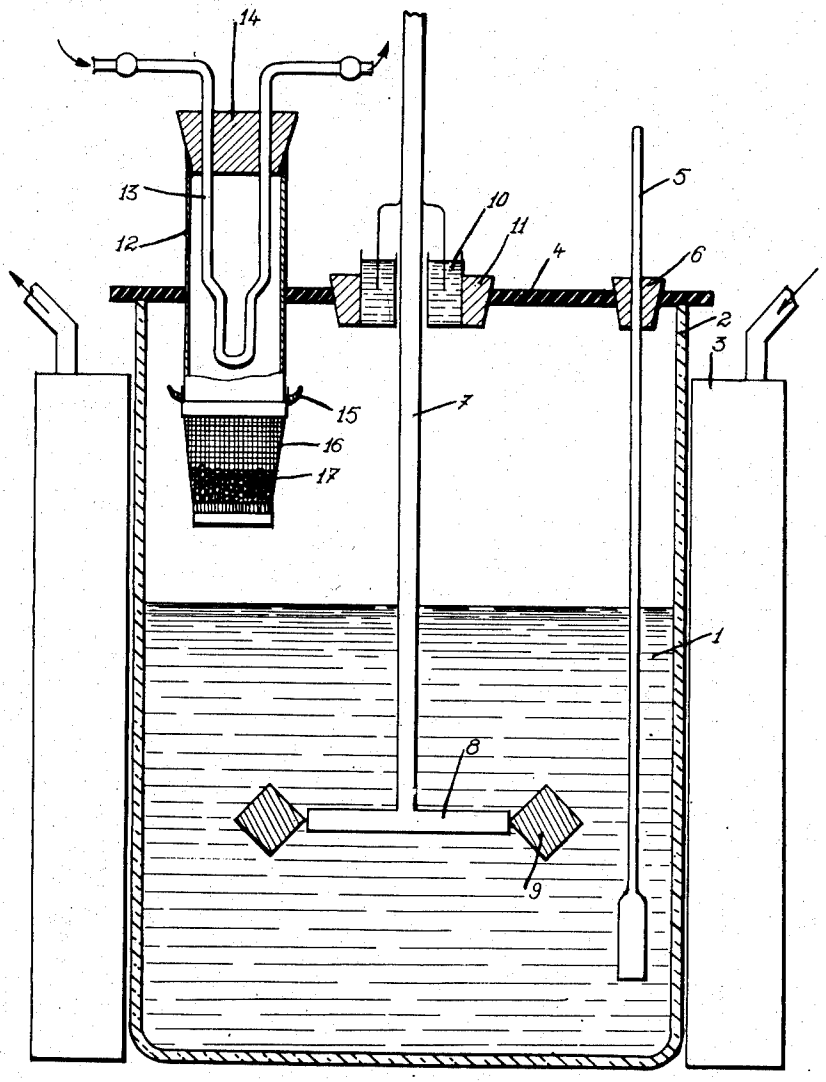
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METHOD FOR CONTINUOUS PREPARATION OF CRYSTALS

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## METHOD FOR CONTINUOUS PREPARATION OF CRYSTALS

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3 Claims. (Cl. 23—301)

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In currently used apparatus for the industrial production of synthetic crystals in an aqueous medium involving agitation of the solution, the process is a discontinuous one. This invention has for its object to provide a new method of crystal manufacture which is free of this drawback and which enables production to be carried out continuously.

The method of the invention is essentially characterized by the fact that it comprises the provision, at a point of the crystallising apparatus above the mother-solution, of a cold condensation surface the temperature of which is lower than the condensation point of the vapor from the mother-solution, and that the condensed liquid is caused to flow down onto a certain amount of the substance from which it is desired to produce crystals, the resulting solution being allowed to fall into the mother-solution.

The invention further comprises an apparatus for carrying the above-defined method into effect, said apparatus being characterized by the fact that in one of the walls of an isothermal enclosure containing the mother-solution, a recessed member is mounted above said solution, a cooling conduct extends through said recessed member, said member carrying a perforate container containing a predetermined amount of the substance from which crystals are to be produced.

Further characteristic features and the advantages of the invention will appear from the ensuing description and the accompanying diagrammatic drawings which illustrate by way of indication and not of limitation, one embodiment of the invention.

As shown in the drawing, the mother-solution 1 of the substance to be crystallised is contained in a container 2 maintained at a constant temperature by means of a jacket 3 through which a flow of fluid adapted to maintain a constant temperature within the container 1 may be circulated. The container 2 is sealed with a cover 4 through which extends a thermostat thermometer 5 retained in the cover by means of a suitably luted or cemented plug 6. The thermostat is adapted to restore automatically the heating circuit of the container 2 whenever the temperature drops beneath a predetermined value and to cut off said circuit when said value is slightly exceeded.

The cover 4 is also traversed by an agitator rod 7 the spider-like bottom part 8 of which carries the seed crystals 9 from and around which the desired crystals are to develop. The agitator 7 extends through the cover 4 by means of a hydraulic seal 10 containing paraffin oil or the like, said seal being hermetically mounted in a plug 11 cemented in the cover 4. Said agitator may have a vertical up and down motion imparted to it, but a rotary agitator may also be used.

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According to the invention, in the cover 4 a glass tube 12 is further cemented, and in said tube extends a cooling coil 13 through which cold water is circulated. The cooling coil 13 is retained in place by means of a plug 14 sealing the top of the tube 12. The bottom end of said tube is provided with projecting hooks 15 from which is suspended a perforate container such as a wire basket containing a predetermined amount of the substance 17 from which the desired crystals are to be produced.

The vapour from the mother-solution 1 will thus be allowed to condense over the cold wall of the tube 12 and the condensed liquid will flow down onto the mother-substance 17 dissolving a portion thereof; the resulting solution, after being filtered through the bottom of the basket, flows down into the mother-solution 1, enriching it and thereby maintaining a constant concentration therein.

By suitably selecting the dimensions of the cooling coil, the rate of flow and the temperature of the cooling fluid flowing therethrough, it is possible suitably to adjust the rate of dissolution of the mother-substance 17.

Insertion of the mother-substance is very easily effected merely by unstopping the glass tube 12.

The frequency at which the basket 16 is replenished makes it possible to regulate the rate of crystallisation.

It will thus be seen that there will be no discontinuity in the process of crystal-production, since the concentration of the mother-solution is automatically restored in a continuous manner and there are no sudden variations in this concentration.

It may also be seen that aside from actuating the agitator 7, the only operation required during the process is replenishing the basket or container 16 with the mother-material at regular predetermined intervals.

It will be distinctly understood that alterations may be made in the details of the apparatus described without departing from the spirit of the invention.

We claim:

1. Method of continuous crystal production from a mother solution of a substance to be crystallized containing a seed crystal, which com-

prises agitating said mother solution with said seed crystal while maintaining said solution at constant temperature, condensing vapor from said solution at a point directly above said solution at a temperature below said constant temperature, allowing the resulting condensed liquid to flow by gravity onto a supply of said substance to dissolve a portion thereof, and allowing the resulting solution to fall dropwise directly into said first-mentioned mother solution, thereby to maintain a substantially constant concentration therein.

2. Method of continuous crystal preparation from a mother solution of a substance to be crystallized containing a seed crystal within an enclosure, which comprises maintaining said mother solution in said enclosure at a constant temperature and agitating said mother solution with said seed crystal maintaining an area of said enclosure directly above said mother solution at a condensation temperature below said constant temperature to cause vapor from said mother solution to condense on contact with said area, allowing the resulting liquid to flow by gravity onto a supply of said substance in said enclosure to dissolve a portion thereof, and allowing the resulting solution to reflux dropwise directly back into said first-mentioned mother solution, and regulating said condensation temperature to provide a rate of reflux effective to maintain a substantially constant concentration within said solution.



3. In the method of claim 2, the step of filtering said reflux solution in its downward flow from said supply to said mother solution.

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