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Penjuke

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[54] **BALLOON INFLATION AND ILLUMINATION DEVICE**

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[52] **U.S. Cl.** **446/222**; 446/485; 137/853; 362/96; 362/253

[58] **Field of Search** 446/220, 222, 446/224, 485; 137/853; 362/253, 96, 101

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,530,923	3/1925	Annas	446/224
4,292,999	10/1981	Szollman	137/560
4,542,445	9/1985	Marletta	362/96
4,737,133	4/1988	Neumeier	446/397
4,794,498	12/1988	Neumeier	362/185
4,911,674	3/1990	Cole	446/224
5,016,154	5/1991	Leeyeh	362/414
5,083,250	1/1992	Malcolm	362/253
5,119,281	6/1992	Akman	362/253
5,499,941	3/1996	Penjuke	446/222

FOREIGN PATENT DOCUMENTS

168367	5/1951	Australia	362/253
405137847	6/1993	Japan	446/485

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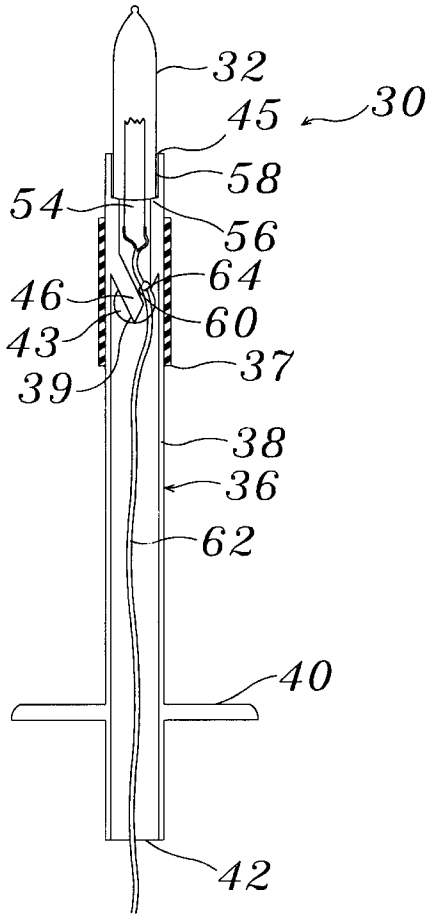
[57] **ABSTRACT**

An improved device for inflating and illuminating a balloon. The device includes a hollow tube having an air baffle structure integrally molded in its interior. The air baffle structure directs air flowing through the tube out through side openings and into a surrounding balloon. A small aperture also extends through the air baffle structure itself. The aperture is sized so that a double lead wire can pass though the aperture from one side of the air baffle structure to the other. The double lead wire extends past the air baffle structure and is directly coupled to an illumination source at the top end of the tube. A sealant is used to seal the aperture through which the double lead wire passes. As such, an air impervious air baffle structure is provided that allows for the direct electrical connection in between a light source on one side of the air baffle structure and a power supply on the opposite side of the air baffle structure.

9 Claims, 3 Drawing Sheets



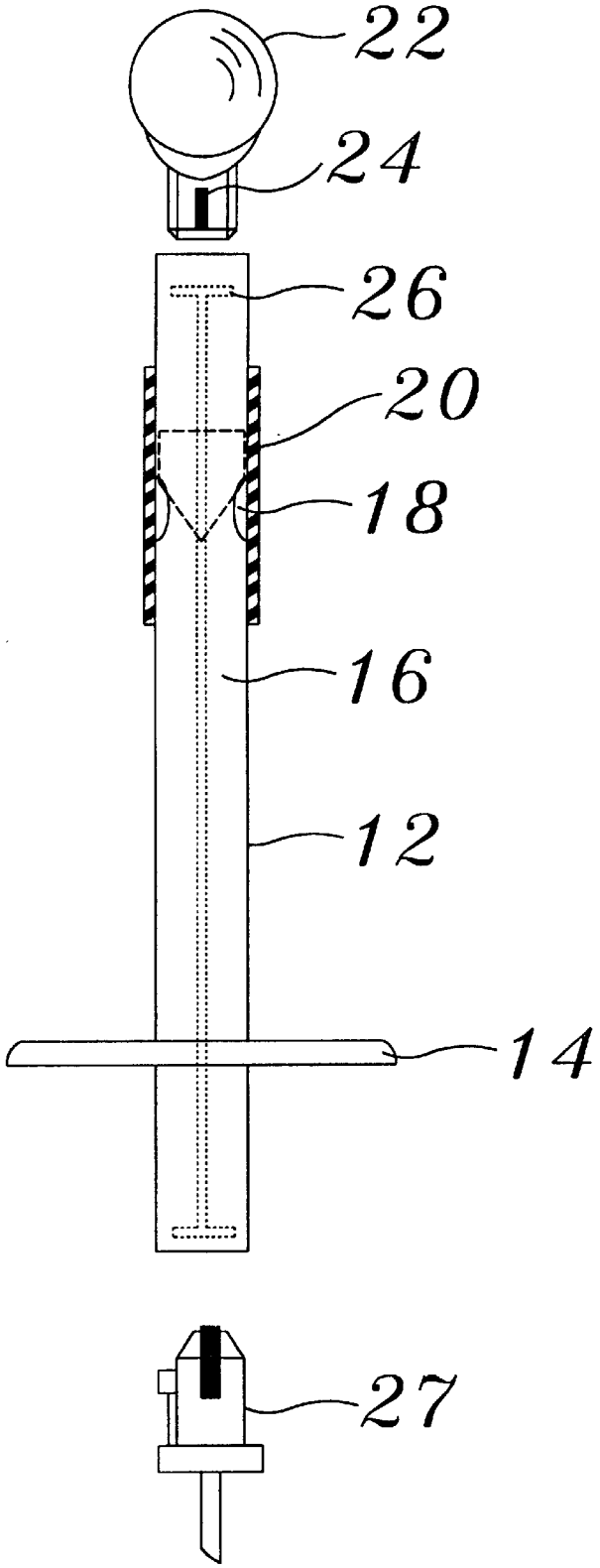


FIG. 1
(PRIOR ART)

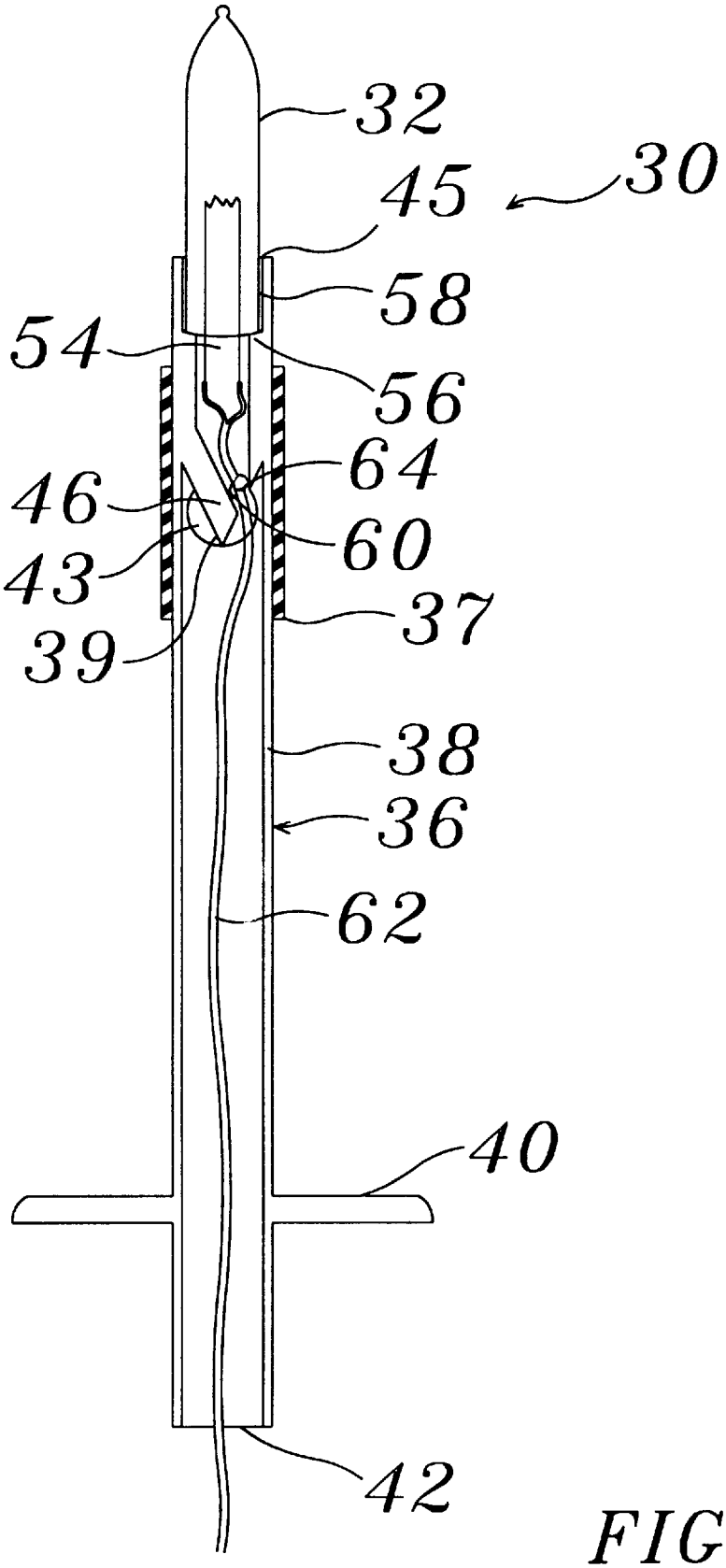


FIG. 2

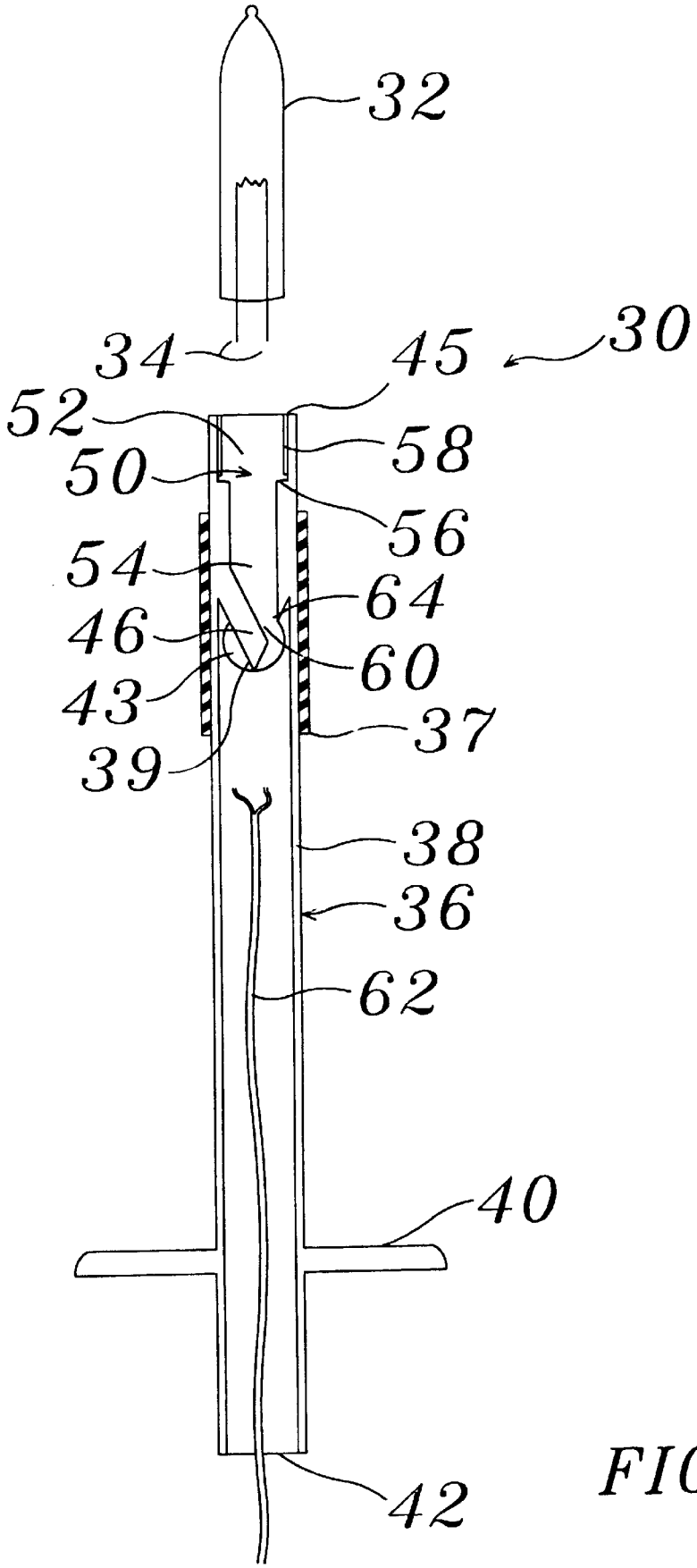


FIG. 3

BALLOON INFLATION AND ILLUMINATION DEVICE

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention relates to devices capable of being positioned within a balloon that assist in the inflation of the balloon and enable the balloon to be illuminated internally. More particularly, the present invention relates to devices that retain a light source within a balloon and couple that light source to an external power source after the balloon is inflated.

2. PRIOR ART STATEMENT

U.S. Pat. No. 5,499,941 to Daniel Panjuke, the inventor herein, entitled Balloon Inflation Device With Light, discloses a device for positioning a light within a traditional latex balloon. Referring to FIG. 1, it can be seen that the device described in U.S. Pat. No. 5,499,941 to Panjuke contains a hollow tube **12** that passes into the opening of a latex-type of balloon. A flange **14** is disposed near the bottom of the hollow tube **12**. The open end of a balloon passes over the flange **14**, thereby creating an air impervious seal around the hollow tube **12**. To fill the balloon, air is introduced into the balloon through the hollow tube **12**. A baffle **16** is positioned in the hollow tube **12**. Two holes **18** are positioned adjacent to the baffle **16**. As air is introduced through the bottom of the hollow tube **12**, the air is directed through the two holes **18** and into the balloon by the baffle **16**. The presence of an elastic band **20** enables air to pass into the balloon through the two holes **18** yet prevents air from leaving the balloon through those same holes **18**.

A light bulb **22** connects to the top of the hollow tube **12**. As the bulb **22** is placed into the top of the hollow tube **12**, the specialty leads **24** of the bulb **22** contact two terminals **26** disposed on the interior of the hollow tube **12**. The terminals **26** extend down the length of the hollow tube **12** and interconnect with an electrical plug **27** that leads to a power source.

In the prior art, the manufacturing of the terminals **26** on the interior of the hollow tube **12** have been problematic. The terminals **26** must be firmly affixed to the interior of the hollow tube **12**. Furthermore, the terminals **26** must extend down the sides of the baffle **16** in the hollow tube **12** without allowing air to leak past the baffle **16**. In order to achieve such a configuration, the baffle **16** cannot be molded as part of the hollow tube. Rather, the baffle **16** must be glued in place within the hollow tube **12** after the terminals **26** have be affixed to the sides of the hollow tube **12**. The use of the terminals **26** also requires that the light bulb **22** and the electrical plug **27** be specially configured to contact and engage the terminals **26** inside the hollow tube **12**. All such requirements have added greatly to the cost and labor required to manufacture the overall device.

A more specific description of the operation of the prior art device shown in FIG. 1 is contained in U.S. Pat. No. 5,499,941 to Daniel Panjuke, entitled Balloon Inflation Device With Light, the disclosure of which is incorporated herein by reference.

In view of the prior art, as exemplified by U.S. Pat. No. 5,499,941, a need therefore exists in the art for an improved balloon and inflation device that does not use interior terminals to connect the light source to a power source. Such an improved device would greatly reduce the complexities of manufacturing and would result in a device that is less costly and less labor intensive to produce. This need is satisfied by the present invention as described and claimed.

SUMMARY OF THE INVENTION

The present invention is an improved device for inflating and illuminating a balloon. The device includes a hollow tube having an air baffle structure integrally molded in its interior. The air baffle structure directs air flowing through the tube out through side openings and into a surrounding balloon. A small aperture also extends through the air baffle structure itself. The aperture is sized so that a double lead wire can pass though the aperture from one side of the air baffle structure to the other. The double lead wire extends past the air baffle structure and is directly coupled to an illumination source at the top end of the tube. A sealant is used to seal the aperture through which the double lead wire passes. As such, an air impervious air baffle structure is provided that allows for the direct electrical connection in between a light source on one side of the air baffle structure and a power supply on the opposite side of the air baffle structure. This results in a balloon inflation and illumination device that is lighter, lower in cost, easier to manufacture and more reliable than those available in the prior art.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the present invention, reference is made to the following description of an exemplary embodiment thereof, considered in conjunction with the accompanying drawings, in which:

FIG. **1** is a partially cross-sectioned and exploded front view of a prior art balloon inflation and illumination device;

FIG. **2** is a cross-sectional view of one preferred embodiment of the present invention balloon inflation and illumination device; and

FIG. **3** is an exploded cross-sectional view of the embodiment shown in FIG. **2**.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. **2** and FIG. **3**, a first embodiment of the present invention balloon inflation and illumination device **30** is shown. In the shown embodiment, a conventional incandescent bulb **32** is used as a light source. The incandescent bulb **32** is manufactured with two long conductive leads **34** (FIG. **3**) that extend into the bulb **32** and connect to the filament within the bulb **32**. The bottom end of the long conductive leads **34** extend well into the hollow tube **38** as will later be explained. The use of an incandescent bulb **32** is preferred but is not required. Other light sources such as light emitting diodes (LEDs) and the like can also be used. The use of an incandescent bulb **32** is preferred because of its low cost and high degree of light output.

The incandescent bulb **32** is retained at one end of an elongated support **36**. The elongated support **36** is comprised in part of an elongated hollow tube **38**. A flange **40** is disposed on the exterior of the hollow tube **38** near its bottom end **42**. The purpose of the flange **40** is to seal the opening of a balloon, as is done in the prior art device of FIG. **1**.

At least two side holes **43** are formed through wall of the hollow tube **38** at a point below the top end **45** of the hollow tube **38**. An elastic element **37** surrounds the side holes **43**. The elastic element **37** acts as a one way valve by allowing gas to leave the hollow tube **38** through the side holes **43** but not allowing gas to enter the hollow tube **38** through the side holes **43**. From the point of the side holes **43** upward, a baffle structure **46** is disposed within the interior of the hollow tube **38**. The baffle structure **46** is integrally molded as part of the

hollow tube **38**. As such, the hollow tube **38** and baffle structure **46** are formed together in a single molding operation. This eliminates the need for a separate baffle and eliminates both the time and labor required to install a separate baffle. The baffle structure **46** facing the bottom end **42** of the hollow tube **38** is substantially conical in shape. As such, a sloped surface **39** of the conical shape is positioned adjacent each of the side holes **43**. The sloped surface **39** of the conical shape directs air flowing up through the hollow tube **38** out through the side holes **43** and into a surrounding balloon.

A bulb receptacle **50** (FIG. **3**) is disposed proximate the top end **45** of the hollow tube **38**. The bulb receptacle **50** is a cup shaped structure that extends between the open top end **45** of the hollow tube **38** and the baffle structure **46**. The bulb receptacle **50** is divided into two sections. The top section **52** (FIG. **3**) has a wide interior that communicates with the open top end **45** of the hollow tube **38**. Below the top section **52** is the narrower bottom section **54**. A ridge **56** is located at the point of transition between the top section **52** of the bulb receptacle **50** and the bottom section **54**. The ridge **56** acts as a rest for the bottom of the incandescent bulb **32**, thereby enabling the bulb **32** to be easily positioned at the proper depth within the bulb receptacle **50**. Adhesive **58** may be applied within the top section **52** of the bulb receptacle **50**. The adhesive **58** bonds to the incandescent bulb **32** and helps to form an air impervious seal in between the hollow tube **38** and the incandescent bulb **32**.

The bottom section **54** of the bulb receptacle **50** is tapered, wherein the taper leads to a small aperture **60** that extends through the baffle structure **46**. A double lead wire **62** extends into the hollow tube **38** through its open bottom end **42**. The double lead wire **62** extends through the aperture **60** in the baffle structure **46** and leads into the bulb receptacle **50**. Once through the aperture **60** in the baffle structure **46**, the double lead wire **62** is knotted into a knot **64** (FIG. **2**) that is larger than the aperture **60**. Consequently, the knot **64** acts as a locking device that prevents the double lead wire **62** from being pulled out of the hollow tube **38** past the baffle structure **46**. A small amount of adhesive (not shown) is added to the knot **64**. The adhesive serves two purposes. First, the adhesive locks the knot **64** in place over the aperture **60**. Second, the adhesive creates an air impervious seal in between the knot **64** and the aperture **60**. As a result, no air flows through the aperture **60** past the knot **64**. The double lead wire **62** extends out of the hollow tube **38** and leads to a battery source (not shown) that provides electrical power to the incandescent bulb **32**. The double lead wire **62** may also extend to a control circuit (not shown) that may cause the incandescent bulb **32** to blink in sequence by selectively controlling the flow of electricity in between the battery source and the incandescent bulb.

The leads of the double lead wire **62** connect to the conductive leads **34** of the incandescent bulb **32** within the bulb receptacle **50**. In the preferred embodiment, the wire leads are soldered to the conductive leads **34** of the incandescent bulb **32**, thereby creating a strong, reliable electrical connection.

The integral baffle structure **46** of the present invention eliminates the cost and labor of manufacturing and installing a separate baffle structure. Furthermore, the presence of an aperture **60** in the baffle structure **46** eliminates the need for separate conductive leads in the hollow tube. Since no separate conductive leads are required, a specialty bulb and a specialty wire connector that engage the conductive leads in the hollow tube are not required. The improved design set forth by the present invention therefore creates significant cost and labor savings over that available in the prior art.

It will be understood that the embodiment of the present invention described and illustrated herein is merely exemplary and a person skilled in the art can make many variations to the embodiment shown without departing from the scope of the present invention. There are many different balloon shapes and styles that may be illuminated. Since many differently shaped balloons exist, it will be understood that the shape and length of the present invention illumination device can be altered in order for the illumination device to properly position a light source near the center of the balloon. All such variations, modifications and alternate embodiments are intended to be included within the scope of the present invention as defined by the appended claims.

What is claimed is:

1. An illumination device for a balloon, comprising:

an illumination source;

a tube having a first end and an opposite second end and at least one side hole disposed in said tube between said first end and said second end, wherein said first end of said tube is adapted to receive and retain said illumination source in a fixed orientation;

a baffle structure having at least one sloped surface that is disposed within said tube proximate said at least one side hole, wherein said at least one sloped surface directs gas flowing in said tube from said second end through said at least one side hole, said baffle structure further including an aperture disposed there through;

a wire extending through said hollow tube and past said baffle structure through said aperture, wherein said wire is electrically coupled to said illumination source;

an elastic element disposed around said tube covering said at least one side hole, wherein said elastic element enables the outward flow of gas from inside said tube through said at least one side hole and prevents the inward flow of gas from outside said tube through said at least one side hole; and

wherein said baffle structure and said tube are integrally molded from the same material as a single unit.

2. The device according to claim **1**, further including an air impervious seal disposed between said aperture and said, wire wherein said air impervious seal obstructs the flow of air through said aperture.

3. The device according to claim **1**, wherein said wire is knotted above said aperture in said baffle structure forming a knot that is larger than said aperture.

4. The device according to claim **1**, further including adhesive disposed between said tube and said illumination source, whereby said adhesive retains said illumination source in said fixed position.

5. The device according to claim **1**, wherein said illumination source is selected from a group consisting of incandescent bulbs and light emitting diodes.

6. The device according to claim **1**, wherein said illumination source is an incandescent bulb having a bulb and two leads that extend from said bulb, wherein said two leads pass into said tube and said wire is directly coupled to said leads within said tube.

7. The device according to claim **6**, wherein said wire is soldered to said leads of said incandescent bulb within said tube.

8. The device according to claim **1**, wherein said illumination source has a bottom edge and a ridge is disposed in said tube proximate said top end, wherein said bottom edge of said illumination source rests against said ridge when said illumination source is at said fixed orientation.

9. The device according to claim **1**, further including a flange radially extending from said tube proximate said bottom end of said tube.

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