This is an invention by DR. PREM BEHARI MATHUR and SHRI RAMASWAMY BALASUBRAMANIAN both of Central Electrochemical Research Institute, Kasimedu-3 (S. R. I.), India both Indian citizen, material, a metal like magnesium, zinc, aluminium as active anode material and paper and nylon cloth as the separator materials in the battery is characterised in that the cathode is made by sintering at an elevated temperature (e.g., 350°C to 420°C for silver chloride powder which with 5% to 20% of silver powder) a mixture of silver chloride and silver powders already pressed in the form of plates and pressing two such plates to form a two ply cathode.

The fabrication of magnesium silver chloride battery includes the following steps:

(a) preparation of cathode material mix;  
(b) preparation of silver chloride plates by sintering the cathode mix spread in the form of a plate;  
(c) cutting and trimming of the silver chloride plates and magnesium alloy cathode plates;  
(d) preparation of a wire structure as support and lead for the two ply plate assembly;  
(e) preparation of two ply silver chloride electrode by placing the wire structure support in between two sinter plates and pressing them;  
(f) soldering the magnesium plates to connecting wire lead;  
(g) insulation of the edges of the plates by means of an insulating plastic paint;  
(h) assembling the batteries by placing magnesium and silver chloride electrodes alternatively separated by paper and nylon cloth separators, and also by the plastic sleeves at the edges and casing the entire assembly in a plastic material container.

Thus, the fabrication of magnesium-silver chloride battery includes the usage of silver chloride cathode, magnesium anode separated by paper and nylon cloth separators and wherein the edges of the electrodes are insulated by plastics paints and the whole assembly is placed in a plastic material container, having holes at the bottom and at top level for the inflow and outflow of electrolyte solution as well of the evolved gases, an activation with salt water.

A multiply sintered silver chloride cathode may be fabricated by sintering pressure silver chloride powder mix with 5% to 20% of silver powder at an elevated temperature between 350°C to 420°C and without making use of any grid support to the powder.

The cathode and anode leads may be two bunches of copper silver or like metal or alloy wires one spread inside the cathode while the other is soldered to the cathode.

The anode and cathode leads are connected through the grid leads to the terminals, either lead in the battery cover or riveted plate cover or attached to the plates, which is the same size as used previously one placed over the cover.

The pressed plate is placed in a furnace maintained at a temperature of about 350°C for a period of 5 to 15 minutes. The pressed powder in plate form is removed, cooled and cut to proper size of say 10 cm by 3 cm. Two such plates are taken and placed one over another to make multiply cathode. A bunch of copper or silver wires are inserted and spread in between the two sintered plates and pressed and the other ends of these wires are joined together to form the lead. For the fabrication of silver chloride and magnesium cell, 3 magnesium alloy plates of 10 cm x 3 cm x 0.02 cm are taken and the copper leads are soldered to them. The electrode leads edges are coated with plastic insulating material. Two ply silver chloride electrodes are wrapped in a filter paper and then in a nylon cloth which act as separators. The cell is fabricated by placing 3 magnesium plates and 2 silver chloride plates alternatively, such that the end plates constitute magnesium electrodes. Each electrode is separated from one another by means of a plastic sleeve placed vertically on the two vertical edges of the plates. All leads emanating from magnesium electrodes are joined together and from silver chloride electrodes together to form the two terminals of the cell. A plastic container having holes at its bottom and also at the top is used to house this assembly. The emanating leads are coated with a plastic material and the leads ends are left loose; these leads coming out of the plastic containers pass through a rigid washer to avoid twisting effect on the electrodes. This silver chloride magnesium activated cell can be discharged on charging a load to its terminals and dipping it in salt water or sea water.

We claim:

1. A process for the fabrication of silver chloride activated batteries using silver chloride as the active cathode material, a metal like magnesium, zinc, aluminium as active anode material and paper and nylon cloth as the separator materials in the battery which is characterised in that the cathode is made by sintering at an elevated temperature (e.g., 350°C to 420°C for silver chloride powder mix with 5% to 20% of silver powder at an elevated temperature between 350°C to 420°C and without making use of any grid support to the powder.

Price: TWO RUPEES.
2. A process as claimed in Claim 1 wherein the fabrication of magnesium silver chloride battery includes the following steps:
   (a) preparation of cathode material mix;
   (b) preparation of silver chloride plates by sintering the cathode mix spread in the form of a plate;
   (c) cutting and trimming of the silver chloride plates and magnesium alloy sheets to size;
   (d) preparation of a wire structure as support and lead for the two ply plate assembly;
   (e) preparation of two ply silver chloride electrode by placing the wire structure support in between two said plates and pressing them;
   (f) soldering the magnesium plates to connecting wire lead;
   (g) insulation of the edges of the plates by means of an insulating plastic paint; and
   (h) assembling the batteries by placing magnesium and silver chloride electrodes alternatively separated by paper and nylon cloth separators, and also by the plastic sleeves at the edges and casing the entire assembly in a plastic material container.

3. A process as claimed in Claim 1 or 2 wherein the fabrication of magnesium-silver chloride battery includes the use of silver chloride cathode, magnesium anode separated by paper and nylon cloth separators and wherein the edges of the electrodes are insulated by plastics paints and the whole assembly is placed in a plastic material container, having holes at the bottom and at a top level for the inflow and outflow of the electrolyte solution as well of the evolved gases, on activation with salt water.

4. A process as claimed in any of the preceding claims wherein a multi-ply sintered silver chloride cathode is fabricated by sintering pressed silver chloride powder mix with 5% to 20% of silver powder at an elevated temperature between 350° to 420°C and without making use of any grid support to the powder.

5. A process as claimed in any of the preceding claims wherein the cathode and anode leads are two bunches of copper silver or like metals or alloy wires one spread inside the cathode while the other is soldered to the anode.

6. A process as claimed in any of the preceding claims wherein the electrode leads and the electrode edges are coated with plastic insulating material.

7. A process as claimed in any of the preceding claims wherein the anode and the cathode are separated from each other by plastic sleeves placed at the vertical edges between the electrodes.

8. A process for the fabrication of silver chloride batteries substantially as described in the example.

9. Silver chloride battery whenever fabricated by a process substantially as hereinafter described.

R. BHASKAR PAI
Patents Office,
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH.
Dated this 19th day of July 1966.