

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN REFINING SUGARS.

Specification forming part of Letters Patent No. **160,928**, dated March 16, 1875; application filed February 25, 1875.

To all whom it may concern:

Be it known that I, FRANZ O. MATTHIESSEN, of New York, N. Y., have invented an Improved Process of Refining Sugar, of which the following is a specification:

In the ordinary process of refining sugar the sugar-liquor is repeatedly boiled *in vacuo*, and after each boiling the crystalized sugar is mechanically separated from the sirup. The reheating of the sirup in the vacuum-pan exposes it to partial carbonization, and the products of the successive boilings are, respectively, of increasingly dark colors and lower grades. After the last boiling and separation there still remains a portion of fluid, which has to be barreled and marketed as sirup.

My improved process of refining sugar consists in boiling the raw sugar, or concrete, as it is sometimes called, in the ordinary vacuum-pan, and in discharging the hot sirup from the vacuum-pan directly into a vacuum-chamber, where the hot sirup, divided into small masses, or spread over a large surface, is exposed to a gentle heat for a sufficient length of time to evaporate nearly all the water it contains, so that it loses its fluid character and acquires the condition of a granular mass, substantially like what is known as coffee-sugar, the slight portion of sirup present being adherent to the sugar-crystals. The heat of the sirup itself, as it comes from the vacuum-pan, is adequate to effect the required degree of evaporation in the vacuum-chamber if the sirup be divided into sufficiently-small masses—as, for example, if it be injected into a suitably high vacuum-chamber in the form of spray. A moderate application of heat will be required when the sirup is deposited in pans or trays in the vac-

uum-chamber; but the temperature must not be allowed to rise above 212° Fahrenheit.

It will be seen that the distinctive characteristics of my invention are prolonged evaporation *in vacuo*, continuity in respect of the avoidance of repeated boiling, and, consequently, a less exposure of the sugar to carbonization.

My improved process may be applied to the sirup produced by the first boiling of the sugar-liquor, or to the product of either of the subsequent boilings, the result in all cases being the production from the sirup operated upon by my process of one uniform grade of sugar, and the separation of all the sugar present, so that there is no fluid remainder, and no loss by reason of having to market a portion of the sugar in the form of sirup.

I am aware that it has been attempted to treat cane-juice in a series of vacuum-pans in the manufacture of raw sugar; but

I claim as my invention—

The improved process of refining sugar herein described, which consists, in addition to the ordinary boiling of raw sugar in the vacuum-pan, in dividing the hot sirup discharged from the vacuum-pan into small masses or thin layers, and subjecting it, when so divided, to a process of gentle evaporation *in vacuo*, prolonged until sufficient water has been expelled from the sirup to change its character from that of a fluid to that of a granular mass, as set forth.

F. O. MATTHIESSEN.

Witnesses:

W. H. LYMAN,
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