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(54) Title: ELECTRODEIONIZATION DEVICE AND METHOD WITH IMPROVED SCALING RESISTANCE

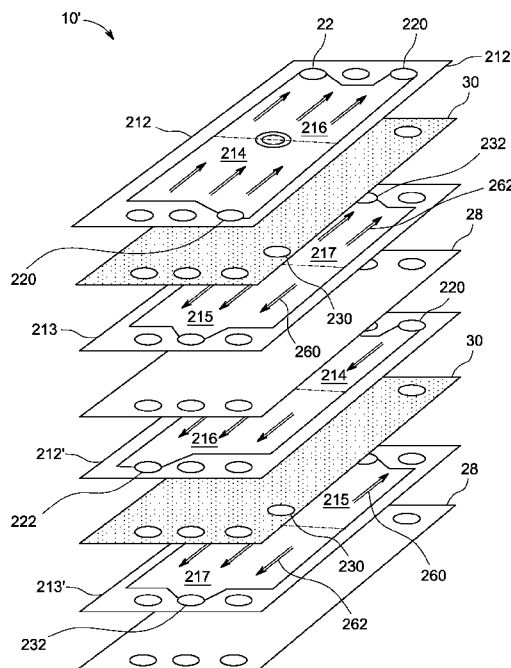


FIG. 3

(57) Abstract: An electrodeionization apparatus includes an anode compart-

ment provided with an anode and a cathode compartment spaced from the anode compartment and provided with a cathode, wherein the anode and cathode are configured for coupling to a DC power source to effect an electric potential difference between the anode and the cathode and thereby influence transport of ionic material in liquid media and ion exchange media by the influence of the electric potential difference. The electrodeionization apparatus also includes a feed inlet receiving a feed solution, a product water outlet and a plurality of anion exchange membranes and a plurality of cation exchange membranes alternately arranged between the anode compartment and the cathode compartment. The electrodeionization apparatus also includes a plurality of spacers, wherein the spacers and the anion and cation exchange membranes are arranged to form a first diluting compartment receiving feed solution from the feed inlet, a second diluting compartment in series with the first diluting compartment and delivering product water to the product water outlet, a first concentrating compartment and a second concentrating compartment. The first and second diluting compartments are bounded by an anion exchange membrane on the side closest to the anode and by a cation exchange membrane on the side closest to the cathode. The first and second concentrating compartments are bounded by a cation exchange membrane on the side closest to the anode and by an anion exchange membrane on the side closest to the cathode.



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