

- [54] **LIGHT PRODUCING DEVICE**
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220/44, 53, 54; 250/71; 252/188.3, 301.2,
301.3; 161/406, 41, 410

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[57] **ABSTRACT**

A hermetically sealed aluminum container provided with a pull-tab means for admitting air and a cotton wick soaked with tetrakis (dimethylamino)ethylene which when exposed to air produces a blue-green light. The device is a reliable map-reader or a non-beaming flashlight.

[56] **References Cited**

UNITED STATES PATENTS

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2 Claims, 2 Drawing Figures

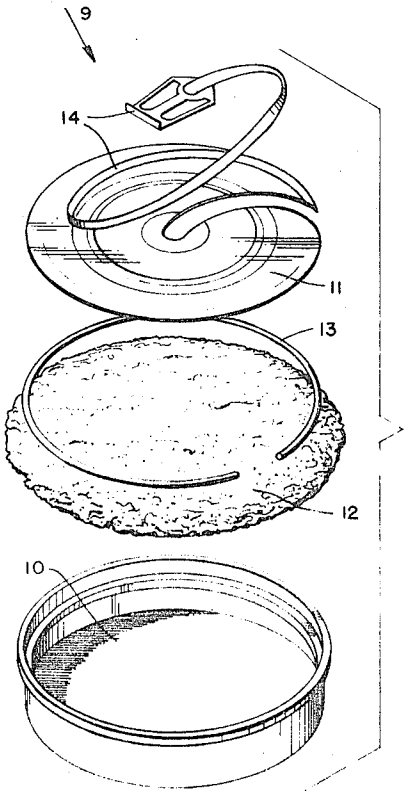


FIG. 1.

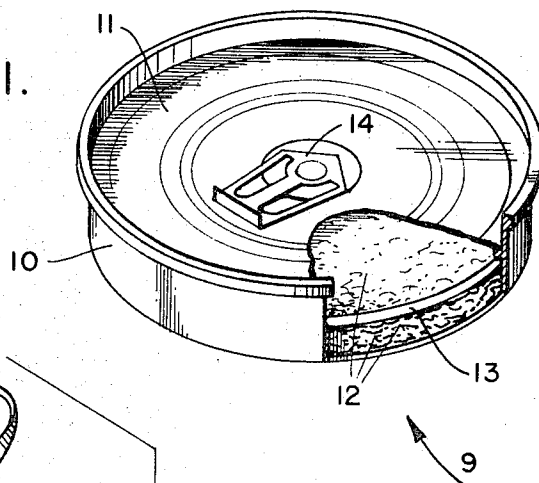
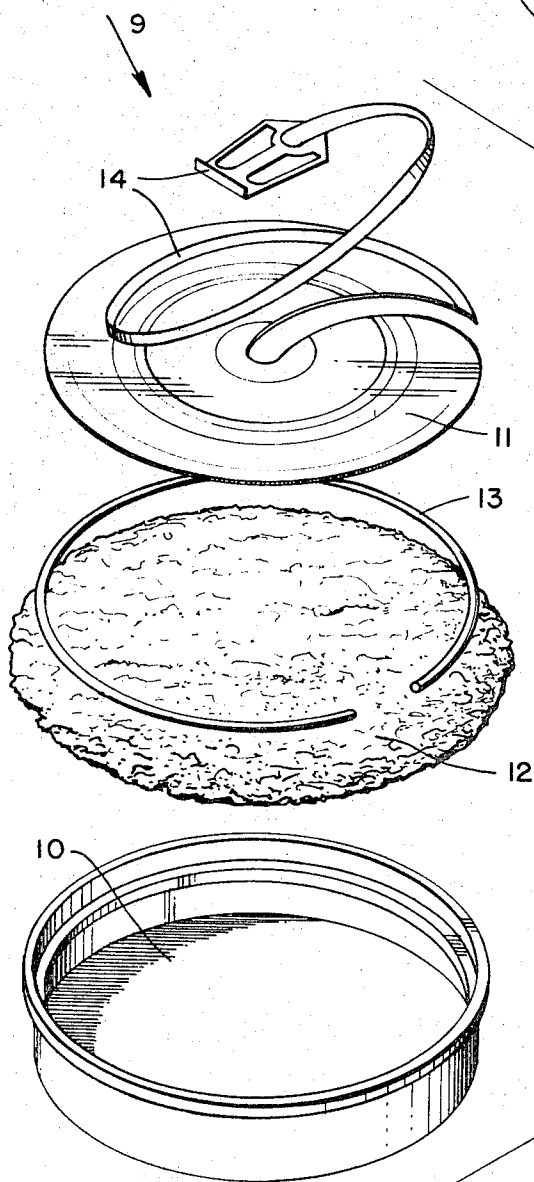


FIG. 2.

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LIGHT PRODUCING DEVICE

The invention herein described may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

The present invention relates to a light producing device, and more particularly to a device in which oxyluminescent compounds are used.

Battery-powered light sources have generally been used to provide light for illumination. These devices in many situations have limitations, such as, adversely affecting night vision, attracting unwanted attention because of beaming, and awkwardness in carrying and stowing. Their shelf life is limited due to battery deterioration, bulbs are fragile, and corrosion of electrical contacts reduces reliability. Although such devices have served the purpose, the present invention provides a light producing source which possesses none of the aforementioned disadvantages.

It is therefore an object of the present invention to provide a light source which has indefinite shelf life and requires no maintenance to keep in readiness.

Another object is to provide a practical light-producing device which is economical, light-weight and easily packaged.

Yet another object is to provide a light source of medium light intensity with high reliability for use as a flashlight, night signal, map-reader, etc.

Other objects, features and many of the attendant advantages of this invention will become readily appreciated as the same become better understood by reference to the following detailed description when considered in connection with the accompanying drawing wherein:

FIG. 1 is a sectional view of the light producing device, subject of this invention; and

FIG. 2 is an exploded view of the components of this invention with appropriate legends.

Referring now to the drawings, there is illustrated in FIG. 1 the light producing device designated generally by numeral 9, which comprises a hermetically sealed vessel or container 10 having an easy-pull-off lid 11, and an oxyluminescent wick 12 secured to the inside of container 10 by a retaining ring 13. Lid 11 is provided with a combined pull tab and tear strip means designated by numeral 14 by which air is admitted to the container to activate the wick. Container 10 and lid 11 may be of any suitable material such as plastic or metal. Aluminum was used in the first models because it is light and was readily available. Wick 12 consists of any absorbent material compatible with the oxyluminescent compound used. Terry-cloth saturated with tetrakis(dimethylamino)ethylene (hereinafter called TMAE) resulted in a practical wick having long time light-producing characteristics (up to 10 hours).

In assembling the present device, terry-cloth was placed in the bottom of container 10 and secured by retaining ring 13 which may be rubber, plastic or metal. The chemiluminescent compound, tetrakis(dimethylamino)ethylene (TMAE), was then poured onto the terry-cloth to make wick 12. Lid 11 was secured to container 10 by use of a commercial canning machine. Assembly of this device must take place in a nitrogen or inert atmosphere because a component of the wick, fluoresces upon exposure to the oxygen in the air. To operate the invention, it is only

necessary to grasp means 14 on lid 11 and pull up. This ruptures the lid permitting air to enter the container and activate the wick producing a blue-green light.

Multiple layers of absorbent material soaked in tetrakis(dimethylamino)ethylene were used to produce a longer lasting light. Bird's-eye cotton and blotter paper were among those found suitable.

By providing an auxiliary snap on lid, light can be extinguished or reactivated at will. The container shape can be varied to suit special purpose needs, and tabs, clips, or clamps may be added for attachment to clothing or hanging from various sources.

An aluminum container with a glass window was made equipped with a poppet valve and another embodiment included a mirror back to reflect the light. Some models were provided with a rubber plug to reseal the container. Various colors of light may be produced by using a suitable dye on the oxyluminescent wick or by use of appropriate lenses.

This invention uses the chemiluminescent compound, tetrakis (dimethylamino)ethylene, but other peraminoethylenes such as tetrakis(N-pyrrolidiny)ethylene, 1,1',3,3'-tetramethyl- $\Delta^{2,2}$ -bi(imidazolidine), and tetrakis(dimethylamino-methyleneamino)ethylene may be used. Several new chemiluminescent compositions are activated in a water environment and could be used in the present device as a signal for sea rescue.

This invention permits the practical use of light-producing chemicals and reduces the size of a light source down to approximately one-tenth that of the present-day flashlight.

The light produced by this invention approaches 100 percent reliability over an infinite time period because it is only activated by air and can be resealed when not in use. Its performance characteristics are not adversely affected by immersion of the device in water, by heat or by most other environmental conditions.

Obviously many modifications and variations of this invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A light producing device consisting of a hermetically sealed aluminum container; and a wick secured within said container; said wick consisting of at least one layer of cotton saturated with tetrakis(dimethylamino)ethylene, and said container being provided with a lid having a pull tab and tear means for admitting air to activate said wick.
2. A non-beaming flashlight which does not attract unwanted attention consisting of a hermetically sealed wafer-like container, and a wick sealed within said container; said wick consisting of a porous cloth substrate impregnated with tetrakis(dimethylamino)ethylene; and said container composed of a light-weight metal compatible with said tetrakis(dimethylamino)ethylene and having on one side an easy-opening pull tab means for admitting air into said container whereby said tetrakis(dimethylamino)ethylene is activated producing a nonbeaming blue-green light.

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