

No. 720,326.

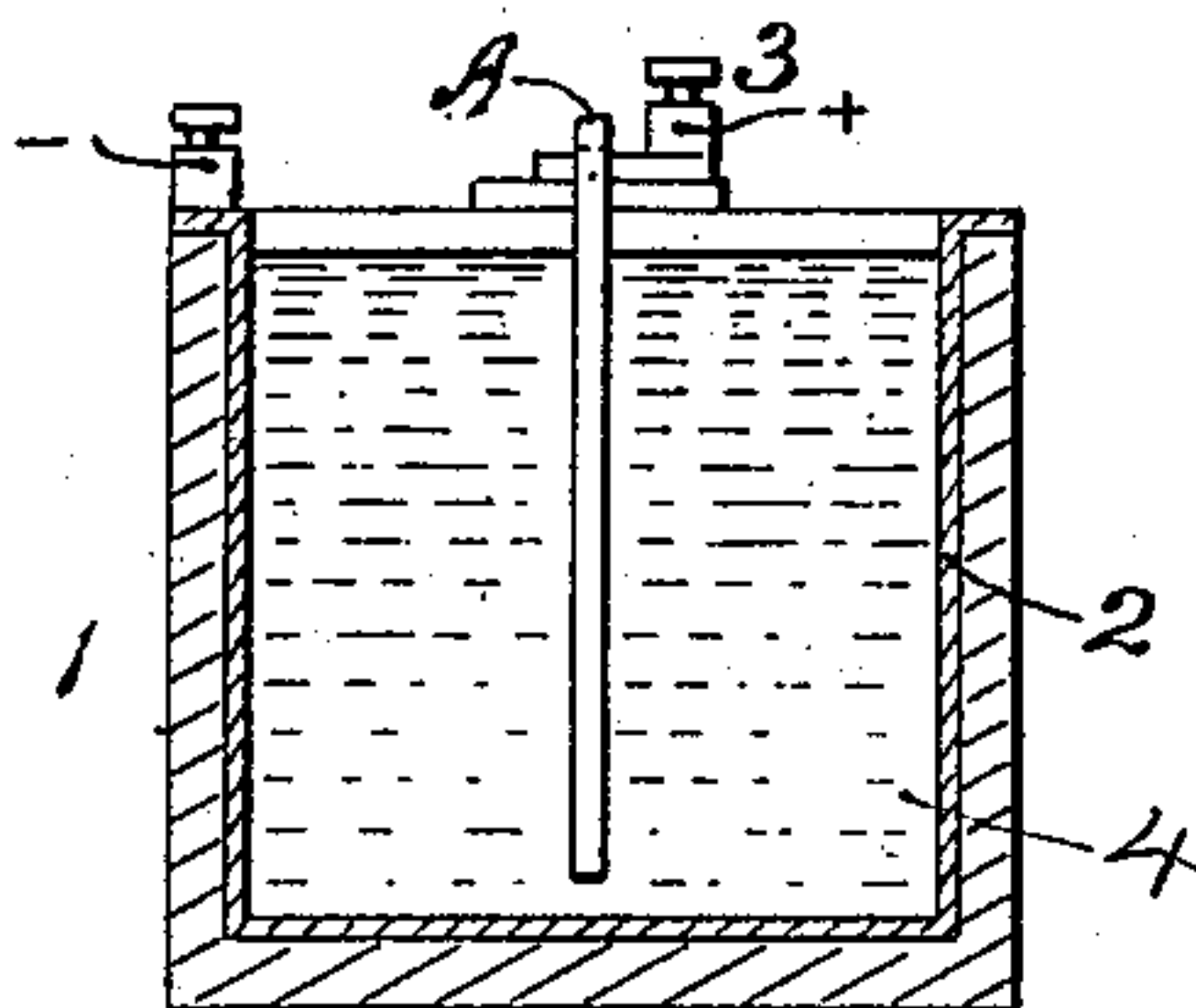
PATENTED FEB. 10, 1903.

R. N. CHAMBERLAIN.

PROCESS OF PREPARING STORAGE BATTERY PLATES.

APPLICATION FILED MAR. 3, 1899.

NO MODEL.



WITNESSES:

M. V. Belgood
W. P. Hammond

INVENTOR

Rufus A. Chamberlain
BY
Thos. W. Bro
ATTORNEYS

UNITED STATES PATENT OFFICE.

RUFUS N. CHAMBERLAIN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO GOULD STORAGE BATTERY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF WEST VIRGINIA.

PROCESS OF PREPARING STORAGE-BATTERY PLATES.

SPECIFICATION forming part of Letters Patent No. 720,326, dated February 10, 1903.

Application filed March 3, 1899. Serial No. 707,592. (No specimens.)

To all whom it may concern:

Be it known that I, RUFUS N. CHAMBERLAIN, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Processes of Preparing Storage-Battery Plates, of which the following is a specification.

This invention relates to improvements in processes of preparing storage-battery plates, the improvements covering the pickling and roughening of the plates preparatory to forming them.

It has been customary to pickle lead battery-plates by subjecting them to the action of strong nitric acid. This process usually involves the waste of acid, and owing to the constant tendency to neutralization of the acid the process is not as regular and certain as could be desired. I have found that the pickling of the lead storage-battery plates preparatory to forming them is greatly facilitated and nearly a complete saving of lead and of the pickling agent is effected by constituting the plate the anode in an electrolytic bath containing the pickling agent, such as a solution of nitric acid, and collecting on the cathode of such bath the lead which has been dissolved by the pickling solution and electrolytic action of the current. The object of the pickling is, first, to remove the superficial glaze or surface of the lead plate and develop a rough or grain surface thereon, and, second, to remove from the plate, as far as possible, the impurities which are more soluble than the lead.

It has been proposed to pickle iron by electrolytic action preparatory to plating same with another metal; but in that case the pickling was only for cleaning and did not have the object or the effect of roughening or pitting the surface of the plate, which is desirable in storage-battery work and which is an important feature of my present process.

Referring to the accompanying drawing, which is a sectional diagrammatic representation of the pickling-vat, the said vat 1 has a cathode-surface 2, which may be the lining of the vat itself, and an anode-terminal 3 is provided, to which the plates to be treated are attached or connected. One of such plates I have indicated at A. The bath contains or consists of a solution (indicated at 4) consist-

ing of four to six per cent. solution of nitric acid in water. The unaided action of such a solution on the lead plate would be extremely slow; but by connecting the bath in an electric circuit, so as to constitute the plate an anode, it is rapidly cleaned. The lead dissolved from the plate when it is allowed to remain in the solution rapidly deteriorates the latter; but by the electrolytic action it is removed as fast as it is dissolved and is deposited on the cathode-surface 2, thus at once maintaining the efficiency of the pickling fluid and conserving the lead, which would otherwise be wasted. When a plate has been thus treated in the pickling and roughening bath until it is properly pickled and roughened, it is removed and another one inserted, the successive plates thus contributing a portion of their material successively to the bath, but the superfluous dissolved material being prevented from accumulating by reason of the continual deposition of the same on the cathode.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The process of treating lead storage-battery plates to clean the same and provide them with a roughened or pitted surface which consists in cleaning the plates by exposing them successively to electrolytic action as anodes in a solution capable of dissolving lead, thereby cleaning and roughening the plates and producing a solution of lead, redepositing the dissolved lead on a cathode, and removing said anode-plates when properly cleansed and roughened and forming them substantially as set forth.

2. The process of treating lead storage-battery plates to clean the same and provide them with a roughened or pitted surface which consists in cleaning the plates by exposing them successively to electrolytic action as anodes in a solution of nitric acid, thereby cleaning and roughening the plates and producing a solution of lead, redepositing the dissolved lead on a cathode, and removing said anode-plates when properly cleansed and roughened and forming them substantially as set forth.

RUFUS N. CHAMBERLAIN.

Witnesses:

A. P. KNIGHT,
M. V. BIDGOOD.