

United States Patent

Tokarz

[15] 3,652,197

[45] Mar. 28, 1972

[54] NONCONSUMABLE WICK

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[22] Filed: May 12, 1970

[21] Appl. No.: 36,642

[52] U.S. Cl. 431/326, 252/425.5, 252/430,
252/477, 431/288

[58] Field of Search 252/425.5, 430, 428, 477;
431/288, 326, 327, 298; 44/40; 65/22; 210/40, 510

[56] References Cited

UNITED STATES PATENTS

3,413,967	12/1968	Hoock	431/288
3,338,691	8/1967	Knowles et al.	44/40
3,484,371	12/1969	Biegler et al.	210/40

2,978,340	4/1961	Veatch et al.	65/22
3,556,698	1/1971	Tully et al.	44/51
266,477	10/1882	Hurlbutt	252/425.5
1,546,616	12/1923	Buberl	252/425.5
1,738,138	12/1929	Cocklin	252/425.5
1,920,384	8/1933	Halter	252/425.5
3,533,908	10/1970	Hoogstein	210/510

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[57]

ABSTRACT

A wick is formed by a plurality of hollow ceramic microspheres adhered together with epoxy resin which is capable of absorbing flammable liquids and transporting the liquid by capillary action above the reservoir of the flammable liquid.

8 Claims, 8 Drawing Figures

Fig 1

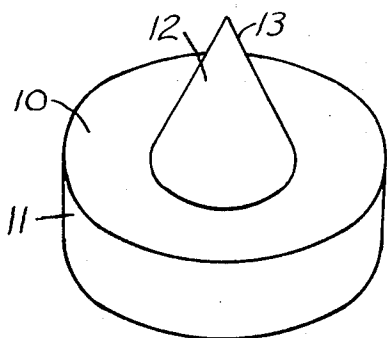


Fig 2

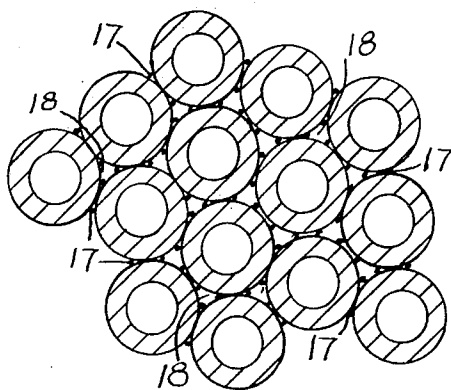


Fig 3

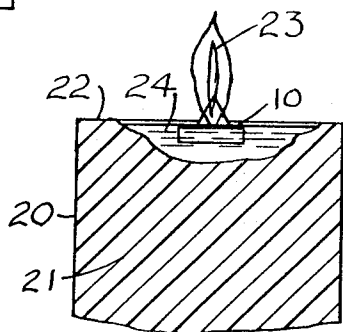


Fig 4

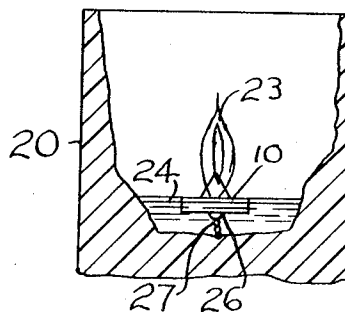


Fig 5

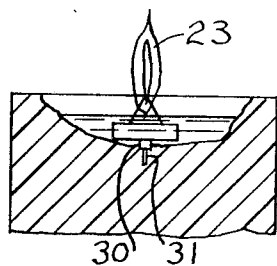


Fig 6

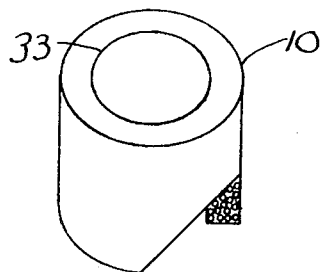


Fig 7

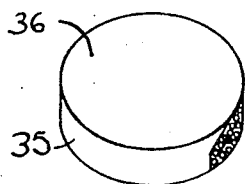
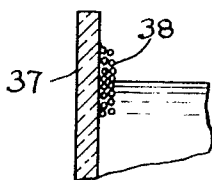


Fig 8



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NONCONSUMABLE WICK

BACKGROUND OF THE INVENTION

This invention relates to wicks for lamps, candles and the like and more particularly to flame wicks that are non-consumable.

The purpose of the wick is to convey by capillary action a constant supply of a flammable liquid from a reservoir to a flame to support the flame.

The conventional candle is formed with a fabric wick embedded in the center thereof, generally running the full length. Such wicks are almost always burnable and consumable. Candle wicks are generally constructed of loosely twisted soft-spun fibers, whereas oil lamp wicks are generally constructed of a flat woven material made of cotton or asbestos. This invention extends to wicks that can be used for candles, lamps, oil stoves, cigarette lighters, or the like to draw up melted tallow, wax, oil, or other flammable liquid above a reservoir to be burned.

One of the principal objects of this invention is to provide a non-consumable wick that can be re-used over and over again.

An additional object of this invention is to provide a wick material that may be machined or molded to a variety of shapes to fit the desired use.

A further object of this invention is to provide a candle wick that greatly simplifies the manufacture of the candle deleting the need for the normal fabric wick that is embodied within the candle.

An additional object of this invention is to provide an inexpensive wick material that is non-consumable.

These and other objects and advantages of this invention will become apparent upon the reading of the following detailed description of the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred and alternate embodiments are illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view of a wick embodying the principle features of this invention;

FIG. 2 is a fragmentary enlarged cross-section of the wick illustrating its composition and construction;

FIG. 3 is a vertical cross-section of the candle showing the wick during the initial period of burning;

FIG. 4 is a cross-sectional view similar to FIG. 3 except showing the candle partly consumed;

FIG. 5 is a cross-sectional view of a candle showing an alternate embodiment of the wick;

FIG. 6 shows a perspective view of an alternate embodiment of the wick;

FIG. 7 is a perspective view showing an alternate embodiment of the wick; and

FIG. 8 is a vertical cross-sectional view of a container showing a wick formed as a layer on the side of the container for drawing liquid up the container wall.

DETAILED DESCRIPTION OF PREFERRED AND ALTERNATE EMBODIMENTS

A wick 10 is illustrated in FIG. 1 having a body 11 with an upward projection 12 extending therefrom. Projection 12 has a surface 13 for supporting a flame.

The wick 10 is constructed with a plurality of closely associated hollow ceramic spheres which are non-consumable and which have diameters less than one-quarter inch. Preferably the ceramic spheres have diameters in the micron range which is from 0.01 to 0.0001 millimeters. The microspheres are held sufficiently close together to absorb and transport the flammable liquid by capillary action, to the flame surface 13. The hollow ceramic microspheres are held in close association by an adhesive 17. A preferable adhesive is epoxy resin. Interstices 18 are formed between the ceramic microspheres for absorbing the flammable liquid by capillary action. It has been found that such a wick will absorb

between 50 and 70 percent of its own weight of molten wax or other inflammable fluid and will transport the inflammable fluid 1 inch up a heated $\frac{3}{8}$ -inch diameter rod when the tip of the rod is dipped in the inflammable fluid. It can be said that the wick is highly porous. The wick has a specific gravity that is less than that of the melted wax or flammable liquid so that it will float on the surface of a flammable fluid reservoir. The wick can withstand temperatures in excess of 1,300° Fahrenheit and is highly insulative enabling a very hot flame to be maintained on the surface of the wick without conducting the heat through the wick to vaporize the flammable oil or wax.

Another important advantage is that the wick can be readily constructed in a variety of shapes best suited for the desired use and flame effect. The wick material can be readily shaped by machinery or by molding. The wick may be formed as cones, cylinders, tubes, blocks, and multitudes of other shapes. As a matter of fact such a wick opens up a whole new design concept for flame patterns and effects for the artist and candle maker.

FIG. 3 shows a wick 10 mounted on the top of candle 20. The candle 20 has a cylindrical body 21 with a top surface 22. The wick 10 is initially positioned on the top surface 22 and then lit to produce a flame 23 which will readily heat the wax adjacent the wick to form a liquid reservoir 24. The wick floats in the fluid reservoir with the projection extending above the fluid surface to support the flame. For some applications it may be desirable to pre-coat or pre-soak the wick in flammable liquid to facilitate the initial generation of the flame.

FIG. 4 shows the candle partially burnt in which the wick 10 has moved downward with the fluid surface supporting the flame in the center of the candle. Means 26 are provided on the wick 10 (FIG. 4) for preventing the wick from drifting from side to side. Such a feature enables the flame to consume only the central portion of the candle without breaking down a localized wall area of the candle and thereby prevent wax from flowing down the side of the candle. The means 26 include a chain 27 that is affixed to the bottom of the wick 10 and extends downward with a lower end resting on the bottom of the liquid reservoir 24 to anchor the wick.

If desired, a weight 30 (FIG. 5) may be embedded in the wick to adjust the buoyancy of the wick. The weight 30 shown in FIG. 5 has a protrusion 31 that extends downward engaging the bottom of the reservoir to prevent drifting.

As previously mentioned the size and shape of the wick can be varied greatly. The wick 10 can be formed in a hollow cylindrical shape as shown in FIG. 6 for floating in a liquid reservoir with an upper annular portion 33 extending above the fluid reservoir for supporting an annular flame. FIG. 7 shows a disk shaped wick 35 for supporting a flame over an entire upper surface 36.

It may be desirable to provide a wick as a layer on a side or wall of a container or glass 37. The layer wick is identified by the numeral 38 for drawing liquid from a liquid reservoir to support a flame around the inside of the container 37.

It should be understood that the above described embodiments are simply illustrative of the principles of this invention and that numerous shapes and configurations of the wick may be readily devised depending upon the desired application and shape of the flame desired. Therefore, only the following claims are intended to define this invention.

What is claimed is:

1. A non-consumable wick for use on a candle to support a defined candle flame when ignited and to melt a portion of the candle to create and maintain a liquid wax reservoir in the wax candle spaced from sides of the candle and to feed the liquid wax from the reservoir to the flame to sustain the flame, comprising:

a non-consumable solid body having an upward projection capable of extending above the surface of the liquid wax reservoir to support the candle flame thereon;

said solid body having a plurality of closely associated hollow ceramic spheres adhered together to form a solid structure for transporting the liquid wax from the reservoir to the flame said adhered together hollow ceramic spheres having a specific gravity less than that of the melted wax; and

means for preventing the solid body from drifting in the liquid wax reservoir to prevent the flame from melting the sides of the candle.

2. A non-consumable wick as defined in claim 1 wherein each of the ceramic spheres has a diameter of less than one-quarter inch.

3. The non-consumable wick as defined in claim 1 wherein each of the ceramics spheres has a diameter between 0.01 and 0.0001 millimeters.

4. The non-consumable wick as defined in claim 1 wherein the ceramic spheres are adhered together by an adhesive material forming the solid body.

5. The non-consumable wick as defined in claim 4 wherein the ceramic spheres are adhered together with an epoxy resin adhesive.

6. The non-consumable wick as defined in claim 4 wherein the solid body is capable of absorbing at least 50 percent by weight of the flammable liquid.

7. The non-consumable wick as defined in claim 1 wherein the means for preventing drifting includes anchor means having one end affixed to the solid body and a lower end extending downward from the body to engage a bottom of the liquid wax reservoir to prevent the solid body from drifting.

8. The non-consumable wick as defined in claim 1 wherein the means for preventing drifting includes a weight secured to the solid body to lower the solid body in the liquid wax reservoir and engage a bottom of the liquid wax reservoir to prevent the solid body from drifting.

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