No. 809,647. PATENTED JAN. 9, 1906.

K. TSUKAMOTO.

ELECTRIC CELL.

APPLICATION FILED JAN. 14, 1904.

Fig. 1

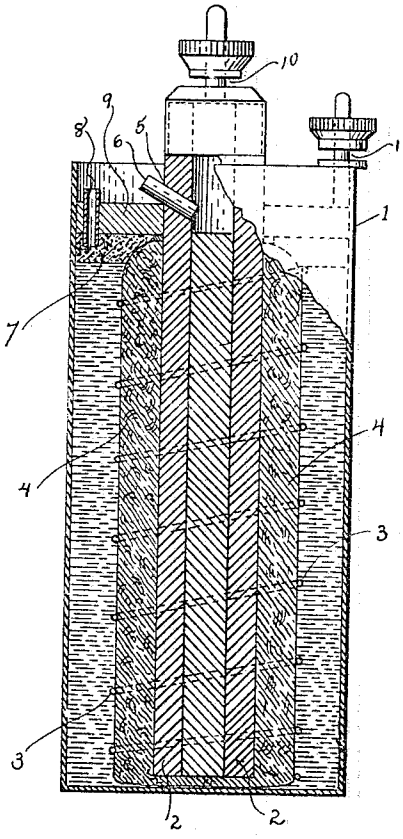
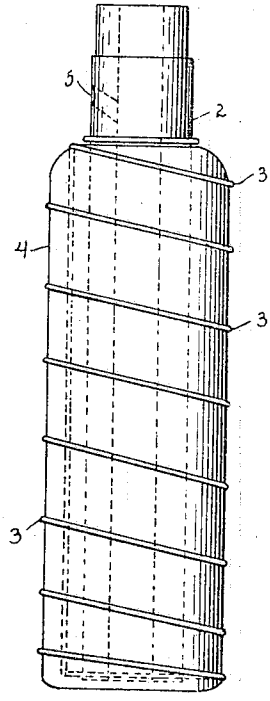


Fig. 2



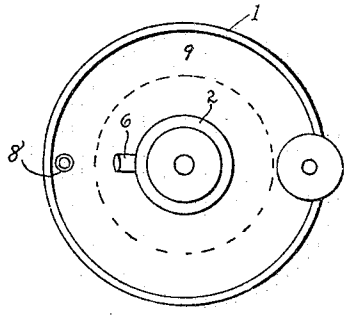


Fig. 3

WITNESSES:

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KUMAJIRO TSUKAMOTO, OF TOKYO, JAPAN.

ELECTRIC CELL.

No. 809,647. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed January 14, 1904. Serial No. 189,066.

To all whom it may concern:

Be it known that I, KUMAJIRO TSUKAMOTO, a citizen of the Empire of Japan, residing at Tokyo, Tokyo Fu, Province of Musashi, Japan, have invented certain new and useful Improvements in Electric Cells; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a vertical section showing the different parts properly arranged. Fig. 2 is a view of the carbon tube. Fig. 3 is a top view.

The present invention has relation to electric cells, and has for its objects the following: first, to reduce internal resistance and also action of polarization to increase electromotive power; second, to prolong the life of the cell.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the shell or casing, which is formed of a size to correspond substantially with the size of the cell designed to be constructed. Within the shell is located the carbon tube 2, which carbon tube has located around it or is covered with blotting-paper or like material, which is held in place by the binding-cords 3, which binding-cords may be located as illustrated in the drawings, or they may be differently located, as the only object is to hold the blotting-paper or like material in proper relative position. The carbon tube, together with the different parts connected thereto, are placed in the shell or casing in a concentric manner, as illustrated in the drawings. Within the carbon tube proper is located the following mixture, which mixture is treated as follows: Graphite, two hundred and forty grams; manganese dioxid, one hundred and sixty grams; potassium chlorid, eight grams; potassium permanganate, twenty grams, and ammonium chlorid, fifty grams, are boiled with five hundred grams of saturated solution of potassium permanganate, pressed to a definite form in a mold, and the mixture is strongly attached to the carbon tube in a crystalline form by the crystallizing action of potassium permanganate from its saturated solution. The blotting-paper 4 covers the above-mentioned mixture.

Within the carbon tube 2 is located a depolarizing mixture, and between the cylindrical zinc case or shell 1 and the blotting-paper 4 is located the following mixture: ammonium chlorid, one hundred grams, potassium chlorid, eight grams, gypsum, four hundred grams, mercuric sulfate, one gram, and dextrin, five hundred grams, well mixed and dried.

The carbon tube 2 is provided with an aperture 5, in which aperture is located a stopper 6, made of material having many capillaries in its structure. The stopper may be made of rattan or like material and is formed of material such as above described for the purpose of letting gas out and at the same time preventing the rapid flow of water.

At the top or upper end of the case 1 and below the covering thereof is located a stratum of sawdust 7 or like material, from which leads the tube 8, which tube is preferably formed of glass and is for the purpose of permitting the gas to escape.

The top of the casing 1 is hermetically sealed by asphalt or other suitable substance; but the top of the sealing material 9 should be a short distance below the top of the case 1, so that water may be placed in the cell proper, as hereinafter described.

The terminals of the cell, 10 and 11, are of the usual construction and constitute the negative and positive poles, the terminal 10 being attached to the carbon tube 2 and the terminal 11 to the casing 1.

In use the cell remains dry after being completed until it is desired to produce a current, and when used for the first time the stopper 6 should be removed and the upper part of the cell filled with clean water, the water being poured in as it becomes absorbed. This process should be repeated twice or three times, after which the stopper 6 is placed in its normal condition.

It will be understood that the cell may be safely used directly after the water is poured in; but three or four hours later the electric motive power will become 1.6 volts and, the internal resistance and the polarization being very slow, it possesses very much practical advantage in every way.

The shape of the cell may be varied, if so desired, without altering in the least the present invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an electric cell the combination of an outer casing having located therein a carbon tube containing graphite, manganese dioxid, potassium chlorid, potassium permanganate and ammonium chlorid, a fibrous substance bound around the carbon tube, and a mixture composed of ammonium chlorid, potassium chlorid, gypsum, mercuric sulfate, and dextrin located between the inner surface of the shell and the fibrous or blotting paper located around the carbon tube, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

KUMAJIRO TSUKAMOTO.

Witnesses:
R. S. MILLER,
YETARO KINOSITA.