D. P. PERRY.

PROCESS OF PREPARING STORAGE BATTERY ELEMENTS.

APPLICATION FILED DEC. 26, 1903.

931,081.

Patented Aug. 17, 1909.

Fig. 1.

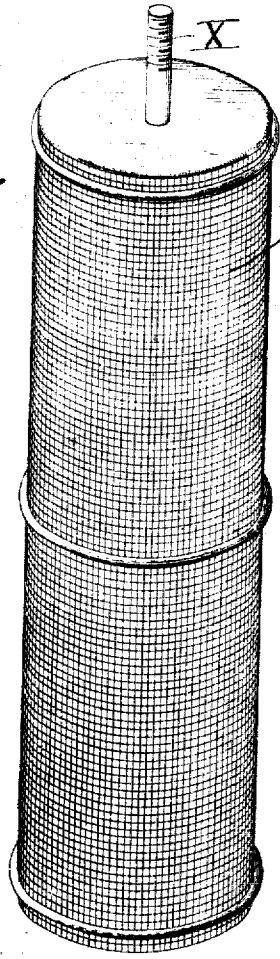
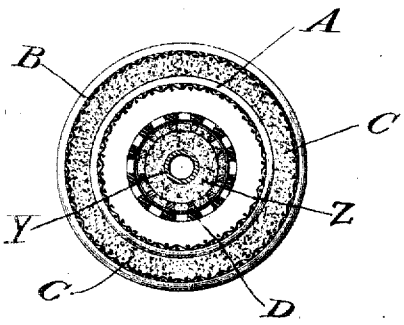


Fig. 2.



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UNITED STATES PATENT OFFICE.

DAVID P. PERRY, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, OF TWO-THIRDS TO WILLIAM MORRISON, OF CHICAGO, ILLINOIS, AND ONE-THIRD TO M. A. LUMBARD, OF DES MOINES, IOWA.

PROCESS OF PREPARING STORAGE-BATTERY ELEMENTS.

No. 931,081. Specification of Letters Patent. Patented Aug. 17, 1909.

Application filed December 26, 1903. Serial No. 186,755.

To all whom it may concern:

Be it known that I, DAVID P. PERRY, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Processes of Preparing Storage-Battery Elements, of which the following is a specification.

My invention contemplates a novel and highly efficient process or method of preparing storage-battery elements.

In a process characterized by my invention, copper and cadmium are, in the manner hereinafter described, preferably simultaneously dissolved, the resulting product being a dry powder-like oxid of copper and cadmium. The copper and cadmium thus reduced to an oxid may then be compressed or packed within a grid or suitable support, as, for example, a couple of concentric cylinders of wire gauze, there being sufficient space between the two cylinders to accommodate the oxid; and this cylindric structure, as will also hereinafter more fully appear, can then be employed as the positive element in a storage battery comprising, for example, an electrolyte consisting of a plain alkaline solution, and a suitable negative element.

My improved process, involving as it does a particularly effective method of preparing copper and cadmium, is productive of good results, and enables me to provide a positive element of such nature as to insure a high degree of efficiency and serviceability on the part of a storage-battery of this character.

In the accompanying drawings, Figure 1 is a perspective of a finished storage-battery element constructed in accordance with the principles of my improved process. Fig. 2 is a cross-section of the element shown in Fig. 1.

In carrying out my invention, any suitable form of grid or support may be employed. For example, a specially constructed grid or support may be employed comprising inner and outer cylinders A and B of copper wire gauze or other like suitable material. These concentrically arranged cylinders of copper wire gauze preferably have sufficient space between them to accommodate the specially prepared oxid of copper and cadmium C. It will be understood that the two cylinders of copper wire gauze can be mounted or secured together in any suitable manner, as my invention relates to the process of preparing the copper and cadmium and of applying it to the element, rather than to the mechanical construction and details of such element. As shown in Fig. 2, however, a cylindric negative element D, of any suitable known or approved character, is arranged concentrically within the said positive element.

The construction, as illustrated, is, I find, well adapted to receive the filling of copper and cadmium, that is to say, the oxid of copper and cadmium, which oxid is prepared as follows: First, take a sufficient or desired quantity of copper and cadmium, preferably in the proportion of one part of copper to two parts of cadmium, and then dissolve the same together in nitric acid. Next, and after the copper and cadmium have been thoroughly dissolved, add a sufficient quantity of a strong solution of potash or soda, so as to precipitate the copper and cadmium. When the precipitation has been thoroughly effected, and after the precipitate has been allowed to settle, and after the acid, etc., has been poured off, then pour in water and wash the precipitate several times. This step, to-wit, the washing, must be repeated and made quite thorough. After this, the precipitate can then be allowed to dry in any suitable manner, and can be further treated or prepared in any suitable or desired manner, and thus made ready for placing in the cylindric or other suitable support. The final product of this method of treatment, is a dry or practically dry powder, which is an oxid of copper and cadmium, and which is a perfect mixture owing to the simultaneous dissolving of the two metals. This oxid is admirably adapted for use as the active material, or material to become active, of the positive element of a storage battery wherein the electrolyte consists of a plain or simple alkaline solution. When used as described, I find that the copper and cadmium give excellent results, and insure a high degree of efficiency and serviceability for the battery. The copper and cadmium, that is to say, the resulting oxid or product, can then be compressed or packed in the space or chamber between the two concentric wire gauze cylinders A and B; and, thus applied to the positive element, the said material is held firmly and efficiently in place. The positive ele-

ment thus made can be employed, if desired, in various kinds of known or approved storage-batteries; but, obviously, it can be employed to advantage, and with good results, in connection with a negative element D in the shape of a perforated cylinder, of copper or other suitable material, containing powder-like oxids of silver and nickel, or other suitable material, and in connection with an electrolyte consisting of a plain or simple alkaline solution.

When placed in the battery, the positive element, of course, contains the copper and cadmium in an oxidized condition. As soon as the battery is charged, however, said oxid turns to a metallic state. Then in the discharge, the copper and cadmium again become oxids.

A copper rod or tube Y passes through the cell, its end X forming the negative pole of the battery.

What I claim as my invention is:—

1. The process of preparing a storage-battery element, which includes suitably dissolving copper and cadmium together, precipitating the hydrates of the metals thus dissolved, converting the same to their oxids and subsequently securing the oxids thus obtained in a suitable support.

2. The process of preparing a storage-battery element, which includes simultaneously dissolving copper and cadmium together in nitric acid, adding a sufficient quantity of a strong solution of alkaline hydroxid to precipitate the hydrates of copper and cadmium, allowing the precipitate to settle, then thoroughly washing the same and permitting the precipitate to dry in any suitable manner, and subsequently securing the oxids thus obtained in a suitable support.

3. The process of preparing a storage-battery element, which includes, as steps, the simultaneous dissolving of copper and cadmium together in a suitable acid, precipitating the hydrates of dissolved metals by adding an alkaline hydroxid, suitably washing and drying the precipitate, and subsequently placing the ultimate product within a suitable support.

4. The process of preparing a storage-battery element, which includes simultaneously dissolving one part of copper and two parts of cadmium together in nitric acid, adding a sufficient quantity of a strong solution of alkaline hydroxid to precipitate the hydrates of copper and cadmium, allowing the precipitate to settle, then thoroughly washing the same and permitting the precipitate to dry in any suitable manner, and subsequently securing the oxids thus obtained in a suitable support.

Signed by me at Chicago, Cook county, Illinois, this 12th day of December, 1903.

DAVID P. PERRY.

Witnesses:
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