THE PATENT OFFICE.

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SPECIFICATION

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IMPROVEMENTS IN PRIMARY BATTERIES.

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The following specification particularly describes and ascertains the nature of the invention and the manner in which the same is to be performed.

This invention relates to primary batteries of the type described in my Indian Specifications Nos. 85 of 1908 and 308 of 1909, wherein are described primary batteries which give an exceptionally high electro-motive force with a low internal resistance, and which possess a remarkable constancy that enables them to be employed with advantage in many cases where the ordinary primary batteries are unsuitable. The object of this invention is the production of a primary battery not only embodying these important features but in which the hitherto uncontrollable and detrimental diffusion of the excitant through the porous pot into the depolariser is retarded and the electrical efficiency and ampere hour capacity of the battery is greatly increased under all loads. This factor also considerably lengthens its life and usefulness when the battery is used for intermittent working over an extended period. The improved battery is particularly useful for wireless sending and receiving sets, sparking on motor cars and boats, driving small voltage electric motors, electric lighting, and in other instances where it is desired to obtain a high efficiency at short notice and without having to send the battery, as in the case of secondary batteries, to charging stations.

In carrying out my invention I use the same elements as described and claimed in Indian Specification No. 85/08, hereinbefore referred to, namely, a perforated rectangular or cylindrical carbon element placed in the depolariser contained in an outer containing vessel made of glass, celluloid, or other suitable material, and zinc element, preferably in the form of a perforated cleft rectangular or cylindrical tube (although I do not wish to bind myself to any particular form or shape of such element) placed in the excitant, which is contained in a porous pot within the carbon element.

The depolariser, which is the same as described and claimed in Indian Specification No. 308/09 to which reference has been made, consists of the following ingredients mixed in approximately the following proportions :—

Chromic Acid	eight (8) ounces.
Water	fifteen (15) ounces.
Hydrochloric Acid	five (5) ounces.
Ferrous Sulphate or Nickel Sulphate or a mixture of the two	one (1) ounce.

Price: ONE RUPEE.

The commercial hydrochloric acid is mixed with the water, and, in this mixture, the ferrous sulphate or nickel sulphate or a mixture of ferrous and nickel sulphate in any proportion is dissolved, and then commercial chromic acid is subsequently added to the solution.

The excitant consists of a solution of sodium hydroxide formed of approximately eight (8) ounces of sodium hydroxide dissolved in approximately sixteen (16) ounces of water, as included in my Indian Specification No. 85/08, but, instead of adding gum arabic, as in Indian Specification No. 308/09, for retarding the diffusion of the excitant, I add approximately two (2) fluid ounces of sodium silicate. The sodium silicate is used as a colloidal substance in solution, which not only retards the diffusion of the excitant but thereby greatly improves the electrical efficiency of the battery. The cell or battery may be fully charged within two minutes and is then immediately ready for use, recording the exceptionally high electro-motive force of 2·6 to 2·7 volts per single cell.

I do not wish to bind myself down to the proportions hereinbefore set out, as I find that good results are obtainable even when a more or less wide departure is made therefrom.

I claim:

1. In improvements in primary batteries of the double fluid type, the addition of sodium silicate to the excitant, as and for the purposes herein set forth.

2. In improvements in primary batteries of the double fluid type, an excitant, consisting of a solution of sodium hydroxide to which sodium silicate is added, substantially in the proportions and for the purposes set forth.

3. In improvements in primary batteries of the double fluid type, a depolariser consisting of a mixture substantially in the proportions mentioned of chromic acid, water, and hydrochloric acid, together with ferrous or nickel sulphate or a mixture thereof, and an excitant consisting of a mixture substantially in the proportions set forth of sodium hydroxide, water, and sodium silicate, as and for the purposes herein set forth.

4. A primary battery of the double fluid type consisting of zinc as the positive element in an excitant consisting of a solution of sodium hydroxide to which sodium silicate has been added, and carbon as the negative element in a depolariser consisting of a mixture of chromic acid, water, and hydrochloric acid, together with ferrous or nickel sulphate or a mixture thereof, the depolariser being separated from the excitant by a porous partition as herein described.

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By his Attorneys,

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Dated this 22nd day of March 1926.