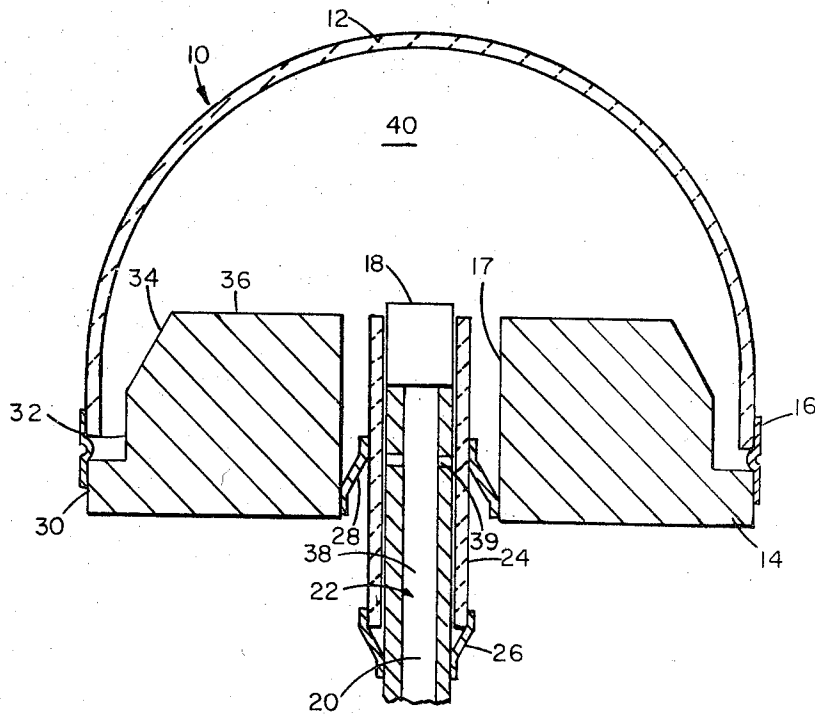
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ABSTRACT: A concentric electrode arc lamp having a first electrode disposed in spaced concentric sealed relation about a second electrode and an envelope secured to the first electrode to provide an enclosure for retention of a gas therein. The second electrode is provided with a passage communicating into the interior of the enclosure for directing gas therein. The electrodes are disposed for activation by application of an electric potential therebetween to cause arcing therebetween. The arc energizes the gas to produce radiation.



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ARC LAMP WITH CONCENTRIC ELECTRODES

BACKGROUND OF THE INVENTION

High pressure short-arc gas lamps currently used are hand crafted quartz lamps, wherein the electrodes lie in a coaxial line within the lamp. When these lamps are energized the radiation is emitted from the tip of one of the electrodes, therefore, the second electrode blocks radiation from the lamp along the axis. Also the design of the package into which the lamp fits must provide an isolated electrical path across the optics to one of the electrodes, and one end of the lamp must have a strong mechanical support.

SUMMARY OF THE INVENTION

The present invention relates to an arc lamp having a pair of electrodes disposed in spaced concentric relation. The electrodes are partially enclosed in an envelope having a gas therein disposed for energization responsive to activation of the electrodes.

It is an object of the present invention, therefore, to provide an arc lamp in which radiation emanates therefrom without being restricted or blocked by internal structure such as electrodes.

It is another object of the present invention to provide such an arc lamp in which the electrodes are mounted in concentric relation for unrestricted radiation flow from the lamp.

These and other objects and advantages of the present invention will be more readily apparent from the following description and drawing.

BRIEF DESCRIPTION OF THE DRAWING

The FIG. is an elevational sectional view of the lamp of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in the FIG., an arc lamp 10 includes a window 12 of ceramic, quartz or the like, sealed to an annular anode 14 by a metal ferrule 16. Anode 14 is provided with a central opening 17 which substantially encloses a tip 18 of a hollow cathode 20. Cathode 20 includes a portion 22 extending out of opening 17.

A ceramic insulator 24, in the form of a cylinder or sleeve, partially encloses the cathode and is sealed thereto by a ceramic to a metal seal 26. Anode 14 is sealed to the ceramic insulator by a metal seal 28 which is secured to a metallized band disposed around the insulator 24.

The anode is generally annular in shape with stepped annular shoulders 30 and 32 and a conical portion 34 terminating into a flat inner anode reflecting surface 36. The anode structure can also be shaped to serve as a multifunction device in-

cluding electrode, heat sink, reflector, resonance shield, and basing member. If desired, the anode may have screw threads on the outer periphery or lugs for bayonet mounting.

The cathode 20 includes a central hollow portion 38 communicating into a chamber 40 through passages 39. Chamber 40 is formed by sealing window 12 to the anode and the anode to the cathode. An end portion 22 of the cathode is pinched off to seal the opening therein responsive to filling chamber 40 with gas through passages 38 and 39.

The tip 18 of the cathode may be in the form shown, as a flat recessed surface, or, if desired, the cathode tip may be shaped as a flat disc slightly suspended above the anode. In any event, the tip is of a refractory material, such as tungsten.

Obviously, many modifications of the present invention may be resorted to by one skilled in the art; however, such modifications are within the spirit and scope of the appended claims.

We claim:

1. An arc lamp comprising:

a. an anode having an annular configuration provided with a first reflecting surface, said anode having a central opening therethrough;

b. a transparent envelope secured around the periphery of said annular anode and forming a chamber between said envelope and said first surface of said cathode;

c. a cathode mounted in said opening of said anode, said cathode being sealed to an inner annular surface of said anode formed by said opening and having a portion extending into said chamber;

d. a gas disposed in said chamber;

e. means for applying a potential between said cathode and said anode; and

f. passage means provided through said cathode, said passage means disposed in communication with said chamber for insertion of said gas therein.

2. A device as set forth in claim 1 including a ceramic insulating collar disposed around said cathode in spaced relation thereto, said collar being disposed in concentric spaced relation in said opening of said anode, and first seal means secured around said collar and in secured relation to said inner annular surface of said anode for securing said cathode in said anode opening, second seal means secured to said cathode and said insulating collar for retention of said cathode and said collar in the spaced relation.

3. The device as set forth in claim 2 wherein said envelope is a hemispherical shaped window having the edges mounted on said anode; and, means for sealing said envelope to said anode.

4. The device as set forth in claim 3 wherein said cathode is provided with a tip comprised of refractory material, said tip extending into said chamber and surrounded by said anode.

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