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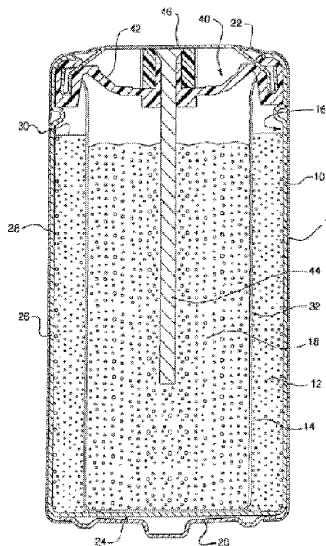


Fig. 1

(57) Abstract: Alkaline electrochemical cells are provided, wherein methods to decrease or eliminate shorting in batteries by preventing zinc oxide reaction precipitate from creating a conductive bridge between the two electrodes. The alkaline electrochemical cell comprising dissolved zinc oxide or zinc hydroxide in at least the electrolyte solution, and/or solid zinc oxide particles or zinc hydroxide in the anode, a silicon donor in the anode, and/or a bilayer separator optimally comprising a high-density layer and a low-density layer.

WO 2023/097286 A1

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