

UNITED STATES PATENT OFFICE.

HENRY E. NIESE, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE
AMERICAN SUGAR REFINING COMPANY, OF NEW YORK, N. Y.

METHOD OF TREATING CANE-JUICE AND OTHER SACCHARINE LIQUORS.

SPECIFICATION forming part of Letters Patent No. 471,060, dated March 15, 1892.

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To all whom it may concern:

Be it known that I, HENRY E. NIESE, of Jersey City, New Jersey, have invented a new and useful Method of Treating Cane-Juice and Saccharine Liquors for the Production of Large-Sized Crystals Therein, of which the following is a specification.

This invention is applicable to the manufacture of raw sugar from cane-juice, and also to the treatment of raw-sugar solutions for the production of large-sized crystals therefrom.

In carrying the process into effect a vacuum-pan is filled, say, half-full, of the thin liquor, and the liquor is then boiled down in the usual way to the granulating-point. Ordinarily it is held at that point for a greater or less period of time while granulation is taking place; but in dealing with a liquor of low grade, of a purity, say, of eighty or less, such granulation takes place very slowly, and, moreover, a considerable proportion of the crystals are so fine that when the resulting magma is subsequently drained in the centrifugal machine the fine crystals escape through the meshes of the sieve and so enrich the resulting sirup, but diminish the yield of the crystallized sugar.

The objects of the present improvement are to lessen the time required for granulation and to obtain larger crystals, and hence a larger yield of crystallized sugar.

To these ends the invention consists in introducing into the vacuum-pan, when the liquor therein has been boiled down to the granulating-point, a charge of sugar-magma of about the same purity as that of the liquor in the vacuum-pan. When the magma is rich in crystals, (containing fifty per cent. of crystals,) the charge will be equal to about ten per cent. of the volume of the concentrated liquor in the vacuum-pan. If the sugar-magma is less rich in crystals, a larger charge will be employed. The magma may be introduced all at once or from time to time, if desired. The effect of the presence of sugar-magma is to greatly increase the rapidity of granulation from the original liquor and to increase the size of the crystals, because the

crystallizable sugar present in the original liquor builds upon and enlarges the crystals of sugar contained in the magma. It will of course be understood that the term "magma" is herein used in the sense in which it is ordinarily used in sugar-refineries, as indicating a mixture of sugar-crystals and sirup. As in the ordinary process, the condition of concentration of the contents of the pan is kept under observation and additional thin liquor is introduced whenever the contents of the pan fall below the concentrating-point. The boiling process and the gradual addition of thin liquor as the boiling proceeds is continued usually until the pan is full. The contents of the pan are then dropped and carried to the usual cooling appliances, and are thereafter treated in the ordinary manner for the production of merchantable products therefrom. It is well known that the introduction of dry crystals into a solution of a crystallizable substance in a proper condition of concentration will have the effect of promoting the crystallization of such substance, and hence the introduction of sugar-crystals into a suitably-concentrated saccharine liquor in a vacuum-pan is not broadly claimed.

What is new in the present process is the introduction into the vacuum-pan containing the concentrated saccharine liquor of a sugar-magma—that is to say, a mixture of sugar-crystals and sirup—from which two advantages result. First, there is no change in the test of the resulting contents of the pan, as there must be when dry crystals are introduced, and, secondly, owing to its semi-fluid quality the magma can be pumped into the vacuum-pan without losing any part of the vacuum therein.

What is claimed as the invention is—

The herein-described process of treating saccharine liquor for the purpose of producing large-sized sugar-crystals therein, which consists in boiling the saccharine liquor in a vacuum-pan down to the concentrating-point, and in then introducing into the pan a charge of sugar-magma equal to about ten per cent., more or less, of the quantity of concentrated liquor contained in the pan, and in maintain-

ing the contents of the pan at the concentrating-point by introducing additional quantities of saccharine liquor into the vacuum-pan from time to time, or additional charges of
5 sugar-magma, if necessary, until the pan contains the desired quantity of material, and in then dropping the contents of the pan in

the usual way preparatory to a repetition of the process with another lot of saccharine liquor and another charge of sugar-magma.
HENRY E. NIESE.

Witnesses:

FCK. GEORG WINKLY,
A. M. JONES.