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ELECTROLYTIC APPARATUS FOR USE IN THE MANUFACTURE OF BLEACHING LIQUORS.

APPLICATION FILED MAR. 5, 1907.

906,669. Patented Dec. 15, 1908.

Fig. 1.

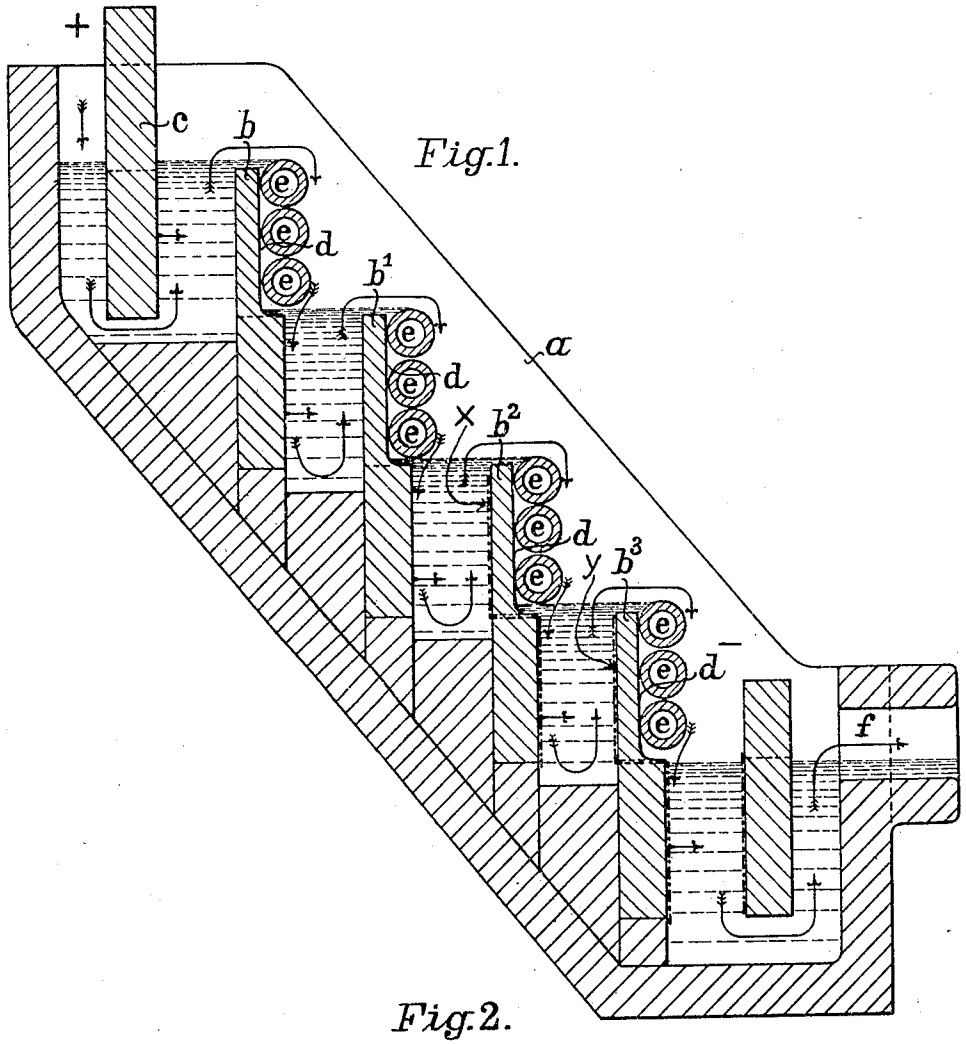
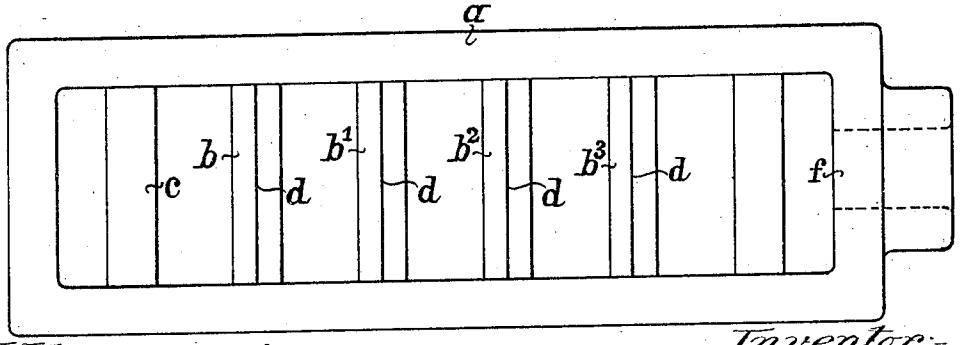


Fig. 2.



Witnesses:-
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UNITED STATES PATENT OFFICE.

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ELECTROLYTIC APPARATUS FOR USE IN THE MANUFACTURE OF BLEACHING LIQUORS.

No. 906,669. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed March 5, 1907. Serial No. 360,769.

To all whom it may concern:

Be it known that I, ALFRED VOGELSANG, engineer, a subject of the King of Prussia, and resident of Dresden, in the Kingdom of Saxony, German Empire, have invented a new and useful Improvement in Electrolytic Apparatus for Use in the Manufacture of Bleaching Liquors, of which the following is a specification.

This invention relates to electrolytic apparatus such as used for obtaining bleaching liquor from aqueous solutions of rock-salt and relates to that form of apparatus in which an open vessel is provided with a plurality of compartments arranged in step-like formation and dependent in number upon the voltage of the dynamos used for electrolysis. Such compartments have heretofore been formed by electrodes separating the compartments one from another so that an over-flow does not take place.

The present invention consists in an electrolytic apparatus in which the liquid used as an electrolyte is cooled down during its over-flow from one compartment to the next one either by its contact with the atmospheric air or by suitable cooling tubes or by both, in such a manner as to obtain a thorough or intimate mixing of the electrolyte within the compartments and obviating an increasing of the temperature in such compartments. For this purpose the electrodes arranged in the form of partitions are provided in step-like formation within a slanting vessel, and according to the present invention one of the electrodes forming a wall of one compartment, is continued or projected above the bottom of the vessel in such a manner that its projecting part forms the wall of a compartment next above. In this manner, a non-electrolytically acting surface is formed on one side of the partition over which the electrolyte will flow down in a thin layer on its passage from one compartment to the next one.

During the flowing of the electrolyte down the non-electrolytically acting surface a cooling down of the electrolyte is obtained either by its contact with the atmospheric air or by cooling-tubes provided on this side of the partition or by both. The cooled electrolyte falls down within the compartment on one partition of the electrode and rises on the other partition so that a constant movement within the compartment is secured and a heating of the electrolyte is obviated. The thin layer of the overflowing electrolytic liquid is of little conducting action, such reduced action being secured from one to the next compartment by the electrode which is formed of a good conducting material, as graphite or platinum. The electric current tends to circulate in the direction offering the least resistance and the electrolyte running from one compartment to the next one in a thin sheet affords but slight conducting power, whereby loss of current generally produced in apparatuses in which the electrolyte circulates from one compartment to the next one in the known zig-zag manner, is prevented.

In the accompanying drawing Figure 1 shows a vertical section and Fig. 2 a plan of the apparatus according to this invention, illustrated as an example of one form of construction.

As will be seen from Fig. 1, the electrolytic apparatus is composed of a slanting vessel a provided with electrodes b, b', b^2 . . . formed by the partitions dividing such vessel into separate compartments in such a manner that the electrode b projects or is continued above the electrode b' and the electrode b' above the electrode b^2 and so on, whereby a step-like construction of the vertically arranged electrodes and of the compartments is secured and each compartment is formed by the lower part of one electrode and by the upper part of the next electrode situated below. c is the anode provided in the uppermost compartment for the supply of current.

As shown from the drawings, the arrangement of the electrodes described secures the formation of a non-electrolytically acting surface d on each electrode on which the electrolyte runs down in a thin layer on its circulation from one compartment to the next one. By this means a cooling down of the electrolyte on the outside of the compartments is obtained in such a manner that a thorough or intimate mixing of the electrolyte in each compartment is secured and the liquid will circulate within this compartment in the direction shown by the arrows whereby a heating of the contents of the compartments is surely avoided. Cooling-tubes e may be provided near the non-electrolytically acting surface d to increase the cooling action by allowing the electrolyte to run down on such tubes.

The partitions of the compartments acting

as the electrodes may in the arrangement described above, consist of graphite, platinum or any suitable material of good conducting action or a partition consisting of non-conducting material as glass, slate or the like may be used as clearly seen by the electrodes b^2 and b^3 to which the electrodes proper, shown by dotted lines as thin sheets and denoted by x and y, composed of platinum or the like are fastened in a suitable manner.

The electrolyte is supplied to the uppermost compartment whereas its exit will take place from the lowermost compartment by the passage or opening f acting as an overflow.

What I claim is:

1. Electrolytic apparatus for the manufacture of bleaching liquor from aqueous chlorid solutions comprising compartments situated one above another in a stair-step-like manner, an electrode between two successive compartments extending upwardly and forming a wall for a compartment next above it, one side of the upwardly projecting portion of the electrode being exposed and not acting electrolytically, the said compartments being so arranged that the electrolyte will flow consecutively from an upper compartment over the upwardly projecting electrode into the next lower compartment in the form of a thin sheet throughout the width of the compartment whereby a circulation and cooling of the electrolyte is obtained.

2. Electrolytic apparatus comprising compartments arranged in step-like formation, the walls of the said compartments for containing the electrolyte serving as electrodes and a wall of a lower compartment extending upwardly and forming a wall of a compartment next above it whereby the exposed portion of said upward extension does not act electrolytically, cooling tubes arranged in proximity to said non-electrolytically acting wall and means for causing the electrolyte to flow in a thin sheet over the said upwardly extending electrodes and downwardly on the said cooling tubes into the compartment next below.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this twenty-first day of February, 1907.

ALFRED VOGELSANG.

Witnesses:
CLÄRE SIMON,
PAUL ARRAS.