

United States Patent Office.

LOUIS JOSEPH FREDERIC MARGUERITTE, OF PARIS, FRANCE.

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IMPROVEMENT IN THE MANUFACTURE AND REFINING OF SUGAR.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LOUIS JOSEPH FREDERIC MARGUERITTE, of Paris, in the Empire of France, chemist, have invented various Improvements in the Manufacturing and Refining of Sugar; and I do hereby declare that the following is a full, clear, and exact description of the same.

In order to separate the sugar from molasses, recourse is necessarily had to crystallization and successive turbine operations, which require considerable time and labor, and involve a loss of much of the sugar.

According to this invention, I obtain the sugar by a much quicker mode, and economically.

These improvements are based on the use of wood-spirit, (methyl,) which liquid has the property of rendering the molasses soluble in a direct manner, without the aid of an acid.

The following is the mode of operation:

The sugar, mixed with molasses, is first brought in contact with a certain quantity of wood-spirit in a mixer, where the whole is stirred for a very short time.

The mixture, consisting of sugar and liquid, is then passed to a filter, similar to those containing animal charcoal, when the black liquor of molasses is run off, which is afterwards replaced by pure wood-spirit.

A washing effected in this manner by displacement furnishes a perfectly white sugar.

The wood-spirit, however, which dissolves the coloring-matter and most of the molassic elements, will precipitate a small quantity of salts of lime and potash, which remain in suspension in the liquor.

If, therefore, this turbid liquor is made to pass through a filter-press and then back on the sugar, two or three times, I am enabled to completely eliminate, by levigation and filtration, all the soluble impurities in the wood-spirit, and obtain, after clarifying, sugar of great purity.

The black liquor, if submitted to distillation, regenerates the wood-spirit, which will serve for another operation.

The molasses forming the residue of this distillation are then again concentrated and crystallized, either alone or with the addition of a sufficient quantity of methyl.

When the molasses no longer yields any sugar, it is still useful in the manufacture of alcohol.

The invention further includes the following improvements:

By treating saccharine matters, such as the residue of the manufacture, with wood-spirit in a cold state, they may be freed from the molasses they contain, but if treated in a boiling state with wood-spirit at

various degrees of concentration, the molasses would be dissolved, and also a portion of the sugar.

On cooling, the sugar will deposit in a nearly pure state, but under these circumstances the crystallization would be too slow to be of practical advantage.

The liquor thus obtained would be in the condition known under the name of super-saturation.

In order to determine the complete and rapid crystallization of the sugar, it is simply necessary to add to the super-saturated liquor containing the wood-spirit either crystal or powdered sugar, in order, in a short time, to effect the crystallization of the whole of the sugar in a free state.

In addition to this primary important result, if to the solution of sugar and wood-spirit there be afterward added a certain quantity of sulphuric acid, the sugar contained in the molasses will be set at liberty, and become crystallized, and by depositing under the influence of the sugar added, will increase the product to a considerable extent.

These properties may be utilized in the treatment of dried beet-root.

When the acid is first added, the heat should not exceed 104° Fahrenheit, in order to prevent the destruction of the sugar, and when it is to be added after boiling, the liquor should be allowed to cool to about 104° Fahrenheit before mixing the sulphuric with the wood-spirit.

The wood-spirit in a treated state extracts various substances, including sugar from dried beet.

This solution, when cooled, does not deposit the sugar, it being super-saturated, but by the addition of sulphuric acid in quantity corresponding to about five per cent. of the molasses contained in the dried beet after filtering, the solution, when brought in contact with sugar in powder, will deposit the whole of the sugar, which exceeds the solubility of this substance in wood-spirit.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. The direct dissolution (without the aid of any acid) of the molasses by the aid of wood-spirit, together with the washing and purification of raw sugars by the same agent.

2. The treatment of any saccharine matter (a mass concentered by coction, of either sugar-cane or beet-root, as resulting from Fryer's concenter,) by the aid of non-acidulated wood-spirit, for the purpose of obtaining a super-saturated sugar solution, and determining the crystallization of the latter by the addition of sugar crystals, if the undissolved sugar will not suffice for effecting such crystallization.

3. Adding sulphuric acid, either previously or not,

to the wood-spirit, for the purpose of decomposing the molasses, properly so called, in the manufacture and refining of sugar, for the purpose of separating the sugar and allowing it to crystallize.

4. The treatment of dried beet or any concentrated sirups by means of wood-spirit, either acidulated or not, for the purpose of extracting the sugar contained in a free state, as well as that from molasses, as also the employment of sugar for effecting the desuper-saturation of the liquor, as above described.

5. The following combination of operations: First,

the washing of raw and impure sugars, by means of wood-spirit, (methyl;) second, adding sulphuric acid to the solution of molasses resulting from the above treatment, for the purpose of afterwards extracting the sugar by crystallization by the addition of sugar crystals or powder.

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Witnesses:

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