

# UNITED STATES PATENT OFFICE

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## ART OF MAKING CANDLES

No Drawing.

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This invention relates to an improvement in the art of making candles from solid combustible materials which are capable of being melted and molded, such as solid paraffin hydrocarbons, vegetable waxes, animal fats, or mixtures of these materials.

The art of making candles has been brought to a high state of perfection, especially in the proper blending of combustible solid wax-like materials for making the body of the candle. As is well known, a candle consists of two component parts, namely, the body and the wick.

At the present time candles are made in various colors, using proper dyes and pigments. The purpose of this color in the material is purely ornamental, the color chosen by the prospective user depending mainly upon the occasion for which the candle is to be used and the personal choice of the user. In like fashion, candles have been made up with perfumes or other materials of pleasant odor, which are disseminated when the candle is burned.

It is the purpose of the present invention to impart a distinctive color to the flame. In this manner it is possible to have all color combinations, e. g., to have the color of the candle match the color of the flame, or to have a candle of one color and a flame of another, thus adding greatly to the artistic value of the candle. As will be later described, it is possible to have a candle which will burn with a varied colored flame, changing as the combustion progresses.

It is well known in the art of pyrotechnics that certain compounds impart a definite color to a flame, particularly salts of the various metals. Usually the color of the flame is a function of the metallic element of the salt rather than the acid radical.

To cite a few examples of a great variety of salts which can be used in connection with the present invention, strontium salts, e. g., chloride, nitrate, sulfate, give a scarlet flame; barium salts give a green flame; potassium salts produce a violet flame; copper halides give an azure flame; zinc salts produce a white flame; selenium salts produce a light blue flame; calcium salts produce a

brick red flame; sodium salts produce a bright yellow flame of a more definite and intense yellow than an ordinary flame.

It is proposed to make use of this property of the various salts in the present invention by incorporating salts either in the body of the candle or in the wick. In accomplishing this object, the material composing the body of the candle is melted and the salt in a finely divided state is added while stirring; this mixture may then be used for making up the candle by molding or otherwise. As an alternative, the wick may be saturated with a concentrated solution of the salt and then dried. Either of these methods, or both, may be used in making up the candle.

While I specifically refer to the use of salts for making these candles, I do not wish to be limited to their use as other materials may be used for producing the desired effects, e. g., the elements themselves, potassium, sodium, calcium, strontium, etcetera will give the corresponding colors of the salts, and finely divided metals give particular effects, e. g., aluminum will give a bright white light, with perhaps scintillating particles being given off from time to time; magnesium is another metal which may be used to obtain similar effects.

Having now given the principal objects of the present invention, I will describe a specific example illustrative of the invention.

Paraffin wax or a mixture of paraffin wax with a small percentage of stearic acid or bees-wax is melted and 1%, more or less, of finely ground strontium nitrate may be added thereto. The wick of the candle may be immersed in a saturated solution of strontium nitrate and properly dried. The candle is then prepared by the usual manner of manufacture, e. g., placing the wick in position and pouring the molten material into the mold or any other improved method of manufacture.

If it is desired to make a candle which will burn with a vari-colored flame, the candle may be built up in sections from mixtures containing salts which give vari-colored flames, e. g., one-third of the candle



may be made up with strontium salts, the second third with zinc salts, and the last third with a mixture of copper chloride and potassium salts. The candle itself may be  
5 of any desired color, e. g., the top third may be red, the intermediate third white, and the bottom third blue; the flames will correspond substantially to the colors of the sections, namely, red, white and blue.

10 In using salts and metals for the purpose of the present invention, where they are incorporated into the body of the candle, a trace to approximately 2% of the salt or metal used relative to the candle body on the  
15 basis of weight will give the desired result.

The above description is sufficiently clear to illustrate the wide scope of the invention and to show its application as an artistic and useful development.

20 I claim as my invention:

A candle adapted to burn with a vari-colored flame, said candle being built up in sections of different color, each section containing a substance which imparts to the  
25 flame when the candle is lighted a color corresponding to the color of such section.

In testimony whereof I affix my signature.  
EDWIN F. NELSON.

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