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PROCESS FOR THE ELECTROLYTIC PRODUCTION OF POTASSIUM BICARBONATE FROM POTASSIUM-CHLORIDE SOLUTION.

No Drawing. Application filed August 24, 1921. Serial No. 494,836.

To all whom it may concern:

Be it known that ROBERT SUCHY, a citizen of the Austrian Republic, residing at 62 Kaiserstrasse, Griesheim-on-the-Main, Germany, has invented certain new and useful Improvements in Processes for the Electrolytic Production of Potassium Bicarbonate from Potassium-Chloride Solutions, of which the following is a specification.

The present invention relates to the electrolytic production of potassium bicarbonate from potassium chloride solutions by means of a diaphragm process in which the caustic potash formed in the catholyte is neutralized by means of bicarbonate. In working according to this process, after complete electrolysis, when all or nearly all the bicarbonate has been transformed into normal carbonate, it is possible to precipitate as bicarbonate the major part of the alkali produced by electrolysis, by treating the final liquor with carbon dioxide; said potassium bicarbonate may be recovered as such by filtering off and washing, or by calcining it, pure potassium carbonate may be obtained.

According to the invention the amount of potassium chloride consumed from the catholyte during the electrolysis is replaced before the final liquor is treated with carbon dioxide. The effect of this procedure is that the amount of potassium carbonate freshly produced by the electrolysis is precipitated as bicarbonate, the original amount of bicarbonate present in the liquor prior to electrolysis being left in solution. Thus the present process always results in the regeneration of sufficient bicarbonate in the original liquor to saturate the same ready for use for the new period of electrolysis. The anode compartment will contain a solution of potassium chloride.

Example.

Catholyte solution, 240 grammes potassium chloride and 140 grammes potassium bicarbonate per litre.

The electrolysis is continued until the content of potassium carbonate has reached about 200 grammes per litre, whereupon the bath liquor is transferred to a suitable carbonating apparatus, about 20 grammes per litre of potassium chloride are added thereto and carbon dioxide is introduced, until complete saturation has occurred, the product being then filtered off. The mother liquor contains potassium bicarbonate and potassium chloride and is then returned as originating liquor to the electrolyzing vessel.

What I claim and desire to secure by Letters Patent is:—

1. The process for the electrolytic production of potassium bicarbonate which comprises electrolyzing a potassium chloride solution neutralizing the potassium hydrate formed in the catholyte by means of potassium bicarbonate, thereby forming normal potassium carbonate, replacing the amount of potassium chloride consumed from the catholyte during electrolysis by adding fresh potassium chloride, precipitating potassium bicarbonate from the end liquor containing said normal potassium carbonate by introducing carbon dioxide, and recovering potassium bicarbonate from said liquor.

2. The process for the electrolytic production of potassium bicarbonate which comprises electrolyzing a liquor containing potassium chloride and potassium bicarbonate thereby forming normal potassium carbonate, transferring the liquor to a carbonating apparatus, adding potassium chloride to replace that amount consumed from the catholyte during electrolysis, introducing carbon dioxide gas until complete saturation has occurred thereby precipitating potassium bicarbonate, filtering off said potassium bicarbonate from the mother liquor and submitting said mother liquor still saturated with potassium bicarbonate and potassium chloride to renewed electrolysis.

3. The process for the electrolytic production of potassium bicarbonate which comprises electrolyzing a liquor containing 240 grammes potassium chloride and 140 grammes potassium bicarbonate per litre un-

til the content of potassium carbonate is about 200 grammes per litre transferring the liquor to a carbonating apparatus, adding about 20 grammes potassium chloride per litre, introducing carbon dioxide gas until complete saturation has occurred thereby precipitating potassium bicarbonate, filtering off said potassium bicarbonate from the mother liquor and submitting said mother liquor still saturated with potassium bicarbonate and potassium chloride to renewed electrolysis.

In testimony whereof I affix my signature.

DR. ROBERT SUCHY.