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PROCESS OF SEPARATING SUGAR FROM RESIDUAL MOLASSES.

No Drawing. Application filed December 29, 1924. Serial No. 758,757.

To all whom it may concern:

Be it known that I, CHRISTOFER G. LEONIS, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Processes of Separating Sugar from Residual Molasses, of which the following is a specification.

This invention relates to a process of separating sugar in crystallized form from the various organic and inorganic impurities contained in any liquors or dry substance containing sugar, and particularly from the discard molasses from the Steffen process.

This application is a continuation, in part, of my copending application for processes of separating sugar from residual molasses, filed December 26, 1923, Serial No. 682,829.

My invention is based on the physico-chemical property of acetic acid of a certain strength to precipitate the sugar in crystal or amorphous form, without forming chemical combinations, such as sucro-acetates, and invert sugar.

In practicing the process, residual molasses is first dried until it can be easily pulverized. The drying process is accomplished by a special apparatus consisting of a steel belt conveyor which is heated up to 160° C., and cooled artificially, rendering the dried molasses very friable and pulverulent. The dried molasses so obtained is pulverized and treated with concentrated acetic acid of 99 per cent to 99½ per cent. In practice, the amount of acid used varies from 150 to 200 per cent of the weight of the dried molasses. The temperature is kept between 15° and 30° C. The time of the complete precipitation of the sugar in crystal form is from 2 to 24 hours, but the average time required is six hours.

By means of this process, the amount of sugar precipitated in the form of crystals is 900 to 1,040 pounds per ton of molasses. The purity of the precipitate sugar amounts to from 94 to 99 per cent or more.

The mixing of the powdered molasses and concentrated acetic acid is accomplished by a special mixer, which is provided with a feeder regulator and mixing device apparatus and the entire apparatus is working under vacuum. After the mixing of the dry molasses and concentrated acetic acid is completed, the mixture is transferred by gravity into an ordinary sugar house crystallizer with the difference that it is working under vacuum system where it remains about six hours to complete the crystallization of the sugar. The mass from this crystallizer is dropped into a special vacuum filter, where the sugar is freed from the mother liquor.

The small amount of mother liquor surrounding the sugar crystal is eliminated by washing the sugar with toluol, or benzene, or alcohol, or any other solvent, which is soluble in acetic acid, but cannot dissolve the sugar. The obtained sugar is dried under vacuum and at the same time, the solvent is evaporated and recovered and can be used indefinitely over again. The sugar thus obtained is remelted with the addition of a little milk of lime, filtered, and boiled to grain, thus producing refined sugar. The mother liquor is mixed with from 1 to 2 per cent of sulfuric acid, and distilled. The acid carbonizes the organic materials, leaving the acetic acid in a pure state. The acetic acid is collected in a pure and concentrated condition and is ready to be used over again.

The loss of acid by this distillation recovery amounts to not more than 2 per cent. In the distilling apparatus there remains an organic carbon from which, by lixiviation, I obtain the potassium as sulfate, and the remaining carbon can be used for filtering purposes.

While I have described in detail the preferred practice of my process, it is to be understood that the details of procedure may be widely varied without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. The process of separating sugar from molasses which comprises treating dried residual molasses with concentrated acetic acid to precipitate the sugar, separating the precipitated sugar from the residue contained therein, and washing the sugar with alcohol.

2. The process of separating sugar from molasses which comprises treating dried residual molasses from the Steffen process

with concentrated acetic acid to precipitate the sugar, separating the precipitated sugar from the residue contained therein, and washing the sugar with alcohol.

3. The process of separating sugar from molasses which comprises treating dried residual molasses with from 150 to 200 per cent by weight of concentrated acetic acid to precipitate the sugar, separating the precipitated sugar from the residue contained therein, and washing the sugar with alcohol.

In testimony whereof, I affix my signature.

CHRISTOFER G. LEONIS.