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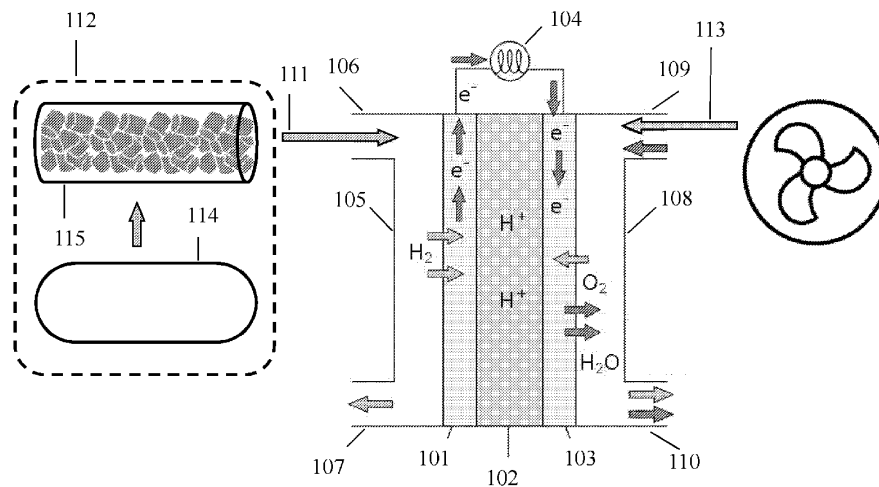


FIG. 1

(57) Abstract: The present disclosure provides a fuel cell comprising: an electrochemical circuit comprising an anode, a cathode, and an electrolyte between the anode and the cathode; a first channel comprising a first inlet and a first outlet, wherein the first channel is in fluid communication with the anode, wherein the first channel comprises one or more features, wherein the one or more features comprise (i) one or more cuts, (ii) one or more cutouts, (iii) one or more grooves, or (iv) any combination thereof; and a second channel comprising a second inlet and a second outlet, wherein the second channel is in fluid communication with the cathode.

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