

No. 714,863.

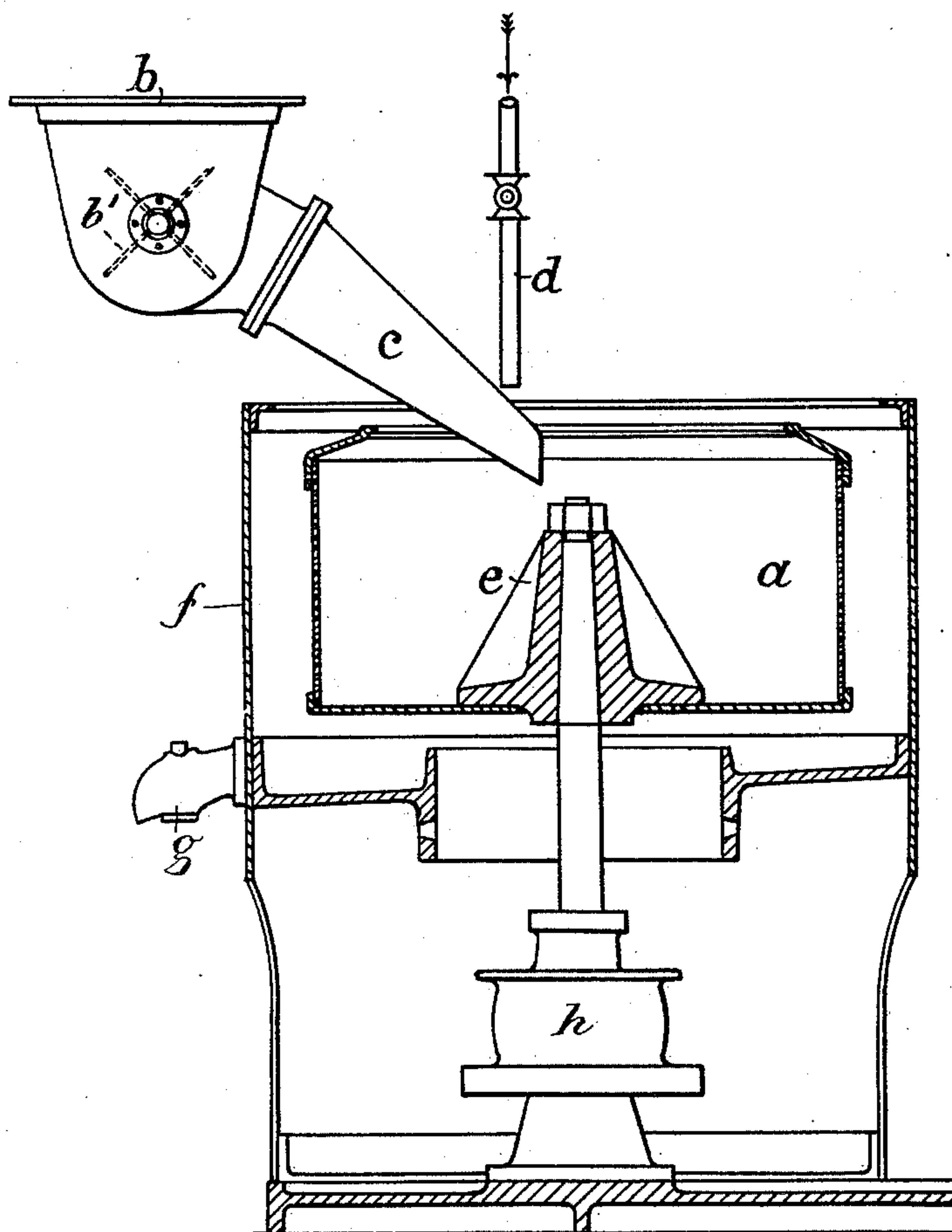
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TREATING MASSE-CUITE OF SUGAR MANUFACTURE BY CENTRIFUGAL ACTION.

(Application filed Nov. 25, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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TREATING MASSE-CUITE OF SUGAR MANUFACTURE BY CENTRIFUGAL ACTION.

SPECIFICATION forming part of Letters Patent No. 714,863, dated December 2, 1902.

Application filed November 25, 1901. Serial No. 83,646. (No specimens.)

To all whom it may concern:

Be it known that I, HERMANN CLAASSEN, a subject of the King of Prussia, Emperor of Germany, and a resident of Dormagen, Rhenish Prussia, German Empire, have invented new and useful Improvements in Treating Masse-Cuites of the Sugar Manufacture in the Centrifuging Process, of which the following is a specification.

My invention relates to improvements in the manufacture of sugar, and especially to the treatment of masse-cuite of after-products by centrifugal action.

It is well known that in the manufacture of sugar the separation of the sugar-crystals from the syrup or molasses of a masse-cuite is effected by centrifugal action and that this action is often considerably hampered or even made impossible by the viscous, sticky, or foamy character of the mother-syrup, which also sometimes contains small crystals. This mother-syrup by adhering to the crystals in considerable amount will form a sticky film upon the solid sugar, and the product or sugar obtained consists of a sticky viscous mass, which cannot be sifted and is of low commercial value.

Various expedients have been employed or proposed for rendering the centrifugal separation more efficient, so as to produce pure sugar which is not sticky. One of the remedies proposed is the admixture to the masse-cuite of a considerable amount of hot diluted syrup, or, instead of this, steam has been introduced into the masse-cuite while it was run into the centrifugal machine and during the centrifugal action. Either one of these expedients is defective, for the reason that it causes some of the sugar of the crystals to be redissolved, and this diminishes the yield, while the sugar contents of the molasses is increased. It has also been proposed to cool the masse-cuite in the crystallizer to such an extent only that the mother-syrup remained sufficiently liquid and did not become viscous. In proceeding in this manner, however, the crystallization will be imperfect and the molasses will contain too high a percentage of sugar. By my improved process I am enabled to secure a very efficient centrifugal action, and I am also enabled to cool the masse-cuite within the crystallizing ves-

sel to a far greater extent than has been possible hitherto where centrifugal separation is employed.

An apparatus suitable for carrying out my improved process is shown in sectional elevation in the accompanying drawings.

b is a hopper, which may be provided with an agitator *b'* and which has a discharge-spout *c*, by means of which the masse-cuite discharged into the hopper from the crystallizer may pass into the drum *a* of the centrifugal machine. Preferably the masse-cuite is discharged upon the central conical portion *e*, which rotates with the drum. The spout *c* is open at the top, and above this open portion is arranged a pipe *d*, so that a liquid may be supplied to the centrifugal drum simultaneously with the masse-cuite.

f indicates the casing, *g* the outlet, and *h* the pulley for rotating the drum, these parts being of any approved construction.

According to my invention I introduce into the centrifugal drum simultaneously with the masse-cuite syrup or molasses, which is a saturated solution, or, preferably, an undersaturated solution, but in no event oversaturated. It is of great importance that this syrup should be introduced into the centrifugal machine simultaneously with the masse-cuite. By this I mean not only that one should avoid to first introduce the masse-cuite alone and then the syrup, but, further, that the masse-cuite and syrup should not be allowed to mix to any material extent or for any length of time before they are subjected to centrifugal action. In other words, centrifugal action is to begin practically at the moment at which the masse-cuite and the syrup come in contact with each other. The syrup is introduced through the pipe *d*, so that the syrup and masse-cuite are in contact with each other without centrifugal action only for a very brief period of time, which is negligible altogether. If desired, however, the syrup and the masse-cuite might be kept entirely separate up to the time centrifugal action begins.

If the masse-cuite were first admitted alone, it would form a viscous or sticky mass upon the inner wall of the drum *a*, and the syrup if admitted subsequently would not be able to penetrate this sticky layer. By the simultaneous introduction of the masse-cuite and

the syrup at the moment centrifugal action begins I secure the following advantage: The syrup will immediately wash away the sticky viscous liquid adhering to the crystals and will carry it off, thus preventing any crystal meal which may be contained in the masse-cuite from forming a sticky film with the mother-syrup. As the operation is continuous, it will be obvious that at the end of the operation the greater portion of the sticky mother-syrup will have been removed and the final centrifugal action to which the diluted syrup is subjected will require a very short period of time.

The syrup used as an admixture to the masse-cuite need not be of a higher purity than the mother-syrup. I may therefore employ the syrup or molasses from the preceding centrifugal treatment of the same masse-cuite. Such run-off liquid should be diluted or heated or diluted and heated in order that it may form an undersaturated solution or at the utmost a saturated solution; but it should in no case be oversaturated. The degree of dilution will be regulated according to the character or quality of the mother-syrup, and the quantity of diluted syrup used will be governed by the same factors. By using a slightly-undersaturated syrup or molasses I prevent a redissolving of sugar from the masse-cuite. It will be understood that at first the diluted syrup will come in contact with the outer layers of the mother-syrup which adhere to the crystals and will not

come in direct contact with the crystals. Said outer layers will be removed by the diluted syrup. Then the said syrup will dilute the remaining layer of the mother-syrup, so as to render such layer more readily removable by the centrifugal action. Since the mother-syrup will always be oversaturated, it will be understood that the mixture of the mother-syrup with the diluted syrup will be of such a concentration that it will be unable to dissolve any of the crystals.

When proceeding as above described, I obtain very pure loose sugar, which is readily salable, and the process takes much less time than centrifugal separation as hitherto carried out.

I claim as my invention—

The process of separating sugar from syrup or molasses of a masse-cuite, which consists in bringing a sugar solution into contact with the masse-cuite, beginning to subject the said masse-cuite and the sugar solution to centrifugal action at the time they are brought together, and continuing the centrifugal action until the sugar has been separated from the syrup or molasses.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of November, 1901.

HERMANN CLAASSEN.

Witnesses:

WM. ESSENWEIN,
LUDWIG HIRT.