

**5508124****CONFINED BATTERY DOOR**

Gordecki Ryszard J; Tan Kian T Singapore,  
SINGAPORE assigned to Motorola Inc

A removable battery door clip has opposed pivoting stubs for the door to be pivotally anchorable to a housing and at least one projection for the door to be snappably fastened with at least one retaining slot of the housing.

A lithium battery constructed of lithium ion containing folded and stacked electrochemical cells is described, having a folded continuous, flexible lithium ion containing polymer laminate electrolyte sandwiched between first and second polarity lithium containing discrete electrode plates. The first and second polarity discrete electrode plates are carried, respectively, by first and second electrical current conducting flexible polymer laminates. The assembled polymer laminates are folded and stacked, connected to current collectors and packed into a lithium battery case.

**5508131****INJECTION MOLDED BATTERY CONTAINMENT FOR BIPOLAR BATTERIES**

Bowen Gerald; Andrew Michael G; Dinkelman John P Cedarburg, WI, UNITED STATES assigned to Globe-Union Inc

An injection molded containment for bipolar batteries of the type which include terminal electrodes and one or more bipolar battery cells is disclosed. In the most preferred embodiment of the present invention, a novel spacer is employed, including beveled edges to facilitate sealing of the injection molding material and the individual cells. Furthermore, the preferred spacer includes a crush ridge to assist in sealing. The present invention facilitates assembly of bipolar batteries in a way which improves sealing when compared to other techniques, such as vibration welding.

**5498492****LITHIUM SECONDARY BATTERY**

Hara Michikazu; Satoh Asako; Takami Norio; Ohsaki Takahis Yokohama, JAPAN assigned to Kabushiki Kaisha Toshiba

A lithium secondary battery with a large capacity and a long cycle life is disclosed. This lithium secondary battery includes a case, a negative electrode accommodated in the case and containing a polymeric material which has been formed by heat-treating a polymer having a perynaphthalene structure as a main repeating unit in a non-oxidizing atmosphere at 500 degrees to 1000 degrees C and which absorbs and desorbs lithium ions, a positive electrode accommodated in the case and so arranged as to oppose the negative electrode with a separator sandwiched between them, and a nonaqueous electrolyte contained in the case.

**LITHIUM BATTERY****5498489****RECHARGEABLE NON-AQUEOUS LITHIUM BATTERY HAVING STACKED ELECTROCHEMICAL CELLS**

Dasgupta Sankar; Jacobs James K Toronto, Ontario,  
CANADA

**5498493****ELECTRON ACCEPTOR SUBSTITUTED CARBONS FOR USE AS ANODES IN RECHARGEABLE LITHIUM BATTERIES**

Dahn Jeffrey; Way Brian M Surrey, CANADA assigned to Moli Energy (1990) Limited

A battery using carbonaceous materials with a graphite or disordered graphite structure wherein boron atoms are substituted for carbon atoms in the structure. The electrochemical potential of the carbonaceous materials is shifted as a result of such substitution, and the

electrochemical capacity is increased. Both effects are desirable for anode materials in lithium ion type batteries.

**5498495**

**ALLOY FOR NEGATIVE ELECTRODE OF LITHIUM SECONDARY BATTERY AND LITHIUM SECONDARY BATTERY**

Takada Yoshinori; Marumoto Mitsuhir; Sasaki Kouzou Amagasaki, JAPAN assigned to Mitsubishi Cable Industries Ltd

An alloy for a negative electrode of a lithium secondary battery, comprising an Li-Ag-Te type alloy having an atomic ratio of Li:Ag:Te=15-120:1-20:0.001-2, an alloy for a negative electrode of a lithium secondary battery, comprising an Li-Ag-Te-(M1-M2) type alloy having an atomic ratio of Li:Ag:Te:M1:M2=15-120:1-20:0.001-2:1-50:1-30 wherein M1 is a 3A-5A group metal and M2 is a transition metal other than Ag, and a lithium secondary battery comprising a negative electrode composed of the above-mentioned alloy. According to the present invention, a negative electrode, wherein the growth of dendrite is suppressed, charge-discharge capacity is high, energy density is high and degradation due to repetitive charge-discharge is less, can be obtained. By the use of the negative electrode obtained in the present invention, moreover, a lithium secondary battery superior in charge-discharge cycle life, which has high energy density permitting long-term use, high electromotive force and high charge-discharge capacity, can be produced.

**5498764**

**NEGATIVE ELECTRODE FOR LITHIUM SECONDARY CELLS AND LITHIUM SECONDARY CELLS USING THE SAME**

Hasegawa Jun; Suzuki Katsuhiko Hekinan, JAPAN assigned to Nippondenso Co Ltd

A negative electrode for lithium secondary cells comprises a substrate having a metallic lithium matrix

on at least a surface portion thereof. An element is dispersed and doped in the lithium matrix and has an electronegativity greater than that of metallic lithium. The element is present in the matrix at a concentration of from less than  $5 \times 10^{19}$  atoms/cm<sup>3</sup> to  $5 \times 10^{15}$  atoms/cm<sup>3</sup>. By this, dendrite crystals of lithium are suppressed from forming during the course of charge and discharge cycles. A lithium secondary cell using the negative electrode is also described.

**5500291**

**LITHIUM ION CONDUCTIVE SOLID ELECTROLYTE AND PROCESS FOR SYNTHESIZING THE SAME**

Minami Tsutomu; Tatsumisago Masahiro; Takada Kazunori; Kondo Shigeo Osakasayama, JAPAN assigned to Matsushita Electric Industrial Co Ltd

A sulfide-based lithium ion conductive solid electrolyte having a high ion conductivity and a high decomposition voltage contains crosslinking oxygen ions and silicon ions combined with the crosslinking oxygen ions in a structure of (\*See Patent for Chemical Structure\*).

**5501919**

**SOLID ION CONDUCTING MATERIAL, OBTAINED FROM A POLYMER AND AN ALKALINE CATION SALT, WITH APPLICATION AS AN ELECTROLYTE**

Paul Jean-Luc; Lassegues Jean-Claude Bordeaux, FRANCE assigned to Saint-Gobain Vitrage International

A solid ion conductor material is made from branched polyethylene imine and a lithium cation salt in such a manner that the ratio of the number of nitrogen atoms contained in the polymer to the number of lithium cations originating from the salt is optimized. The branched polyethylene imine can be plasticized within a certain proportionate range of plasticizer. This type of material is used as electrolyte, notably in electrochromic systems.