

# UNITED STATES PATENT OFFICE.

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## PROCESS OF CLEANSING RAW SUGAR, &c.

SPECIFICATION forming part of Letters Patent No. 405,610, dated June 18, 1889.

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*To all whom it may concern:*

Be it known that I, AUGUST SEYFERTH, of Auerbach, Grand Duchy of Hesse, Empire of Germany, have invented a certain Improvement in Cleansing Raw Sugar and other Crystals, of which the following is a specification.

This improvement relates to the art of washing away impurities from raw-sugar crystals, and is applicable to the cleansing of all crystals which are coated with or are environed by impurities originally held in solution in the mother-liquor in which the crystals were formed.

In sugar-refining the raw sugar is first made into a magma by mixing it with water. The magma is then usually introduced into a centrifugal machine, by the rotation of which the magma is made to form a wall of sugar upon the inside of the rim of the basket. Water or steam being then directed in radial jets against the wall, is driven outward through the wall by centrifugal force, pushing before it and carrying out the soluble impurities contained in the sugar wall and previously adhering to the crystals. The water, however, dissolves and carries off some sugar, which has to be recovered by another refining process.

The present invention consists in employing, instead of the larger quantity of water commonly used, a liquid—such as paraffine-oil—which will not dissolve the crystals and is not soluble in water nor in the mother-liquor, but which helps to give fluidity to the magma, and thus lessens the quantity of water required, and subsequently, in the draining and washing process, conducted either in a centrifugal machine or otherwise, performs the mechanical function of pushing before it the impurities which may be present in the magma or adherent to the crystals. The paraffine-oil therefore performs, first, the function of a diluent; and, secondly, that of a washing-fluid, which mechanically displaces the soluble impurities originally present. It equally performs these functions whether the washing process is conducted in a centrifugal machine or in those other forms of apparatus in which hydrostatic pressure or atmospheric pressure

are employed for forcing the washing-fluid through the magma. As such forms of apparatus employed in washing magma are well known and in common use, they do not need especial description herein.

In conducting the cleansing process by the present invention the general methods of treatment are the same as when other washing-fluids are employed. For example, if the magma exhibits an alkaline reaction, it is neutralized with acid in the usual way. Again, the quantity of paraffine-oil employed in washing is regulated with reference to the quantity of soluble impurities requiring removal. In any case the washings are collected in a settling-tank, in which the paraffine-oil rises to the top, and is thus easily recovered. The washed crystals, coated with paraffine-oil, are then redissolved in hot water for the usual refining operations. The paraffine oil separates from the crystals in solution and rises to the top of the dissolving-tank, from which it is pumped back to the oil-reservoir. The solution is drawn off from the bottom of the tank, and is thus perfectly separated from the paraffine.

It will of course be seen that instead of making the magma by mixing with the raw crystals the desired quantity of paraffine-oil and water, an emulsion of paraffine-oil and water may be mixed with the raw crystals—for example, an emulsion composed of paraffine oil, having melted into it such a quantity of solid paraffine as will produce a lasting emulsion when mixed with water at, say, 57° Fahrenheit. It will also be seen that this invention is adapted for the cleansing of all natural or raw crystals which are mixed with or coated with impurities originally held in solution in the mother-liquor in which the crystals were formed.

In practicing the present process of cleansing, other oils incapable of dissolving the crystals and not soluble in water nor the mother-liquor in which the crystals were formed might be substituted for paraffine; but paraffine is preferred chiefly for reasons of economy.

What is claimed as the invention is—

The improvement in cleansing raw crystals

herein described, which consists in supplying  
them with sufficient water to form a concen-  
trated solution of the impurities present and  
in washing away the dissolved impurities by  
5 forcing through the resulting magma a wash-  
ing-fluid—such as paraffine-oil—which is not  
capable of dissolving the crystals, and is not

soluble in water nor in the mother-liquor in  
which the crystals were formed.

AUGUST SEYFERTH.

Witnesses:

CARL TWIETMEYER,  
C. VOLCKERS.