



US 20110045424A1

(19) **United States**(12) **Patent Application Publication**
Litten-Brown et al.(10) **Pub. No.: US 2011/0045424 A1**(43) **Pub. Date: Feb. 24, 2011**(54) **CANDLE**(76) Inventors: **Colin Litten-Brown**, Berkshire
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CLEVELAND, OH 44145 (US)(21) Appl. No.: **12/919,249**(22) PCT Filed: **Mar. 13, 2009**(86) PCT No.: **PCT/CH09/00092**§ 371 (c)(1),
(2), (4) Date: **Oct. 15, 2010**(30) **Foreign Application Priority Data**

Mar. 14, 2008 (GB) 0804763.1

Publication Classification(51) **Int. Cl.**
F23D 3/16 (2006.01)(52) **U.S. Cl.** **431/288**(57) **ABSTRACT**

A candle comprising a body of combustible wax and a wick, there being dispersed within the body inclusions of a combustible wax that has a higher melting point than has the wax of the body, said inclusions comprising a modifier, typically a fragrance or a pyrotechnic substance.

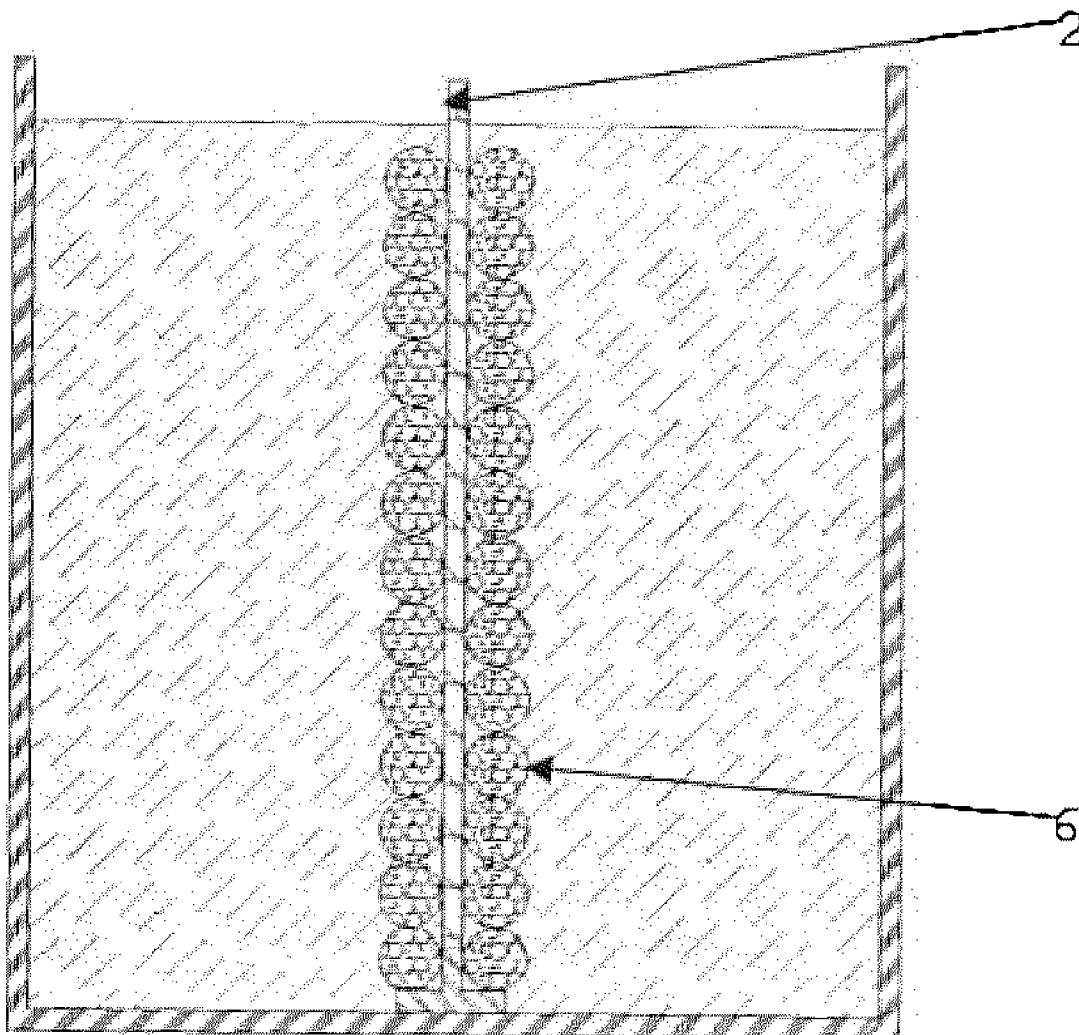


Fig. 1

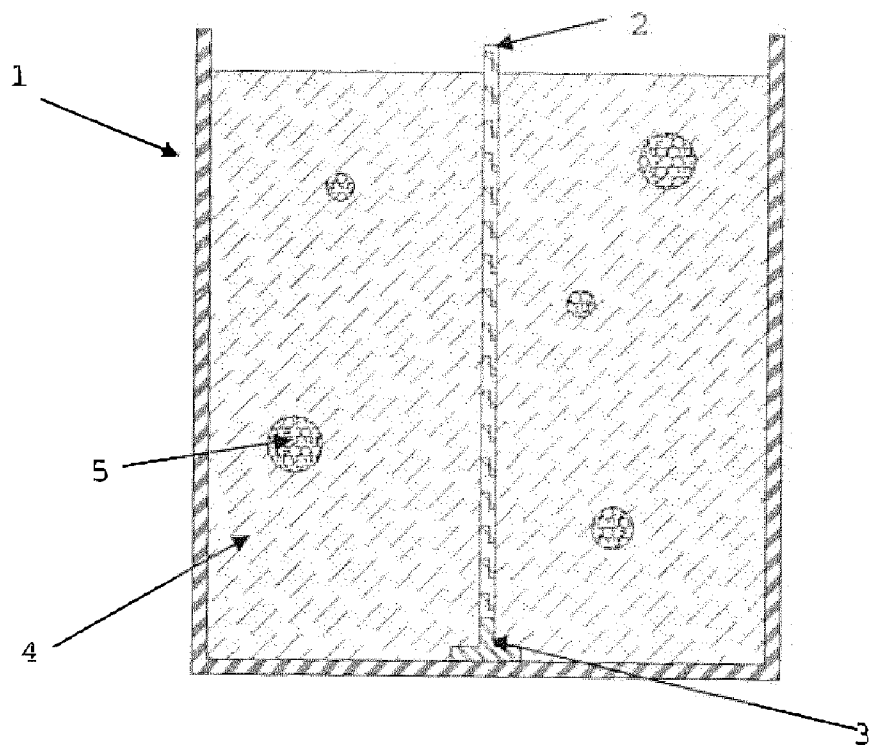
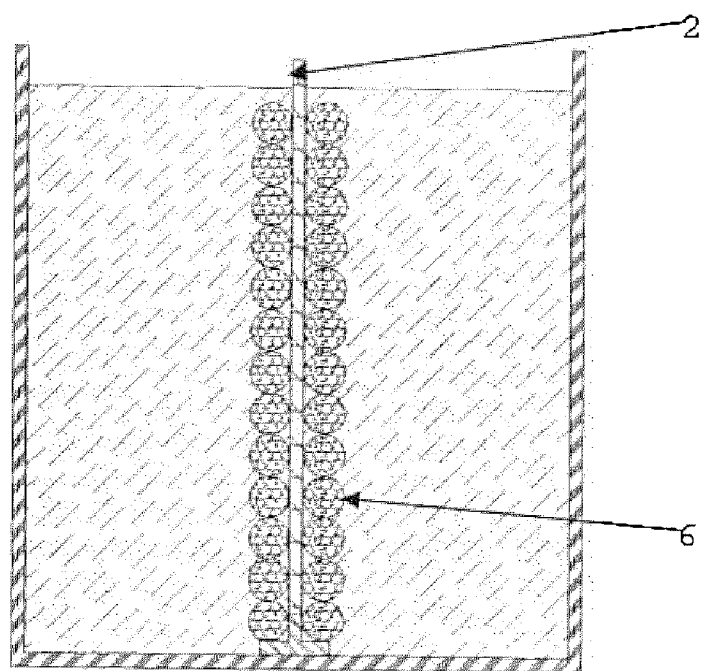


Fig. 2



CANDLE

[0001] This invention relates to candles.

[0002] There has been recent considerable interest in candles, not merely for aesthetically-pleasing illumination, but also for the provision of other benefits. One of the first of these was the use of fragrances in candles, such that the fragrance was dispensed as the candle burned, the heat from the candle and the air current caused thereby aiding in the dissemination of the fragrance. Other benefits that have been provided are changing colours and sparkle effects, both achieved by the dispersion of selected finely-divided metals or metal salts in the candle wax. Another desirable effect is to have a change of fragrance. This is generally achieved by making a candle in layers, with the wax of each layer containing a different fragrance.

[0003] All of these methods, while working well enough to enjoy substantial commercial success, have drawbacks. For example, in the case of the metals and metal salts needed to produce flame colour changes or sparkling effects, the metals or salts must be uniformly distributed through the wax of the candle prior to its manufacture. This means that much of this relatively expensive material is actually wasted, as only that part that reaches the flame will cause the effect. In the case of the multi-fragrance candle, the process of manufacture is longer, because each layer must be poured in turn.

[0004] It has now been found that it is possible to provide all these benefits in a manner that is more efficient, more effective and less expensive. There is therefore provided a candle comprising a body of combustible wax and a wick, there being dispersed within the body inclusions of a combustible wax that has a higher melting point than has the wax of the body, said inclusions comprising a modifier.

[0005] By “modifier” is meant any substance or mixture of substances that provides a property other than illumination. Examples of modifiers include, but are not restricted to, fragrances and finely-divided metals and metal salts, to give interesting and pleasing visual effects, such as sparkling and other pyrotechnic effects and flame colour changes. It is naturally possible to provide more than one modifier, for example, both a fragrance and a pyrotechnic effect.

[0006] There is therefore also provided a means of providing in a candle comprising a body of combustible wax and a wick a modifier, comprising the provision throughout the body of modifier-containing inclusions of a combustible wax that has a higher melting point than has the wax of the body.

[0007] By “melting point” is meant the temperature at which the wax is completely liquid. Unlike pure compounds, waxes do not have a sharp melting point, but soften and melt over a range of temperatures. The upper temperature of the range is considered the melting point for the purposes of this disclosure. In the case of the candle body wax, the wax is generally a relatively low melting point variety, such as paraffin wax and beeswax, with a melting point typically of about 53°-57° C., although other temperatures can be used.

[0008] The wax comprising the modifier (hereinafter “the modifier wax”) has a higher melting point than has the wax of the candle body. This is necessary so that the inclusions may be added in finely-divided form to the liquid body wax and retain their integrity. The melting point of the modifier wax must therefore be sufficiently high so that it can withstand this treatment. The choice of a suitable wax is well within the ordinary skill of the art. Typical examples include microcrystalline

waxes (sometimes known as “microwax”) typically with melting points in the range of about 75°-77° C.

[0009] The fact that the modifier wax has a higher melting point can often mean that it has a higher density than the body wax, which in turn may mean that, when the inclusions are added, they will tend to sink to the bottom of the molten body wax. This can be countered in a number of ways. One is to create the candle in layers, such that any settling of inclusions take place only within a layer. This is a useful method if a “timed” effect is desired, that is, that the modifier effects take place at selected time intervals. Another is to add to the inclusions materials that modify its density to the same value as the molten body wax. Examples of such materials include inherently light and air-containing materials, for example, hollow glass or plastic spheres. Commercially-available examples of hollow-glass spheres include Q-Cell or Sphericel from Omya UK Ltd.

[0010] In a particular embodiment, the inclusions are associated with the candle wick. By “associated” is meant that they are retained in close proximity to the wick. This can be achieved in any suitable manner, and the skilled person will readily comprehend the possibilities. Some exemplary, non-limiting examples are:

[0011] the inclusions are of a form that allows them to be slacked around the wick—for example, at least part-circular;

[0012] the inclusions are attached to the wick by any suitable means, such as being partially melted around the wick, adhesive or mechanical attachment.

[0013] This embodiment has the advantage that the modifiers will all be exposed to the flame.

[0014] All of the modifiers need not be the same, and particular novelty effects may be realised by alternating modifier types in the inclusions associated with the wick, for example, several different types of fragrance may be used, incorporated into different modifier waxes, these being associated with the wick in a predetermined order, such that there is a change in fragrance at one or more points during the candle life. Another possibility is the achievement of a variety of colour or pyrotechnic effects, by using different modifiers.

[0015] Naturally, it is also possible to have modifiers in the body of the candle itself, in the art-recognised manner of their simply being incorporated into the body wax.

[0016] In a particular embodiment, the modifier in the inclusions is at least one fragrance. The fragrance may be selected from any of the wide variety of fragrances known to be suitable for use in candles. As hereinabove mentioned, it is possible to have different fragrances in the inclusions, and in the body of the candle itself.

[0017] In a particular embodiment of the use of fragrance, the fragrance in the inclusion material comprises at least 20% of ingredients that have a perception threshold of less than 300 nanograms per liter. Perception threshold is a parameter well known in the fragrance art and it may be measured by a number of different methods, for example, that of Neuener-Jehle and Etzweiler in “Art Science and Technology” (ed. Lampaski and Muller, Elsevier 1991), ch. 6, 153-212. In particular embodiments, the perception threshold is less than 20 nanograms per liter, and less than about 10 nanograms per liter.

[0018] Candles as hereinabove described are easy to make and effective in action.

[0019] The candles are now further described with reference to the drawings, which depict preferred embodiments

and which are not to be considered in any way limiting. The skilled person may, by the exercise of the ordinary skill of the art, be easily capable of realising a great many embodiments, which are not specifically described here, but all of which lie within the scope of this disclosure.

[0020] FIG. 1 depicts a schematic vertical cross-section through one embodiment of this disclosure.

[0021] FIG. 2 depicts a schematic vertical cross-section through another embodiment of this disclosure.

[0022] In both of these embodiments, the waxes used are as follows:

[0023] Body wax—Paraffin wax (melting point, 53°-57° C.)

[0024] Modifier wax—Microwax (melting point, 75°-77° C.)

[0025] In FIG. 1, the candle is formed in a glass jar 1. A centrally- and vertically-mounted wick 2 is attached to the floor of the jar by means of a fixed support 3, permanently attached to the floor. The wick is surrounded by the above-mentioned body wax 4. Within this wax are dispersed beads 5 of modifier wax. These contain the desired modifier material, and have had their density adjusted by the incorporation of 5% Q-Cell 7019 glass spheres, such that they tend neither to float nor to sink when added to the molten body wax.

[0026] The candle of FIG. 1 is made by melting the body wax and maintaining it in a molten state (but at a temperature below the melting point of the modifier wax) while adding the beads of modifier wax and dispersing them therein. The molten mixture is then poured into the jar 1, in which the wick 2 has already been placed, and allowed to harden.

[0027] In FIG. 2, the modifier wax is in the form of toroidal elements 6. These are preformed and placed around the wick 2, prior to the pouring into the jar of the body wax.

1. A candle comprising a body of combustible wax and a wick, there being dispersed within the body inclusions of a combustible wax that has a higher melting point than has the wax of the body, said inclusions comprising a modifier.

2. A candle according to claim 1, in which the inclusions have the same density as that of the combustible wax, by means of the incorporation therein of density-modifying materials.

3. A candle according to claim 1, in which the inclusions are retained in close proximity to the wick.

4. A candle according to claim 3, in which the retention of the inclusions is by means selected from

- (a) the inclusions being slacked around the wick; and
- (b) the inclusions being attached to the wick.

5. A candle according to claim 4, in which the inclusions that are stacked around the wick are of at least part-circular form.

6. A candle according to claim 1, in which the modifier is at least one fragrance comprising at least 20% of ingredients that have a perception threshold of less than 300 nanograms per liter.

7. A means of providing in a candle comprising a body of combustible wax and a wick a modifier, comprising the provision throughout the body of modifier-containing inclusions of a combustible wax that has a higher melting point than has the wax of the body.

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