Feb. 10, 1948. H. F. WATERS 2,435,811

ARTIFICIAL CANDLE

Filed March 30, 1945

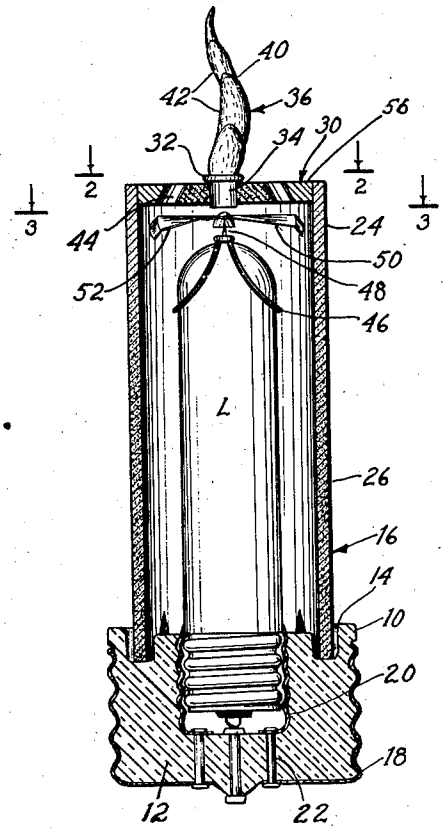

FIG. 1.

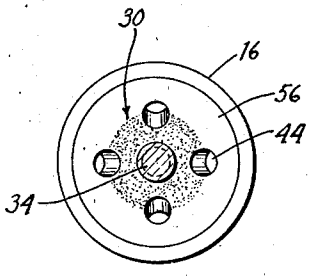

FIG. 2.

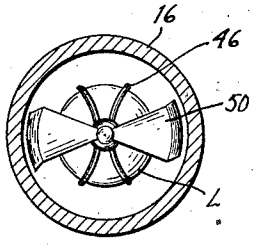

FIG. 3.

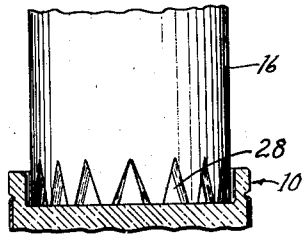

FIG. 4.

INVENTOR.

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ARTIFICIAL CANDLE

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6 Claims. (Cl. 240—10)

1

The present invention relates to ornamental illuminating devices and more particularly to artificial candles of the type which are adapted to be energized or illuminated electrically.

Heretofore various illuminating devices of this character which are designed to simulate a candle effect have appeared upon the market. These devices have possessed numerous limitations, the chief one being the extreme cost of manufacture thereof, requiring as they often do specially constructed filament lamps to give the desired flame effect, resistors, transformers, or both, to regulate or attain the required current flow, or a special and often complicated system of wiring to accommodate a series or a parallel system of lighting or illumination units.

The present invention has been designed to overcome the above noted limitations that are attendant upon the manufacture and use of such present day installations. Toward this end the invention contemplates the provision of a relatively simple and inexpensive illuminating unit which will fit the conventional and standard electric light socket and which may readily be installed therein or removed therefrom at will with a minimum of ease and without destroying or altering existing wiring systems.

This being the principal object of the invention, another object thereof is to provide such a unit which does not rely upon the use of a specially constructed filament lamp but which relies for its illumination upon a conventional and replaceable electric lamp or bulb which is substantially universally obtainable upon the market.

Another object of the invention is to provide such a device which is operable from the regular household lighting system whether the same be of the alternating or direct current variety.

A still further object is to provide an illuminating unit designed to simulate a candle which employs a novel candle flame effect that gives the general appearance of flame flickering in a manner common to an ordinary wax candle when the latter encounters a draft or other disturbance.

Another object of the invention is to provide a unit of this character in which the actual illuminating source, i. e. the electric lamp bulb is insertible in or removable from the unit without resorting to the use of tools or the like.

Yet another object of the invention is to provide an artificial candle effect in which not only the flame but also the body of the unit or candle-

2

stick portion at the top thereof where the flame appears gives a natural appearance in that it emits an illuminated transparent effect just as natural wax is made transparent, while in the lower regions thereof the body exhibits an opaque effect.

Various other objects and advantages of the invention, not at this time enumerated, will become more readily apparent as the nature of the invention is better understood.

In the accompanying single sheet of drawings, forming a part of this specification, one embodiment of the invention is illustrated.

In these drawings:

Figure 1 is a longitudinal sectional view taken substantially centrally through an illuminating unit constructed in accordance with the principles of the present invention.

Figure 2 is a sectional view taken substantially along the line 2—2 of Figure 1.

Figure 3 is a sectional view taken substantially along the line 3—3 of Figure 1, and

Figure 4 is a side elevational view, partly in section, of the lower regions of the illuminating unit.

In all of the above described views, like characters of reference are employed to designate like parts throughout.

Referring now to the drawings in detail, the device involves in its general organization a base or support which may be in the form of a slightly modified form of light socket adapter and which has been designated in its entirety at 10. As shown, this adapter employs a central core 12 of porcelain or the like which has been modified to the extent that it is formed with an upper shallow ring-like trough 14 near the peripheral regions thereof and into which there is adapted to be loosely received the body portion 16 of the improved candle-simulating unit. The remainder of the adapter is of conventional design and includes the usual outer and inner conducting shells 18 and 20 respectively which are electrically connected together as at 22.

It is to be understood that the adapter 10 in the present instance has been shown merely for illustrative purposes as a base for the remainder of the illuminating device and that various other forms of bases may be employed. As such, the adapter 10 is capable of being received in any conventional light socket wherever it may be located. With the device in use with other than the conventional lighting system, as for example where it is used as a party favor on a banquet or

other table as a self-contained unit, a suitably modified form of base would, of course, be employed.

The previously mentioned body portion 16 is of open-ended tubular configuration and is designed to simulate the body portion of a candle. This member is preferably formed of a ceramic or plastic material and is so constructed that for a slight distance extending downwardly from its upper edge it is transparent or at least translucent as shown at 24. The remainder of the member 16 is preferably opaque and this latter portion is designated at 26. There need be no clear line of demarcation between the two portions 24 and 26 and it is preferred that these regions merge gradually into each other with the member becoming more and more opaque progressing downwardly. To attain maximum candle effect a region of total opacity should occur approximately one-eighth of the total length of the member measured from the top thereof. I do not desire however to be limited to any specific standard for such attainment of total opacity.

As previously stated, the lower end of the tubular member 16 is open and seats within the annular groove 14. In order to permit of free circulation of air through the member, a series of serrations or V-shaped notches 28 are formed in the lower edge thereof.

The upper end of the member 16 is closed by means of a closure plate 30 which is formed of an opaque material and which has a central opening formed therein and in which there is adapted to be removably received the base portion or shank 34 of a flame-simulating element 36. This latter member may be transparent if desired but it is preferably semi-transparent in that it is formed of glass or other material which transmits light rays and which is colored with a yellow hue simulating the color of a candle flame. The flame-simulating unit is formed with a rib 32 immediately above the shank 34 which seats on the upper surface of the closure plate 30. Above the rib 32 there is formed a generally flame-shaped top portion 40 formed of individual lobes 42 that diminish in size upwardly.

The closure plate 30 is formed with a series of spaced circularly arranged inclined apertures 44 (see Figures 1 and 2) which are adapted to allow light generated within the tubular member 16 to fall upon the lower regions of the flame-simulating element 36 for reflection therefrom and also for absorption thereby and subsequent refraction therefrom. Such light as enters the element 36 through the bottom end of the shank 34 will similarly be radiated from the element by refraction.

The adapter 10 is adapted to removably receive within its central shell 20 a conventional elongated illuminating lamp L of the filamentary type. A suitable wire or other element 46 frictionally engages the upper regions of the lamp L and has associated therewith an upwardly projecting sharpened point or pinnacle 48 upon which there loosely rests for rotational movement a light intercepting multi-vane member or turbine 50 having a series of blades or vanes 52 associated therewith. It is to be noted that the member 50 is positioned in close proximity to the underneath side of the closure plate 30 in such a manner that upon rotation thereof the blades 52 thereof will successively intercept light issuing from the lamp L and entering into or

falling upon the flame-simulating element 36. The net effect of this interception of light intermittently is to impart a realistic effect to the member 36 which closely simulates the normal flickering of a candle flame when the same encounters a draft or other disturbance.

It will be understood that the member 50 will, when the lamp L is energized, normally tend to rotate inasmuch as the vanes or blades are so inclined that convectional air currents created within the member 16 by virtue of the heat generated by the lamp L will rise upwardly and be expelled through the apertures 44. The apertures 44 thus serve a dual purpose, namely to permit free circulation of air through the tubular member 16, and also to properly direct light onto the flame-simulating element 36 for maximum optical illusory effect. The apertures, in combination with the notches 28 at the base of the tubular member 16, may be said to also serve a third function in that by their presence they allow heat to escape from the member and thus prevent overheating and consequent burning out of the lamp L.

It is also to be noted that light issuing from the flame-simulating element 36, both by reflection and by refraction, will to a certain extent be directed downwardly and toward this end to insure maximum illusory effect it is contemplated that the extreme outer peripheral regions of the closure plate 30 be made transparent or translucent as shown at 56. In this manner light which is reflected from the flame-simulating element 36 may pass through this outer peripheral region of the closure plate 30 and also through the upper portion of the tubular member 16 which, as previously stated is also transparent or translucent, and give the effect of the transparency of a partially melted candle top.

In addition to the above, light generated within the tubular member 16 itself will also pass outwardly through the upper transparent or translucent region of the latter, thus augmenting the illusory effect of an ignited candle.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawing or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention. Only insofar as the invention has particularly been pointed out in the accompanying claims is the same to be limited.

Having thus described the invention, what I claim and desire to secure by Letters Patent is:

1. An artificial candle comprising in combination, an elongated hollow tubular member formed of light-transmitting material adjacent its upper regions and of opaque material adjacent its lower regions, a source of light disposed within said member, a flame-simulating element at the upper end of said member and formed of light-transmitting material, means directing light issuing from said tubular member interiorly thereof onto said flame-simulating member for reflection therefrom.

2. An artificial candle comprising in combination, an elongated hollow tubular member formed of light-transmitting material adjacent its upper regions and of opaque material adjacent its lower regions, a source of light disposed within said member, a flame-simulating element at the upper end of said member and formed of light-transmitting material, means directing light issuing from the interior of said tubular member onto

and through said flame-simulating element for radiation therefrom by refraction.

3. An artificial candle comprising in combination, an elongated hollow tubular member formed of light-transmitting material adjacent its upper regions and of opaque material adjacent its lower regions, a source of light disposed within said member, a flame-simulating element at the upper end of said member and formed of light-transmitting material, means directing light issuing from the interior of said tubular member onto and through said flame-simulating member for reflection therefrom and for radiation therefrom by refraction.

4. An artificial candle comprising in combination, an elongated hollow tubular member formed of light transmitting material adjacent its upper end which gradually increases in opacity progressively downwardly, a filamentary light source disposed within said member, means for energizing said source, a flame-simulating element disposed above said member and formed of light-transmitting material, said element being exposed to rays of light issuing from said source for reflection and refraction from said element, a light intercepting turbine rotatably disposed between the source and said flame-simulating element and adapted to be rotated by convection currents generated within said chamber, means adjacent the bottom of said member for admitting air thereinto, and a perforate member disposed within said member adjacent the top thereof above said turbine.

5. An artificial candle comprising in combination, a support, an elongated hollow tubular member disposed on said support loosely and having an open lower end, said member being formed of light-transmitting material in its upper regions and of opaque material in its lower regions, a closure for the upper end of said tubular member, there being an opening formed centrally of said closure, a flame-simulating element having a body portion and a stem portion removably received within said opening with its lower end exposed to the interior of the tubular member, said element being formed of light-transmitting material, a filamentary light and heat emitting source disposed within said tubular member and supported on said support, there being a series

of inclined apertures in said closure for permitting heat generated within the tubular member to escape from the latter and for permitting light issuing from said source to fall upon the outer surface of said flame-simulating element, and a light-intercepting turbine rotatably mounted on said source in close proximity to said inclined apertures, said turbine being adapted to be rotated by convection currents generated within the tubular member, there being means formed in said tubular member adjacent the bottom thereof for admitting air to the interior of the tubular member.

6. An artificial candle comprising in combination, an elongated hollow tubular member, a filamentary light source disposed within said member, means for energizing said source, a flame-simulating element at the upper end of said member and formed of light transmitting material, the extreme lower end of said element being exposed to light issuing from said source whereby light will enter said element and be emitted therefrom by refraction, a perforate closure for the upper end of said member having apertures therein through which light issuing from said source may pass and be directed onto the medial regions of said element for reflection therefrom, a light-intercepting turbine rotatably disposed between said source and flame-simulating element and adapted to be rotated by convection currents generated within the chamber by said light source, said apertures also serving to permit egress of heated air from within said chamber, and means adjacent the bottom of said member for admitting air to the interior thereof.

HARRY F. WATERS.

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The following references are of record in the file of this patent:

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