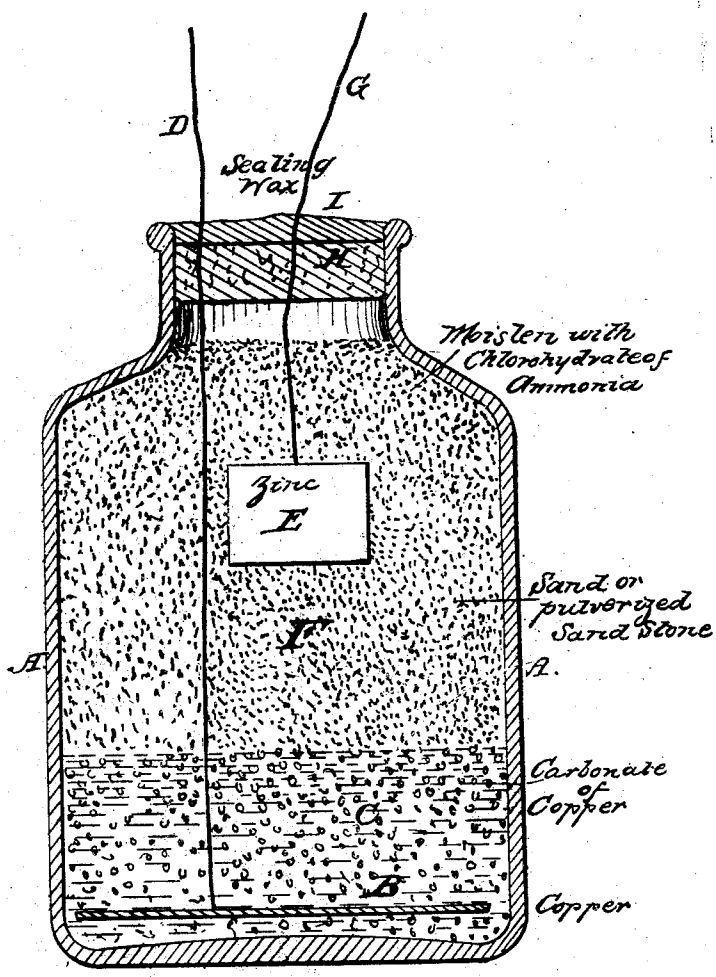
G. L. LECLANCHE.

Electric Battery.

No. 55,441. Patented June 5, 1866.



Witnesses

L. W. Kidder

W. W. Swingham

Inventor,

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UNITED STATES PATENT OFFICE.

GEORGE LIONEL LECLANCHE, OF PARIS, FRANCE.

IMPROVEMENT IN GALVANIC BATTERIES.

Specification forming part of Letters Patent No. **55,441**, dated June 5, 1866.

To all whom it may concern:

Be it known that I, GEORGE LIONEL LECLANCHE, engineer, of 13 Rue Gaillon, Paris, Empire of France, have invented certain Improvements in Piles for Generating Electricity; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

Piles composed of two liquids in which the constancy of the current is obtained by means of the decomposition of a soluble salt of copper have two serious disadvantages: first, the evaporation of the liquids, and, secondly, the permanent mixture of the two liquids, of whatever nature the porous diaphragm may be. The principal results of these two facts are, first, the necessity of renewing the evaporated liquids; secondly, a considerable waste of salt of copper; thirdly, a short duration of the pile; and, fourthly, a sensible weakening of the current.

By substituting for the soluble salts of copper insoluble or slightly soluble salts of copper I obtain the following advantages: facility in closing and sealing hermetically the piles; a duration at least double that of the piles hitherto used; avoidance of the necessity of superintendence; total absence of all internal chemical action when the pile is not at work; and I have found that the salt of copper, insoluble or slightly soluble, which has given me the best results is carbonate of copper.

I have also found in practice the following arrangement of parts to be the most preferable: I place in the bottom of a bottle or jar having a large mouth a plate of copper or any other metal, or even any other suitable substance—such as, for instance, graphite, or any other carbon good conductor of electricity, to which I attach a wire, to be used as one of the poles. I cover this plate with carbonate of copper reduced into a powder, and I then fill the bottle or jar nearly up to its mouth with sand or pulverized sandstone, in the middle of which I place the zinc bearing a copper wire, to be used as the negative pole. I then moisten the whole with a liquid containing a salt in solution capable, by its decomposition, of rendering soluble the salt employed.

In the case above mentioned (carbonate of copper) I moisten the whole with water containing about twenty per cent. of chlorohydrate of ammonia. The apparatus may then be hermetically closed. It is well understood that the two wires must be allowed to pass through the mouth of the bottle.

In order that my improvements be better understood, I have represented in the accompanying drawing a pile constructed on my new system, in which—

A is the bottle or jar; B, the plate of copper or other suitable electro-conductor; C, the carbonate of copper reduced into a powder; D, the wire attached to the plate and to be used as one of the poles. E is the zinc; F, the sand or pulverized sandstone; G, the copper wire attached to the zinc and used as the negative pole; H, the cork or bung, and I sealing-wax.

Nota Bene. The whole (sand and carbonate of copper) is moistened with water containing chlorohydrate of ammonia.

Having thus explained the nature of my invention and the best means that I am acquainted with for carrying the same into practice, I claim—

The use, in electrical piles, of insoluble or slightly soluble salts of copper or other equivalent material moistened with a liquid containing a salt in solution, capable by its decomposition of rendering the said salts of copper or other equivalent material soluble, substantially as described.

G. LECLANCHE.

Witnesses:

EDWARD TURK,

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