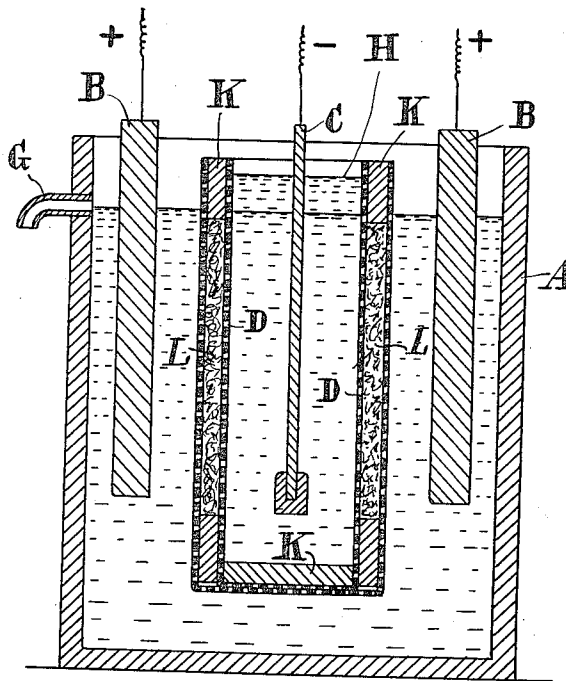


N. V. HYBINETTE.
ELECTROLYSIS OF METAL SALT SOLUTIONS.
APPLICATION FILED JAN. 5, 1912.

1,052,256.

Patented Feb. 4, 1913.



Witnesses:
J. K. Sommers
E. Leckert.

Inventor.
Noak Victor Hybinette
By *[Signature]* atty.

UNITED STATES PATENT OFFICE.

NOAK VICTOR HYBINETTE, OF KRISTIANSAND, NORWAY.

ELECTROLYSIS OF METAL-SALT SOLUTIONS.

1,052,256.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NOAK VICTOR HYBINETTE, a citizen of the United States of America, residing at Kristiansand, Norway, have invented certain new and useful Improvements in the Electrolysis of Metal-Salt Solutions; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to the electrolysis of metal salt solutions and has for its object a diaphragm by which very important advantages are obtained over the diaphragms hitherto employed. The characteristic feature of this diaphragm is that it is made up of a fibrous filtering material such as asbestos or the like which is filled in between perforated frames preferably of lead.

In the following a diaphragm constructed in accordance with this invention is described in connection with the electrolysis of copper salt solutions obtained by the leaching of ores, reference being had to the accompanying drawing which shows the diaphragm adapted for the ordinary construction of the plating tank, which is universally used for the refining of copper from soluble anodes.

In the drawing A is the cell or tank generally made from wood and leadlined. In this tank are suspended the anodes B and cathode C.

D is a screen made from lead, perforated and being held in shape by the structure K, generally made from wood or iron covered with lead and of which the upper horizontal part is made deep enough to prevent any filtering except in the submerged part of the screen. The space L, between the lead screens is filled with loose asbestos or other suitable filtering material. It is remarkable that the use of metallic lead should be

possible in a construction interposed between anode and cathode. It would seem that such screen should be covered over with a plating of metallic copper; such plating does not take place, at least not to such an extent as to cause any annoyance.

It will be noticed from the above description of the diaphragm, that it has more the character of a filter or screen than of a diaphragm proper. It has the advantage of offering a lower resistance to the electric current than an ordinary diaphragm, but after it has been used for some time small particles of ore carried with the solution from the leaching of the ore may fill up the openings in the filter, which then ceases to be a screen and becomes a diaphragm proper. On account of the particular construction of the diaphragm according to this invention there is very little expense in taking the screen apart and washing the fine ore away from the asbestos whereupon the filtering capacity and low electrical resistance are recovered, but the deposition of the copper goes on equally well, whether the apparatus works as a filter or as a diaphragm. When it is necessary to prevent compounds from passing through the diaphragm by diffusion such can be done by filtering and hydrostatic pressure, but the easy diffusion in some cases is of advantage.

In the plating of metals the cathode very often grows out against and adheres to the diaphragm, which by other forms of diaphragms may cause considerable trouble and expense. It is evident that a diaphragm of this character is useful in many cases where low resistance and filtering capacity is necessary but its great field of usefulness is in the electrolytic deposition of metals from corrosive solutions, where my discovery that lead may be used is of the greatest importance.

I claim:

1. Diaphragms for use in the electrolytic deposition of metals from aqueous metal salt solutions, comprising a fibrous filtering material supported by a structure having

leaden parts exposed to the action of the electrolyte.

2. Diaphragms for use in the deposition of metals from aqueous metal salt solutions, comprising a fibrous filtering material supported by a structure whose surfaces exposed to such solutions are of lead.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

NOAK VICTOR HYBINETTE.

Witnesses:

NANA SCHIANDER,
HENRY BORDEWICH.