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COLORLED FLAME CANDLE

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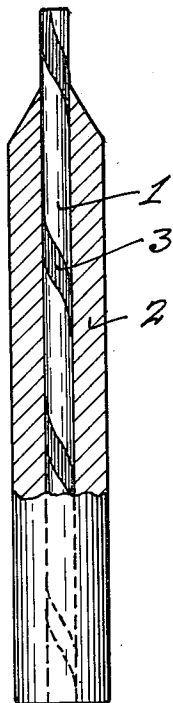


Fig. 1

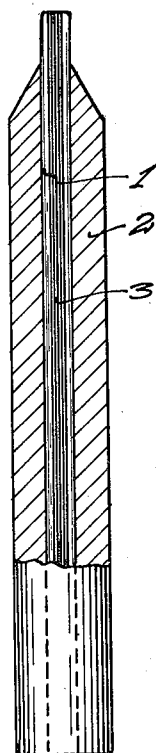


Fig. 2

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COLORED FLAME CANDLE

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4 Claims. (Cl. 67—22)

This invention relates to a colored flame candle and consists in applying color-producing metallic salts to the candle wick in a limited straight and a spirally extending path, with the aid of one or more vehicles in such manner that when the candle is lighted it burns with a colored flame.

My invention also consists of incorporating the color-producing metallic salts in the candle mass, by the use of one or more of the same vehicles, as hereinafter set forth.

The invention is illustrated in the accompanying drawing wherein:

Fig. 1 is a view showing a candle of the improved construction partially in longitudinal section and partially in elevation.

Fig. 2 is a view similar to Figure 1 showing a candle of a modified formation.

The vehicles used in my invention consist of such products as petrolatum, liquid paraffin, oils, fats, glycerol, ethylene glycol, greases, waxes, glues, alcohols, esters, and the like, or mixtures thereof.

When applying the color-producing metallic salts to the wick 1 of the candle 2, a continuous or a discontinuous ribbon, film, layer or deposit of one or more of the above named vehicles is applied to a limited portion of the wick by suitable means. The color-producing metallic salts are now affixed to the vehicle bearing wick as shown at 3 by contact therewith as by dipping the wick into the metallic salts, by spraying the metallic salts onto the wick, or by any other suitable means, it being understood that the color producing salt crystals will be retained only upon the limited portion of the wick to which the vehicle has been applied.

In Figure 1 the strip of color producing salt crystals follows a spirally extending path about the wick whereas in Figure 2 the color producing salts extend in a straight path along the wick. In neither example do the salts extend entirely about the wick at any point in the length of the wick.

The purpose of the vehicle is to affix and to help retain the color-producing metallic salt on the wick, as well as to later aid in bringing the metallic salt into contact with the candle flame, and to help release the flame-coloring properties of the metallic salts.

The candle wick may or may not be previously waxed, as by dipping it into hot paraffin or other wax. In some cases by dipping the wick into hot paraffin or other wax previous to applying another vehicle, it helps to maintain the candle

flame against the damping effects of the color-producing metallic salts.

The candle wick carrying its deposit of one or more of the vehicles named above, is given its quota of color-producing metallic salts, either in the dry or moist state, or otherwise; which union may, or may not, later form a chemical combination, before or after the candles have been manufactured. As an example: Glycerol used as a vehicle on the wick, to which strontium chloride is applied, may form a chemical combination, or start to, after union on the wick; while petrolatum used as the vehicle, to which strontium chloride is applied, may not. The same may be said of other vehicles and metallic salts.

The color-producing metallic salts may also be applied to the vehicle-bearing wick, as a saturated or an unsaturated salt, or as a dissolved or a semi-dissolved salt of one or more of the above named vehicles. As an example: A glycerol-salt of sodium chloride, or potassium chloride, or an alcoholate of sodium or potassium.

The color-producing metallic salts may also be applied to the dry candle wick in the form of a paste, which can be made by mixing the metallic salts with small amounts of one or more of the above named vehicles, as for example: A petrolatum paste containing cupric chloride etc. etc.

The candle wick, treated as above outlined, and other variations thereof, and which has its quota of vehicle and metallic salts, is now dipped in paraffin or other wax which is now allowed to cool and set so as to seal them preparatory to making the desired size candle by dipping or pouring, or other regular method of manufacture.

The amount of color-producing metallic salts applied to the wick may vary from a trace up to an amount sufficient to produce the intensity of color desired, and they may be applied to the wick in a continuous or a discontinuous manner, or alternately, so as to produce one single color, or an intermittent single color, as desired or may be applied alternately so as to produce several separate colors in the same candle, according to the color effect desired. As an example: A blue colored flame, followed by a red one, and then a yellow flame.

The color-producing metallic salts may be applied to the wick, either as separate colors by the use of single metallic salts; or as mixed colors by the use of mixed salts; or by alternate layers of the different metallic salts so as to produce mixed colors in the flame, which may or may

not be separated by alternate dippings or by layers of paraffin or other waxes.

I shall now describe a few of the colored flame candles which may be made in accordance with my invention.

The single color type: If a candle burning with a red colored flame is desired, a wick similar to those now in use, or any suitable wicking, is first dipped into hot paraffin or other wax. Over this waxed wick is applied a continuous film or layer or other deposit of warm petrolatum by drawing the waxed wick through the petrolatum. The wick so prepared is now dipped in crystals of strontium chloride, so that a continuous attachment of the strontium chloride salt is made on one side of the wick, and in medium proportions, for the full length of the wick. The wick is now dipped into paraffin or other wax, which seals in the petrolatum and the strontium chloride salt. It is now allowed to cool and set, or it may be dipped in the paraffin or other candle material bath, and be brought up to size, as in regular candle manufacture. The salt is applied only on one side of the wick instead of entirely about the same in order that an uncoated portion of the wick will be provided for melted wax to be drawn upwardly thereon. If the uncoated portion were not present the salt solution would form a clinker around the wick and quench the flame.

The alternate color type: If a candle burning with alternate blue, followed by red, followed by yellow colors is desired, apply glycerol to the wick on one side for the length of the distance to which it is desired to burn the blue and red colored flames. Now dip the wick into cupric chloride crystals for the distance determined for the blue colored flame, and then dip the wick into strontium chloride crystals onto that part of the wick reserved for the red colored flame. Now dip the entire wick into melted paraffin, etc. so as to seal these salts, and the vehicle onto the wick. Now draw the paraffined remainder of the wick which has been reserved for the yellow color, through a saturated glycerol and sodium chloride salt mixture, and dip the part of the wick on which has been applied the yellow burning metallic salt, into the paraffin, etc., so as to seal in this last application. Now proceed to manufacture the candles in the regular manner, being careful that the last coating of paraffin has set sufficiently for safe handling of the wick.

The mixed color, or multicolor type: A red, white and blue colored flame candle can be made in the following manner: Draw the wick through warm petrolatum for the entire length of the wick, and then dip the wick into cupric chloride crystals so as to have a continuous attachment of the crystals to one side of the wick in medium amount for the entire length of the wick. Now dip the entire wick carefully into melted paraffin which is not too hot, so as to seal in and onto the wick the blue color producing metallic salt. While still warm, the wick is again drawn through warm petrolatum, and it is now dipped into strontium chloride crystals, so as to have a continuous attachment on one side of the wick, in medium amount, for the entire length of the wick, and on top of the blue color producing metallic salt. The entire wick is again dipped into melted paraffin to seal in this last application of the red color producing metallic salt. The wick is then allowed to cool and set, or with care, one can immediately proceed to manufacture the candles in the regular manner.

In most instances, the same good results may

be obtained, by substituting glycerol for petrolatum and vice versa, or of either one of these for most any other of the group of vehicles named herein, in one way or another. The above illustrations are made merely to show one method of getting satisfactory results, in the manufacture of colored flame candles, by applying the vehicle and the color-producing metallic salt to the wick of the candle.

The metallic salts are applied to a limited portion of the surface of the wick only, on one side of a flat or braided wick, or applied to a round wick in a spirally extending path, as by twisting the wick when passing it over an applicator such as a roller type moistener.

The untreated portion of the wick, about one-fourth to one-half its surface, is left free of salts as an open channel along the wick through which the melted candle material keeps feeding the flame, thus preventing an accumulation or crust of metallic salts on the wick which would extinguish the flame, as often happens when the wick is completely encircled or covered with metallic salts.

At no time is the wick impregnated, soaked or saturated in an aqueous or other solution or mixture of metallic salts, as is followed in the prior art.

The purpose of the wax seal is to prevent the untreated portion of the wick from becoming impregnated or saturated with the metallic salts, as well as to retain the vehicle bearing the metallic salts on the wick.

When incorporating the color-producing metallic salts in the candle mass, use is also made of the vehicles named herein, the purpose of which, in this case, is to help release the flame coloring properties of the metallic salts.

As an illustration: Should a red colored flame be desired, a metallic salt such as strontium chloride or lithium chloride is dissolved in one of the vehicles, such as an alcohol, to a saturated solution. In this saturated solution is dissolved another vehicle such as oleic or stearic acids to the saturation point by heating. To the melted candle material, such as paraffin or stearin, or their combinations, as well as the other candle materials or their combinations, which are named herein, is added a small amount of the saturated combination, in small quantities, according to the amount of color desired in the flame, and intimately mixed therewith. This mixture lends itself better to types of candles which are cast or poured into molds.

Another variation in making these candles, is the addition of an alcoholate of such metals as sodium, for a yellow colored flame, or potassium for a lavender colored flame. The alcoholate is incorporated into the candle mass in small amounts, according to the amount of color desired, but not to exceed 5%. The candle material is then poured or cast into molds, as in regular candle manufacture.

The above named candles may be made with or without a coating of metaldehyde.

The color-producing metallic salts I use in my colored flame candles, are the halides, nitrates, nitrites, acetates, oxyalts, ammoniates, chlorates, perchlorates, alcoholates, oxides and hydroxides and other salts of

Sodium, potassium, lithium, boron, thorium, strontium, iron, copper, calcium, barium, cerium, and also powdered aluminum and magnesium (metallic).

My invention may be used with any burnable

material from which candles can be manufactured. As an example of a few:—Paraffin and other waxes; spermaceti; barberry; stearic, oleic and other fatty-acids and mixtures thereof; esters of amino or imino-acids, and other esters; ethyl carbamate; ethyl or methyl oxalate, and the like, or mixtures thereof.

Having thus described the invention, what is claimed as new is:

1. The method of making a candle burning with a multi-colored flame consisting of applying a vehicle bearing a metallic salt to a wick for the entire length of the wick without extending entirely about the wick at any point in its length, applying a wax seal to seal the untreated portion of the wick and the salt; applying a vehicle having a salt producing a flame of a different color to the wax encased wick, on top of the first application of wax, coating the last application of salt and the first mentioned wax with a coating of wax to form a seal, and building up

the candle with an outer jacket of wax to predetermined size.

2. A candle comprising a wick, metallic salts extending along the wick in a path extending spirally about the wick, a coating of wax to seal the untreated portion of the wick, and a combustible body about the wick and metallic salts.

3. A candle comprising a wick, a combustible body, and a continuous application of a saturated metallic salt solution in a nonaqueous vehicle extending along the wick but not impregnating or saturating the wick, the candle burning with a colored flame when lighted.

4. A candle comprising a wick, a combustible body, and a continuous application of a paste of metallic salts in a nonaqueous vehicle extending along the wick the full length thereof without encircling the wick at any point, the candle burning with a colored flame when lighted.

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