

No. 656,253.

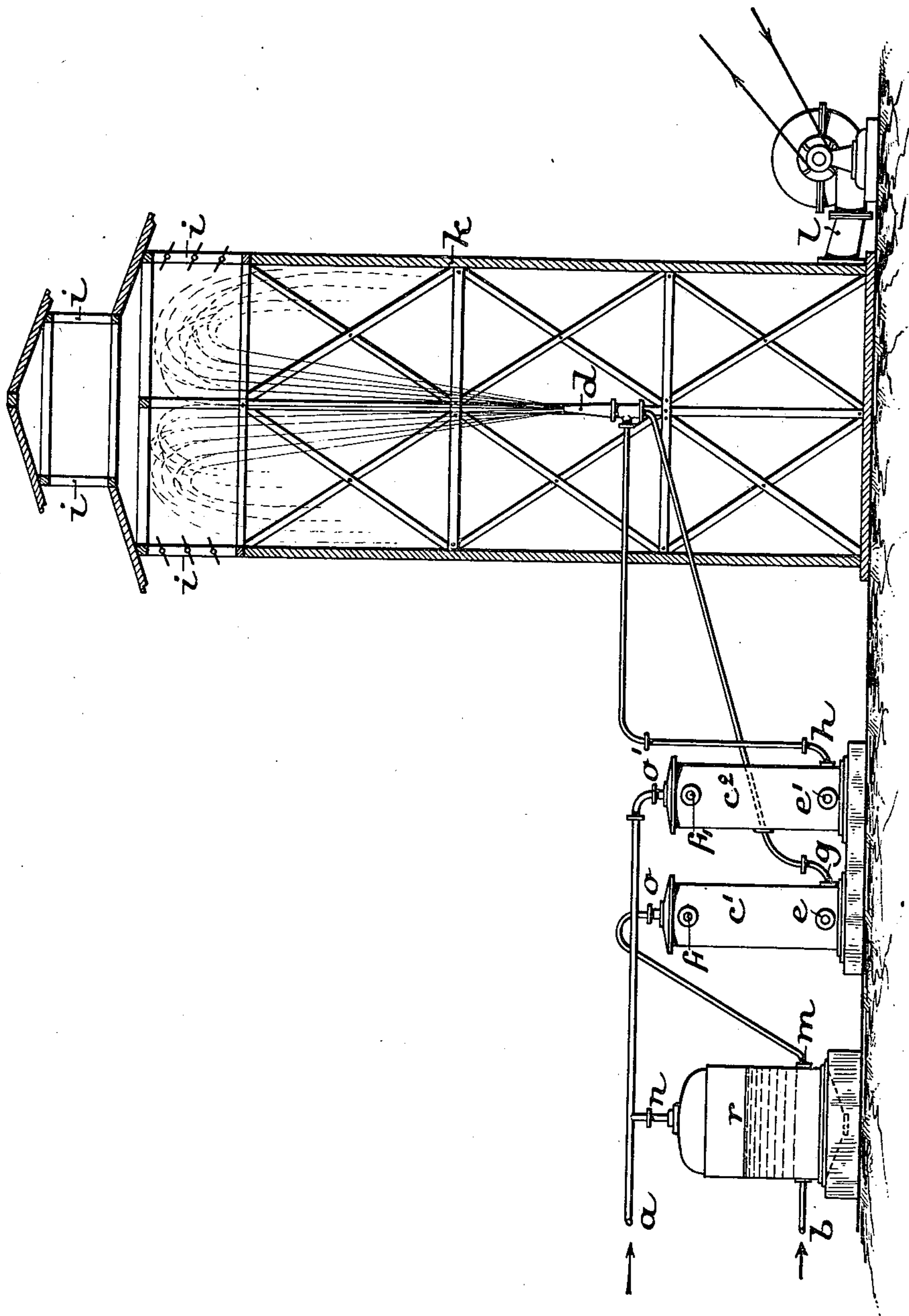
Patented Aug. 21, 1900.

J. KÜNSTNER.

METHOD OF MAKING SODIUM CARBONATE CRYSTALS.

(No Model.)

(Application filed Apr. 23, 1900.)



WITNESSES:

Ella L. Giles
O. W. ...

INVENTOR:

Josef Küstner

by

ATTORNEYS.

Richardson

UNITED STATES PATENT OFFICE.

JOSEF KÜNSTNER, OF OBERSEDLITZ-AUSSEGG, AUSTRIA-HUNGARY

METHOD OF MAKING SODIUM-CARBONATE CRYSTALS.

SPECIFICATION forming part of Letters Patent No. 656,253, dated August 21, 1900.

Application filed April 23, 1900. Serial No. 13,955. (No specimens.)

To all whom it may concern:

Be it known that I, JOSEF KÜNSTNER, manufacturer, a subject of the Emperor of Austria-Hungary, residing at Obersedlitz-Aussegg, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in the Manufacture of Carbonate-of-Soda Crystals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved process for the manufacture of carbonate-of-soda crystals, in particular of small crystals.

The process consists in effecting the solution in water of the carbonate of soda from which the crystals are to be produced, such solution being then concentrated by evaporation until a saturated carbonate-of-soda solution is obtained. The temperature of this solution must be such that it will not then crystallize. This temperature may advantageously be 35° centigrade. The solution is then converted into spray, whereupon the sprayed liquid is cooled, whereby the crystallization thereof is effected. If thought desirable, the warm saturated carbonate-of-soda solution can also be somewhat cooled before it is sprayed; but this is not essentially necessary.

The cooling of the sprayed carbonate-of-soda solution can be effected by causing a jet of compressed air to impinge upon a jet of the solution issuing in the same direction. The cooling of the liquid particles can, however, also be effected by bringing into contact with the sprayed solution a current of cold air passing in the contrary direction as the finely-divided solution falls to the ground. Or both the said methods may be employed in combination in such manner that a jet of compressed air is first brought in contact with the jet of solution, so as to effect the spraying and cooling thereof, after which the falling spray is brought in contact with another forced current of air passing in the contrary direction.

I will describe the process with reference to the accompanying drawing, which shows a vertical section of a construction of apparatus that may be employed for the purpose.

The concentrated carbonate-of-soda solu-

tion is led through a pipe *b* into a recipient *r*, which may advantageously be connected with the compressed-air supply by the pipe *n*, so as to act as an air vessel. From the recipient *r* the solution presses through the pipe *m* into the cooling apparatus *c'*, in which the cooling-water enters at bottom through a pipe *e* and issues at top through a pipe *f*. The solution, on the other hand, enters the cooler at top through *o* and issues at bottom through *g*. In a second cooler *c''* the air entering through the pipe *a* at *o'* is cooled by a current of cooling liquid entering at *e'* at bottom and leaving the cooler at *f'*. The carbonate-of-soda solution passes through pipe *g* from the cooler *c'* to the ejector *d*, provided with a spraying-nozzle, which propels the solution in the form of spray into a closed tower *k*, the nozzle being at the same time supplied with compressed cooled air from the cooler *c''* through the pipe *h*. The tower into which the mixture of carbonate-of-soda solution and air is thrown is with advantage made at least about twelve meters high, with a base of about thirty square meters area. A strong current of cold air is preferably injected at bottom by a fan *l*, so that in rising upward it meets the falling spray and then escapes through the openings at *i*. As the liquid particles fall, they crystallize in consequence of the strong cooling action to which they are subjected by their contact with the cold upward current of air, and the resulting fine carbonate-of-soda crystals are deposited on the floor of the tower.

If the tower be made of sufficient height, it is possible to dispense with compressed air for spraying the solution, the cooling of the spray being effected during its downward fall by the upward current of cold air from *l*.

The above-described process has the advantage over the crystallizing processes now in use in that the crystallizing-works for producing the same output will occupy much less space.

The working can be arranged to be carried on in a continuous manner. The large crystallizing-tanks heretofore employed can be dispensed with.

There are no mother-liquors, as the whole of the carbonate of soda employed is made to crystallize. Also by operating in the above-

described manner small carbonate-of-soda crystals are obtained without the admixture of foreign substances or without the large expenditure of power hitherto necessary.

5 Having now particularly described and ascertained the nature of my invention and the manner in which the same is to be performed, I declare that what I claim is—

10 1. Process for the production of carbonate-of-soda crystals, consisting in converting a warm saturated solution of carbonate of soda into small particles by spraying and cooling such sprayed small particles, substantially as described.

15 2. Process for the production of carbonate-of-soda crystals consisting in converting a warm saturated solution of carbonate of soda into small particles by the spraying action of a jet of compressed air propelled in the same
20 direction as the jet of liquid whereby the liquid particles are at the same time cooled, substantially as described.

3. Process for the production of carbonate-of-soda crystals consisting in converting a warm saturated solution into small particles 25 by spraying, and then subjecting the falling particles to an upward-directed current of cold air, substantially as described.

4. Process for the production of carbonate-of-soda crystals consisting in converting a 30 warm saturated solution of carbonate of soda into small particles by spraying by means of a jet of compressed air issuing in the same direction as the jet of liquid, and then subjecting the falling liquid particles to a second up- 35 ward current of cold air, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOSEF KÜNSTNER.

Witnesses:

FR. BRUZA,

ADOLPH FISCHER.