

UNITED STATES PATENT OFFICE.

UNO LUNDGREN AND GUILLAUME GIERLING, OF BRUSSELS, BELGIUM.

PROCESS OF REFINING BROWN SUGAR.

1,063,708.

Specification of Letters Patent.

Patented June 3, 1913.

No Drawing.

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To all whom it may concern:

Be it known that we, UNO LUNDGREN and GUILLAUME GIERLING, respectively subjects of the King of Sweden and of the Emperor of Germany, and residents of Brussels, Belgium, have invented new and useful Improvements in the Process of Refining Brown Sugar, of which the following is a specification.

This invention is a process of refining raw sugar in a simple, efficient and economical manner.

It involves the application of ozone or ozonized air in the particular manner hereinafter described.

The principal advantage of the process is that it successfully accomplishes the refining and bleaching operations without necessitating the expensive operation of filtration through bone charcoal which is at present employed.

It has been proposed heretofore to employ ozone in refining sugar, but, so far as we are aware, no process employing it has proved commercially successful, the failures being attributable to incorrect methods of procedure.

In practically carrying out our invention we proceed as follows: As is now customary, we first treat the raw sugar so as to remove therefrom the adhering syrup, and this may be done by washing with water, though preferably by using the special solution hereinafter referred to. The washings from the sugar crystals are diluted to substantially 20° Baumé, and the resulting solution subjected, while cold, to the action of ozone or ozonized air. This solution having been thus bleached, a part of it is used to dissolve the previously washed raw sugar, the solution thus obtained being filtered, reboiled and otherwise manipulated in the customary manner. The other part of the bleached solution is employed, instead of the water herein referred to, to wash a fresh supply of raw sugar crystals to remove the adhering syrup therefrom.

Under normal conditions of operation, the raw sugar is washed by the ozonized or bleached sugar solution, plain water being used only in washing the initial mass of raw sugar. By this procedure, the ozone first acts on the raw sugar during the first operation of removing the adhering syrup therefrom, and again on this removed syrup when the latter is treated directly by the

ozone or ozonized air. It will thus be observed that the ozonizing operations are conducted in the cold, and that the direct ozonizing of the washings is carried on in a solution of about 20° Baumé. No heat being employed, the full effect of the ozone is secured, heat acting to decompose ozone and materially interfering with its operation. Further, solutions of sugar more dense than 20° Baumé cannot be expeditiously and successfully bleached.

While the invention is not to be limited to the exact details of procedure outlined, yet we have found that these give the best results.

Having thus fully described the invention, what we claim as new, and desire to secure by Letters Patent is:—

1. In the art of refining sugar, the process which consists in bleaching a cold solution of sugar of a density of substantially 20° Baumé by subjecting it to the action of ozone or ozonized air.

2. In the art of refining sugar, the process which consists in bleaching a solution of sugar by ozone, utilizing a portion of the solution thus bleached for washing raw sugar crystals, and utilizing another portion of said bleached solution for dissolving sugar crystals free from syrup.

3. In the art of refining sugar, the process which consists in bleaching a cold solution of sugar of a density of substantially 20° Baumé by subjecting it to the action of ozone or ozonized air, and using a portion of the solution thus bleached for washing raw sugar.

4. In the art of refining sugar, the process which consists in bleaching a cold solution of sugar of a density of substantially 20° Baumé by subjecting it to the action of ozone or ozonized air, using a portion of the solution thus bleached for washing raw sugar, and using a further portion of the said solution for dissolving sugar crystals free from syrup.

5. The continuous process of refining sugar which consists in removing adhering syrup from a batch of raw sugar, bleaching said syrup, washing a further batch of raw sugar by a part of the solution thus bleached, and dissolving sugar free from syrup in another portion of the said bleached solution.

6. The continuous process of refining sugar which consists in removing adhering syrup from a batch of raw sugar, bleaching

said syrup by ozone, washing a further batch of raw sugar by a part of the solution thus bleached, and dissolving sugar free from syrup in another portion of the said bleached solution.

7. The process of refining sugar which consists in washing the syrup therefrom with water, concentrating the aqueous solution thus produced until it reaches a density of 20° Baumé, bleaching the resulting solution by ozone, washing a further batch of raw sugar by a part of the solution thus

bleached and dissolving sugar free from syrup in another portion of the said bleached solution.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

UNO LUNDGREN.
GUILLAUME GIERLING.

Witnesses:

GEORGE BEDE,
M. GERBEAULT.