UNITED STATES PATENT OFFICE.

CHARLES A. EHRENBERG, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SOLUTIONS FOR GALVANIC BATTERIES.

Specification forming part of Letters Patent No. **215,899**, dated May 27, 1879; application filed March 3, 1879.

To all whom it may concern:

Be it known that I, CHARLES A. EHRENBERG, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Galvanic Batteries; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the materials used for filling galvanic batteries.

The construction of the ordinary galvanic battery is so well known that it is unnecessary to describe it to understand the nature of my invention, especially as the application of my improvement is not limited to any particular form of construction. It matters not whether in a battery there is used zinc and copper, zinc and carbon, or iron, platinum, &c., My invention is applicable to all forms.

My invention is simple, but is none the less important and effective in its results.

My improvement consists in the introduction of urine into the battery, in lieu of or in combination with the liquids ordinarily used for filling batteries.

All the liquids in use for the purpose referred to have in their composition acid in such form and combination that the unavoidable result of their use is the oxidation and destruction of the metals with which they come in contact. There is also a constant decrease in the effective power of the battery. The battery requires frequent renewal of parts and refilling, which is attended with labor, discomfort, and injury and destruction of property, and is a constant source of expense.

I have found by practical test that by the use of urine the oxidation and destruction of the metals used are avoided, the renewal of parts obviated, and refilling rendered unnecessary except at long intervals. Further, the power of the battery, instead of decreasing with use and lapse of time, will rather tend to increase.

Another advantage possessed by my improvement is, that it admits of general application to the batteries in common use.

The expense attending the use of my improved battery is unappreciable, the many objectionable features of ordinary batteries are removed, and the production of electricity, if I may use the phrase, is attained cheaply and easily.

If necessary or desirable, the urine used may be clarified or purified.

If desired, urine may be used in combination with the liquids in ordinary use for filling batteries; but I regard its use alone as preferable.

I claim as my invention—

The use of urine as an excitant in galvanic batteries, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

C. A. EHRENBERG.

Witnesses:
THOS. GAHAGAN,
JOHN J. ALLEN.