

UNITED STATES PATENT OFFICE

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PRODUCTION OF CANDLES

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8 Claims. (Cl. 87—21)

The present invention relates to the production of candles.

We have found that valuable candles can be prepared by casting or drawing candles in the usual manner with non-fibrous organic combustible substances, usually employed as the combustible materials for the production of candles and which are usually of fatty nature, mixed with between 1.5 and 20 per cent, preferably from 2 to 18 per cent, of their weight of solid aliphatic alcohols; i. e. alcohols having a melting point above 45° C. Solid (preferably saturated) aliphatic alcohols, or mixtures thereof, may be recovered in any usual and convenient manner by the saponification of waxes of natural origin in which they are usually present in the form of esters, as for example bees wax, sperm oil, spermaceti, carnauba, shellac or Montan waxes. They may also be prepared by reducing the fatty acid substances, that is acids and esters, or mixtures thereof, contained in waxes of natural, i. e. vegetable, animal or mineral origin and in fats and oils of vegetal, i. e. animal or vegetable origin, such as cotton seed oil, linseed oil, castor oil, rapeseed oil, olive oil, peanut oil, stearine, whale, seal or fish oils and the like, or their synthetic substitutes obtainable by destructively oxidizing paraffin wax in the liquid phase with the aid of air, or by reducing derivatives of such acids, such as esters with mono- or polyhydric aliphatic alcohols or anhydrides, for example in the presence of cobalt or nickel with the aid of hydrogen or gases containing the same, and at a temperature between about 180° and 250° C. while maintaining a pressure between about 180 and about 250 atmospheres. The alcohols obtained by reducing mixtures of acids of high molecular weight containing mainly from about 27 to about 29 carbon atoms, obtainable by the treatment of Montan wax with chromic acid for example according to applicants' specification No. 1,777,766 have also proved very suitable. Similarly, the solid alcohols obtainable according to the applications Ser. Nos. 486,280 and 486,281, filed October 3rd, 1930, may be employed. As specific single examples of alcohols of the said kind may be mentioned tetradecyl alcohol, hexadecyl alcohol (cetyl alcohol), octadecyl alcohol, docosanol, octodecandiol, ceryl alcohol and myricyl alcohol. The solid, aliphatic alcohols should, generally, contain at least 14 carbon atoms, preferably at least 16 carbon atoms, alcohols having a melting point above 48° C. being preferably employed.

As the non-fibrous combustible substances may

be mentioned for example paraffin wax, bees wax, tallow, spermaceti, stearine, stearic acid or synthetic fatty acids of high molecular weight, for example from the destructive oxidation of paraffin wax, middle oils and like hydrocarbon mixtures, with the aid of air, the proportions within the aforesaid limits being selected according to the purpose in view, the hardness of the candles usually rising with the content of alcohols. The preparation of the candles from the said alcohols and usual candle making material is effected in any known and suitable manner usual for the production of candles.

The addition of the said amount of solid aliphatic alcohols is specially advantageous in the case of employing crystalline paraffin wax which may not, generally, be employed for the manufacture of candles since the resulting candles are brittle and liable to breakage, numerous cracks being formed after their production. Besides this, paraffin wax yields transparent candles which have a low commercial value. By the said comparatively small addition of solid aliphatic alcohols entirely homogeneous candles can be obtained from paraffin wax of any origin, which candles have a smooth opaque appearance and a milky white color and which, moreover, are entirely free from cracks and not liable to breakage. Furthermore, since the said alcohols are extremely readily absorbed even by thin wicks, candles of the said kind burn very quietly and with a strongly luminous non-smoky flame; they do not drip nor do they form deep cups. The following examples will further illustrate the nature of this invention but the invention is not restricted to these examples. The parts are by weight.

Example 1

A fused mixture of 97 parts of coarsely crystalline, hard paraffin wax (melting point 53.6° C.) and 3 parts of octadecyl alcohol is cast into candles. The candles obtained are entirely homogeneous, have a smooth opaque appearance and a milky white color and are free from cracks, whereas candles prepared from the said paraffin wax alone are transparent and show numerous cracks.

The good quality of the candles obtained from the said mixture of paraffin wax and octadecyl alcohol can be shown by the following test. Candles having a length of 23 centimeters and a diameter of 20 millimeters at one end and of 23 millimeters at the other end, are suspended horizontally in clips covering 3 centimeters of the

broader end of the candles and then kept for 3 hours in a room warmed to a temperature of 25° C. The downward deflection from the original position of the free ends of the candles cast from paraffin wax alone is 16.5 millimeters, whereas that of the candles cast from the aforesaid mixture is only 7 millimeters. Equally good results may be obtained by casting candles from a mixture in which the 3 parts of octodecyl alcohol are replaced by 5 parts of cetyl alcohol.

Example 2

Candles with a cotton wick are cast in the usual manner from a fused mixture of finely crystalline, hard paraffin wax (melting point 52.1° C.) and solid aliphatic alcohols. Candles, having the same dimensions as those described in Example 1 are submitted to the deflection test described in the said example. The following table shows the results obtained with candles prepared from mixtures containing various solid aliphatic alcohols in different proportions.

Paraffin wax M. P. 52.1° C.	Alcohols	Downward deflection in millimeters
Parts		
98	2 parts of docosanol.....	8.5
98	2 parts of octodecandiol.....	13.5
95	5 parts of docosanol.....	4.0
90	10 parts of tetradecyl alcohol.....	21.0
82	18 parts of octodecyl alcohol.....	5.5
100		34.5

What we claim is:—

1. As a new article of manufacture, a candle the non-fibrous combustible constituents of

which comprise between 1.5 and 20 per cent, by weight, of normally solid aliphatic alcohols.

2. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise between 1.5 and 20 per cent, by weight, of a normally solid aliphatic alcohol having a melting point above about 45° C.

3. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise between 1.5 and 20 per cent, by weight, of normally solid aliphatic alcohols obtainable by reducing the acids of waxes, oils and fats of natural origin.

4. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise paraffin wax and between 1.5 and 20 per cent, by weight, of a normally solid aliphatic alcohol having a melting point above about 45° C.

5. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise from 2 to 18 per cent, by weight, of octodecyl alcohol.

6. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise from 2 to 18 per cent, by weight, of cetyl alcohol.

7. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise paraffin wax and from 2 to 18 per cent, by weight, of octodecyl alcohol.

8. As a new article of manufacture, a candle the non-fibrous combustible constituents of which comprise paraffin wax and from 2 to 18 per cent, by weight, of cetyl alcohol.

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