

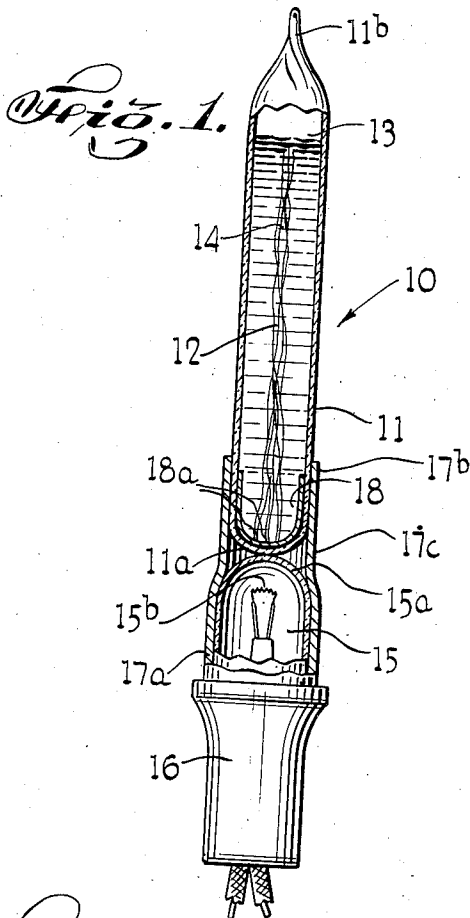
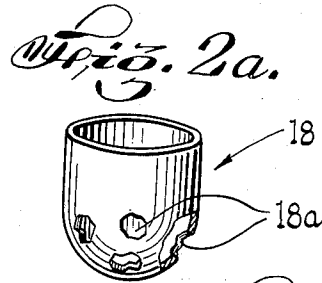
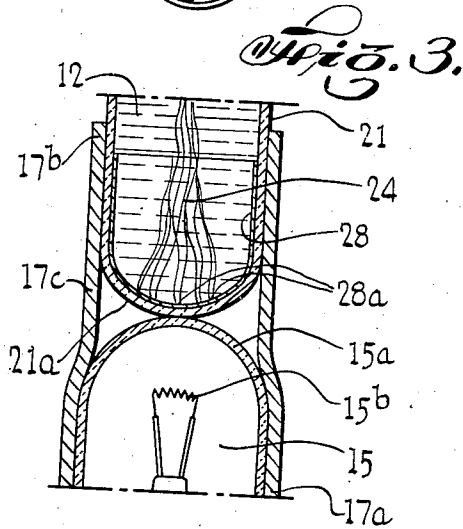
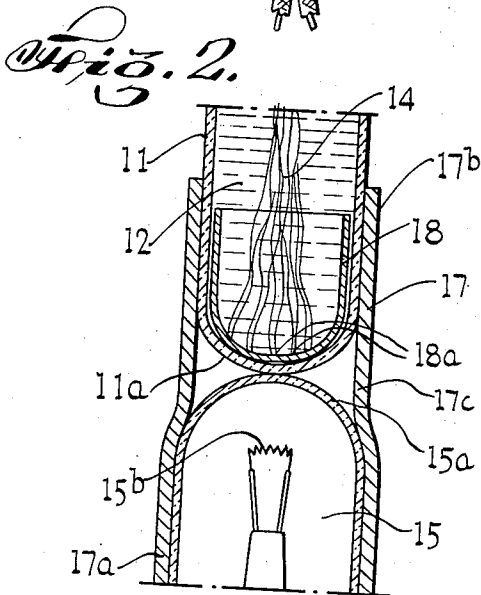
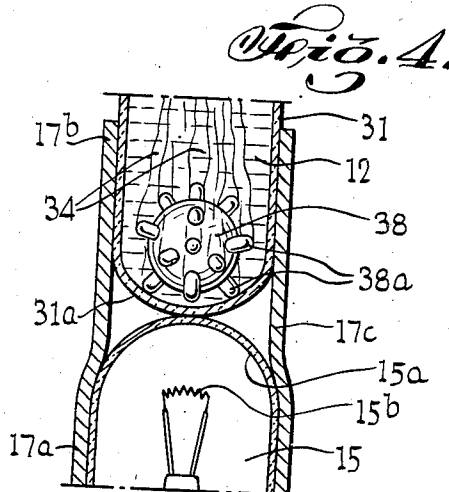
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DECORATIVE ILLUMINATED DEVICE AND METHOD

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DECORATIVE ILLUMINATED DEVICE AND METHOD

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2 Claims. (Cl. 240-10)

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This invention relates to improvements in illuminated devices and a method for operating same, and more particularly is directed to devices and a method of the character described which provides continuous unbroken streams of flowing vapor in a body of transparent liquid embodied in the operation and construction of illuminated ornamental and decorative display devices such as for Christmas tree lighting, signs and the like.

Among the objects of the invention is to generally improve devices of the character described and their method of operation in which a simplified construction of few and easily assembled parts are required, which shall be economical to manufacture especially in quantity production, which shall be positive and reliable in operation requiring a minimum of external heat supply, and which shall be practical and efficient to a high degree in use.

Other objects of the invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists of features of construction and method, combinations of elements, arrangement of parts and steps in operation which will be exemplified in the constructions and method hereinafter described and of which the scope of the application will indicate in the following claims.

In the accompanying drawing in which possible illustrative embodiments of the invention are shown.

Fig. 1 is a front elevational view, partly broken away to expose the interior, showing a unit of a Christmas tree light outfit constructed to embody the invention and showing the improved method.

Fig. 2 is an enlarged detailed fragmentary view of the vapor current generating means as shown in Fig. 1, and

Fig. 2a is a perspective view of the concentrator member removed from the device.

Figs. 3 and 4 are similar views to Fig. 2 showing two modified constructions of vapor current generating means and illustrating the improved method embodying the invention.

Heretofore devices used for purposes similar to that for which the applicant's is utilized, have as their principal feature the generation of illuminated vapor bubbles passing in individual spaced succession through a liquid column. In the present invention improved devices of most simple construction and method are made available which differ from the prior art in providing for the generation of illuminated currents un-

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broken streams of vapor extending as waving bands through a liquid column, a plurality of such currents forming in appearance interlaced or entwined fluttering ribbons a contrastingly attractive and novel lighting effect passing through the liquid column.

To this end, as seen in the drawing, there is provided an improved ornamental illuminated device 10 constructed to embody the invention which is seen to include a vertically disposed transparent tube body of glass or other translucent material designated generally as 11 having an integral closed bottom end 11a and sealed top end 11b, said tube body 11 for the purposes of forming a Christmas tree lighting ornament may be made in appearance to simulate in outline, form, shape and size that of a candle.

In one form of the invention, shown in detail in Fig. 2, a suitable vapor concentrator member 18 may be fitted or seated to extend along the interior surface of the tube body end 11a. The tube body contains a readily volatilizable liquid 12, such as ether or wood alcohol but preferably a translucent liquid which has a like relatively normal low boiling point but which is non-inflammable. The liquid 12 may be placed in the tube body 11 through the top end 11b thereof before fusing the latter for hermetically sealing the liquid 12 therein at a level short of said top end 11b so as to leave a space 13 therein as shown in Fig. 1. The space 13 above the liquid 12 in the tube body 11 may be evacuated before said tube top end 11b is sealed to permit lowering the boiling point normally required for the liquid 12. Said space 13 constitutes a condensing and heat dissipating means for the device 10.

The concentrator member 18 may be made of metal or rough textured non-metallic material, such as porous clay or the like. When ether is used as the liquid 12 copper is a desirable material to use for said member as it forms a protective means to eliminate possible explosive derivatives.

The concentrator member 18 mounted in said lower bottom end 11a provides a focal point to serve as a source or beginning for the generation of one or more continuous currents 14, that is, an unbroken stream or streams of vapor extending upwardly through the liquid column 12 on the application of illuminating heat by means of, for example, an incandescent electric lamp 15 in the manner hereinafter described. The concentrator member 18 may be formed with non-uniform irregularities either cut out or projection portions 18a, projecting portion not being shown,

3 of various shapes and sizes, each serving as a focal point and irregularly spaced apart if desired so that entwined fluttering ribbons 14 producing a wide range of contrastingly attractive lighting effects are made available.

In Fig. 1 of the drawings, the invention is shown with the improved ornamental illuminated device 10 having the lower bottom end 11a of the tube body 11 supported in close proximity to the bulb 15a of lamp 15. The latter as here shown is mounted in one of the electric sockets 16 of a Christmas tree lighting outfit of any well understood construction (not shown) by means of a sleeve holder or connector 17 made of fiber, glass, plastic or any other non-combustible material. The lower end 17a of the sleeve holder 17 fits snugly over the lamp bulb 15a and the upper end 17b fits snugly over the lower bottom tube body end 11a so that said holder 17 provides a relatively firm interconnecting support or rigid coupling. The holder 17 also serves as a conduit to guide the surrounding air heat conducting medium from the lamp bulb 15a to said bottom tube end 11a provided with the internal mounted member 18 is thus disposed directly over the source of heat and light, which in this instance, is the glowing lamp filament 15b.

In practicing the invention, assuming the socket 16 is positioned on a Christmas tree (not shown) or arranged for other decorative display purposes and connected in an electric circuit power supply (not shown) for lighting the lamp 15. Heat and light radiated from the lamp filament 15b is effective to cause the generation of vapor currents with said concentrator member 18 serving as a focal point or points when the heat from said lamp filament 15b is maintained to a sufficient degree to generate vapor at a rate to make the flow thereof continuous in an unbroken stream or streams through the liquid column. The portion 17c of the sleeve holder 17 between the lamp bulb 15a and the tube body end 11a serves as a conduit to confine the heat conducting medium therein for producing the aforesaid degree of heat with a minimum heat producing source.

Light beams from lamp filament 15b are projected longitudinally the length of each of said flowing current 14 which forms a waving illuminated band as seen from the exterior of the tube body 11 and shown in Fig. 1. As concentrator member 18 causes one or more separate flowing currents 14, at each of said cut out or projecting portions 18a those currents 14 appear together to either interlace, entwine or emerge into fluttering ribbons thereby forming contrastingly attractive activated lighting effects in the liquid column.

The lighting of bulb 15 also illuminates the side wall of the transparent tube body 11 to the top end 11b thereof and imparts the appearance suggestive of a lighted candle.

It has been found that the construction, shape, size, depth, and spacing of either the cut out or projection portions 18a are effective to control the cross sectional shape, contour and general fluttering path of the flowing stream or streams of the continuous unbroken currents whereby a relatively large range of said illuminating activated streamer effects are made available. When neither cut outs or projection portion 18a are provided, the concentrator member 18 will function but definite focal points will not be established.

The improved method embodying the invention in the form above described will now be apparent. The column of volatile liquid 12 within the tube body 11 which preferably is under less than atmospheric pressure because of the evacuated space 13 above the level of the liquid 12, has an external illuminating radiant heat applied, as by means of a suitable heat source, such as the glowing filament 15b of lamp 15, which acts to focus the effect thereof on the portion of the liquid at the tube bottom end 11b at the cut out or projecting portions 18a of concentrator member 18. Heat from said lamp filament 15b is supplied to an effective degree sufficient to generate a vapor streaming current from each of said cutouts or projections 18a, flowing in a continuously and unbroken stream up through the liquid body 12. These currents 14 are illuminated by the light from said lamp filament 15b passing through the liquid body 12 so that each of said currents 14 is seen to sparkle in a waving or fluttering ribbon stream suggesting in activity rapid dancing movements. Within a wide range of heat supplied such movements can be made to appear more or less active as desired. Each of the various cut outs or projections 18a generates an individual current 14, as above described which may be located so as to interlace, entwine or merge the several currents 14 thereby forming intricately contrasting and attractive lighting effects.

The vapor forming currents 14 on reaching the space 13 after passing through the liquid column 12 condense and disappear. The condensed vapors return to the liquid in body 11 for replenishing the same to continue the cycle of operations above described as long as said illuminating radiant heat from lamp filament 15b is applied.

While in the above described improved method of operation a continuous unbroken stream current of flowing vapor is produced in the liquid body the novel construction may also be utilized for producing a flow of bubbles in a stream by applying insufficient heat to form said continuous stream current from the various focal points.

In Fig. 3 a modified form of the invention is shown in which 28 is the concentrator member which may be formed of a thin film or deposit on the interior closed bottom end 21a of transparent tube body 21. Said member 28 may be made of materials like member 18 described above but may be electroplated or permanently deposited or molded to adhere in the position shown. Member 28 like said member 18 may be formed with a roughened surface against which liquid 12 contacts and provide focal points 28a for generating one or more continuous currents 24, that is, an unbroken stream or streams like currents 14 described above for device 10.

In Fig. 4 another modification of the invention is shown. Here a concentrating member 38 which merely rests on the bottom end 31a of the transparent tube body 31. The member 38 may be made of any suitable material, as for example, a rough textured metallic or non-metallic globular portion with spaced metallic projections as shown in Fig. 4. The member 38 provides focal points 38a at the free ends of said projections in the manner similar to members 18a and 28a described above for generating one or more continuous currents 34 in unbroken stream or streams like currents 14 and 24 described above. Member 38 may be made out-

side the tube body 31 and simply drop into tube body 31 for assembly.

It is to be understood that the modified constructions shown in Figs. 3 and 4 may be assembled in holders 17 and supportingly mounted on incandescent lamp 15 in the same manner as have been described for device 10. The improved method of operation described for device 10 above is also equally applicable to said modified forms in practicing the invention.

It is therefore seen that there is provided an improved device and a method of operation in which the objects of the invention are achieved and which are well adapted to meet all conditions of practical use.

As various possible embodiments may be made in the above invention for use for different purposes and as various changes might be made in the embodiments and method above set forth, it is understood that all the above matters here set forth or shown in the accompanying drawing are to be interpreted as illustrative and not in a limiting sense.

Thus having described my invention, I claim as new and desire to secure by Letters Patent:

1. A device of the character described comprising a sealed transparent tube body, a volatile liquid partially filling said body, the unfilled portion of said tube body being under reduced atmospheric pressure, heating and illuminated means applied to said filled tube body portion, and a relatively fixed operative means carried on the interior surface of said filled tube body portion to provide a focal point serving as a source to generate unbroken current of vapor for passing through the liquid to produce an activated light effect, said heating and illumi-

nating means maintaining a gradient between the focal point and said unfilled tube body portion whereby the generated vapor current light effect continuously initiated at said focal point, said fixed operating means comprising a thin metallic coating firmly applied against said body portion interior surface.

2. A device of the character described comprising a sealed transparent tube body, a volatile liquid partially filling said body, the unfilled portion of said tube body being under reduced atmospheric pressure, heating and illuminated means applied to said filled tube body portion, and a relatively fixed operative means carried on the interior surface of said filled tube body portion to provide a focal point serving as a source to generate unbroken current of vapor for passing through the liquid to produce an activated light effect, said heating and illuminating means maintaining a gradient between the focal point and said unfilled tube body portion whereby the generated vapor current light effect is continuously initiated at said focal point, said focal point means being formed of a thin shell mounted against said body portion interior surface and fitted to conform in size and shape to the latter.

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