Patented Mar. 9, 1937 2,072,895

UNITED STATES PATENT OFFICE

2,072,895

PRODUCTION OF CONCENTRATED MAPLE FLAVOR

Albert A. Lund, New York, N. Y.

No Drawing. Application August 31, 1935, Serial No. 38,851

7 Claims. (Cl. 99—142)

This invention relates to improvements in processes for producing flavoring material from flavor-bearing crystals, and has particular reference to processes for producing true maple flavor concentrates from maple sugar.

Prior methods of preparing concentrated maple flavors require the use of chemical reagents which are costly and deleterious to the quality of the finished product. Other methods may provide a product of higher quantity, but involve long and expensive periods of processing.

The present invention eliminates the necessity for chemical reagents with the disadvantages resulting from the use thereof and simplifies the manner of producing a concentrated true maple flavored syrup by requiring only a brief period of processing and a minimum of ordinary and inexpensive materials and equipment.

A further important advantage of the invention permits the use of sugar as a starting material without the necessity for first reducing it to syrup and the process is particularly adaptable to the treatment of cheaper maple sugars, such as Farmer's bag sugars, which are available in relative abundance at low cost.

The product of the present process is a concentrate of true maple flavor, substantially free of impurities and such foreign flavor producing substances as caramel, which may be present in the sugar treated. The product may be further characterized by a high density, sufficient to render it self-preserving.

Maple sugar is commonly in the form of crystal aggregates tightly bound together. The recovery of flavor, particularly a concentrated flavor, from such materials has heretofore been highly impractical, if not impossible, without first reducing the crystal structure of the sugar to a syrup. In the practice of the present invention, it is not necessary to reduce the sugar to syrup, but the starting material may be the sugar in its natural state. The process provides a step for penetrating the interstices of the crystal aggregate structure in such a manner that the flavor-bearing constituents may be stripped from the surfaces of even the innermost crystal and separated from the denuded crystals.

As above stated, the present invention is particularly applicable to the treatment of coarse maple sugars, such as Farmer's bag maple sugars, which are characterized by a very solid and microfine crystal structure. The sugar of this type to be treated is preferably first put through a rock crusher or other machine capable of breaking the solid structure down to a coarse granular or mushy consistency without, however, destroying the crystal aggregate character, and placed in a centrifuge which may be of the open basket type with a fabric bag or other screen which will pass liquids but prevent the passage of undissolved solid substances.

Steam is then directly applied to the mass in such a manner as to penetrate the solid massecuite structure of the crystal and syrup aggregates and may effect agitation thereof. The steam does not, however, necessarily break down the aggregate structure or reduce the same to discrete particles. The action of the steam is such as to selectively dissolve the flavor-bearing films from the crystal surfaces and distend the volume of the resulting syrup solution to the point where separation from the crystals by centrifugal force is possible. The period of contact of the steam with the sugar crystals may be only momentary before it is thrown off as condensate.

The steam does not dissolve any substantial quantity of the solid sucrose portion of the sugar, the moisture expanded syrup film being thrown off before solution of the solid substance can take place. The maple flavor constituents of the treated sugar which comprises largely soluble acids and salts and invert sugar are dissolved by the steam and preferentially taken up in the centrifuge. The bulk of the caramel remains behind with the sucrose crystals so that the recovered syrup is a true maple flavor concentrate.

Dilution of the syrup film by the steam condensate preferably does not take place beyond the point where the lowered adhesion of the expanded film is capable of being overcome by the force of the centrifugation. This results in a centrifugate of relatively high density, requiring a minimum of subsequent evaporation to produce a high density concentrate of self-preserving character.

In the ordinary practice of the process, the steam distended flavor films thrown off by the centrifuge may test about 50 to 54° Brix. more or less, and when reduced under ordinary open fire cooking conditions to a safe preserving density of from, for example, 70 to 72° Brix., the finished concentrate may have a flavoring ratio of between 2 and 4 to one as compared with a normal maple sugar syrup produced from this same raw material. By recovering separately only the earlier fractions of a centrifugate, higher flavoring strength ratios may be obtained.

The denuded crystals and residue remaining

in the centrifuge is a relatively flavorless brown sugar, almost devoid of invert, and may be marketed as such or subjected to a further refining and crystallizing process for use as granulated table sugar.

Inasmuch as the flavor of maple as commonly recognized is a combination of various aromatic and non-aromatic elements including caramel and sugar, it may be desirable for certain purposes, as for example, in the preparation of maple concentrates for confectionery and ice cream manufacture, to convert a small proportion of the residual, caramel-containing maple sugar into a maple caramel concentrate, and to add this to the flavor concentrate to round out the product to the more generally recognized maple flavor.

I claim:

1. A process for the production of a concentrated maple flavor which comprises the step of treating maple sugar with steam in sufficient quantity and under conditions adequate to remove flavor constituents from the sugar crystal surfaces without substantially dissolving the sugar crystals.

2. A process for the production of a concentrate of maple flavor which comprises the step of treating maple flavor-bearing crystal aggregates with steam in sufficient quantity and under conditions adequate to remove flavor constituents from the surfaces of the aggregate crystals without substantially dissolving the crystals.

3. A process for the production of concentrated maple flavor which comprises subjecting maple sugar to treatment with steam whereby flavor constituents thereof are dissolved in the condensate, and separating the condensate solution from the sugar crystals.

4. A process for the production of concentrated maple flavor which comprises crushing maple sugar, subjecting the crushed sugar to treatment with steam whereby flavor constituents thereof are dissolved in the condensate, and separating the condensate solution from the sugar crystals.

5. A process for the production of concentrated maple flavor which comprises agitating maple flavor-bearing crystal aggregates with steam whereby the steam penetrates the interstices of the crystals, permitting the steam to strip flavor-bearing constituents from the crystal surfaces and effect a solution of flavor constituents and condensate and separating the solution and denuded crystals.

6. A process of treating maple flavor-bearing crystal aggregates to produce a concentrated flavor material therefrom which comprises penetrating the solid crystal aggregates with steam, dissolving flavor-bearing films from the crystal surfaces by the steam condensate, centrifugally separating the resulting syrup solution from the denuded crystals and recovering said syrup as a product of the process.

7. A process for treating maple flavor-bearing crystal aggregates to produce a concentrated maple flavoring material therefrom which comprises penetrating the solid crystal aggregates with steam to strip the flavor-bearing materials from said crystals, dissolving said flavor-bearing materials in the steam condensate and centrifugally separating the resulting solution from the stripped crystals.

ALBERT A. LUND.