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IMPROVEMENTS IN OR RELATING TO FABRICATION OF SILVER CHLORIDE FOIL OR ELECTRODES.
PROVISIONAL SPECIFICATION.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAFT MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTERED BODY, INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

The following specification describes the nature of this invention.

This is an invention by DR. PREM BEHARI MATHUR and RAMASWAMY BALASUBRAMANIAN, both of the Central Electro-chemical Research Institute, Karaikudi-3, Tamil Nadu, India, both Indian citizens.

This invention relates to the improvement in or relating to the fabrication of silver chloride foil or electrodes for activated batteries or other applications.

This has a particular reference to a battery system wherein silver chloride is used as cathode material.

Hitherto it has been proposed to fabricate the silver chloride cathode for magnesium, zinc and other metal anode activated batteries by pressing and sintering the cathode mix over a silver lead.

This is open to objection that the process does not produce silver chloride sheets where the bonding between molecules of silver chloride is so close that sheets may show flexibility, high mechanical strength and translucency.

The object of this invention is to obviate these disadvantages by producing the silver chloride or silver chloride mix electrode by subjecting them to rolling between rollers. The foil thus produced is translucent, flexible, mechanically strong as it does not crack or break on falling from a height. The electrodes made out of these foils show the same electrical performance as the electrodes produced by pressing and sintering. The production of large size silver chloride foil electrode for special applications may also be fabricated by the rolling process. Hence in production of large size electrodes, this process of rolling can be adopted with advantage in addition to the process described in the previous Indian Patent No. 106725 dated 25. 7. 66.

To these ends the invention broadly consists in developing a mechanically strong silver chloride foil electrode possessing elasticity and translucency by a process of rolling the silver chloride cake obtained by pressing and sintering—a process which may facilitate the production of large size silver chloride electrode for special applications.

The following typical Examples are given to illustrate the invention:

Example 1

A silver chloride electrode is made for activated cells as described herein. 20 grams of dried silver chloride powder is taken and pressed in a die of size 3 cm × 5 cm. The pressed cake is heated at a

temperature between 375° and 450°C. The electrode is removed and put between the two rollers of a rolling machine and rolled and thinned. Afterwards it is cut into 4 cm × 8 cm size and used to fabricate magnesium-silver chloride activated cells. One cell is tested straight for its capacity after activation. Another cell is dropped on the ground 3 times at different angles from a height of 5 feet. The cell is then activated and tested for its capacity. The two cells gave the same performance indicating that the silver chloride electrode is mechanically sturdy and strong and does not get damaged under mechanical shocks.

Example 2

The silver chloride electrode is fabricated and the cells are assembled as described under Example 1 with the exception that 1% to 20% of silver powder is mixed with silver chloride in the cathode material.

The following are among the main advantages of the invention:

1. The silver chloride electrode produced by rolling process possesses flexibility, translucency and extremely good mechanical strength.

2. The material does not fall out from the electrodes under the conditions of rough handling as the bonding between the molecules of silver chloride is close and strong.

3. The foil or plates made by the process can easily be cut and shaped without any danger of developing cracks or peeling off of the material.

4. The process can also be adapted in continuous line production of large size silver chloride electrodes for special applications.

R. BHASKAR PAI

Patent Officer,

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

Dated this 7th day of September 1972.

COMPLETE SPECIFICATION.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, RAFT MARG, NEW DELHI-1, INDIA, AN INDIAN REGISTERED BODY, INCORPORATED UNDER THE REGISTRATION OF SOCIETIES ACT (ACT XXI OF 1860).

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

This is an invention by DR. PREM BEHARI MATHUR and RAMASWAMY BALASUBRAMANIAN, both of the Central Electro-chemical Research Institute, Karaikudi-3, Tamil Nadu, India, both Indian citizens.

This invention relates to the improvement in or relating to the fabrication of silver chloride foil or electrodes for activated batteries or other applications.

Price: TWO RUPEES.

This has a particular reference to a battery system which makes use of silver chloride electrode as the cathode element.

Hitherto it has been proposed to fabricate the silver chloride cathode which is coupled with magnesium or zinc or with other metal anode in activated type of batteries by pressing and sintering the cathodes mix over a silver lead.

This is open to objection that the literature known process does not produce silver chloride sheets where the bonding between molecules of silver chloride is so close that sheets may show flexibility, high mechanical strength and translucency.

The object of this invention is to obviate these disadvantages by producing the silver chloride or silver chloride mix electrode by subjecting them to rolling between rollers. The foil thus produced is translucent flexible, mechanically strong as it does not crack or break on falling from a height of about 5 feet. The electrodes made out of these foils thus show the same electrical performance as the electrodes produced by pressing and sintering. The production of large size silver chloride foil electrode for special applications may also be fabricated by the rolling process. Hence in production of large size electrodes, this process of rolling can be adopted with advantage in addition to the process described in the previous Indian Patent No. 106725 dated 25.7.66.

To these ends, the invention broadly consists in developing a mechanically strong silver chloride foil electrode possessing elasticity and translucency by a process of rolling the silver chloride cake obtained by pressing and sintering—a process which may facilitate the production of large size silver chloride electrode for special applications.

The following typical Example is given to illustrate the invention:

Example 1

A silver chloride electrode is made for activated cells described herein. 20 gms. of dried silver chloride powder is taken and pressed in a die of size 3 cm×5 cm. The pressed cake is heated at temperature between 375° and 450°C. The sintered cake is removed and put between the two rollers of a rolling machine and rolled and thinned. Afterwards, it is cut into 4 cm×8 cm and used to fabricate magnesium-silver chloride activated cells. One cell is tested straight for its capacity after activation. Another cell is dropped

on the ground 3 times at different angles from a height of 5 feet. The cell is then activated and tested for its capacity. The two cells gave the same usual performance indicating that the silver chloride electrode is mechanically sturdy and strong and does not get damaged under mechanical shocks. These cells gave same performance as the cells with old type silver chloride electrode with the difference that the electrodes were some mechanically and translucent.

The silver chloride electrode is fabricated and the cells are assembled as described under Example 1 with the exception that 10% silver powder is mixed with silver chloride in the cathode material.

The following are among the main advantages of the invention:

1. The silver chloride electrode produced by rolling process possesses flexibility, translucency and extremely good mechanical strength.
2. The material does not fall out from the electrodes under the conditions of rough handling as the bonding between the molecules of silver chloride is close and strong.
3. The foil or plates made by the process can easily be cut and shaped without any danger of developing cracks or peeling off of the material.
4. The process can also be adapted in continuous line production or large size silver chloride electrodes for special applications.

We claim:

1. A process for the fabrication of silver chloride plate or foil for use in activated batteries conducting base for television screens or elsewhere which consists in pressing silver chloride alone or along with a conducting material like 1-20% silver powder, heating at temperature between 350° and 450°C and rolling under roller.
2. A process as claimed in Claim 1 wherein the heating is done at a temperature between 375° and 450°C and then rolling and thinning the cake thus obtained in rolling machine or by other means.

R. BHASKAR PAI

Patent Officer,

COUNCIL OF SCIENTIFIC AND INDUSTRIAL
RESEARCH

Dated this 2nd day of May, 1973.