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(54) **DEVICES WITH EXTENDED AREA STRUCTURES FOR MASS TRANSFER PROCESSING OF FLUIDS**

(75) Inventors: **Ward E. TeGrotenhuis**, Kennewick, WA (US); **Robert S. Wegeng**, Richland, WA (US); **Greg A. Whyatt**, West Richland, WA (US); **David L. King**, Richland, WA (US); **Kriston P. Brooks**, Kennewick, WA (US); **Victoria S. Stenkamp**, Richland, WA (US)

(73) Assignee: **Battelle Memorial Institute**, Richland, WA (US)

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(58) **Field of Classification Search** ..... 422/198, 422/190, 211; 436/139, 140, 141, 142, 143; 48/197 R; 165/165
See application file for complete search history.

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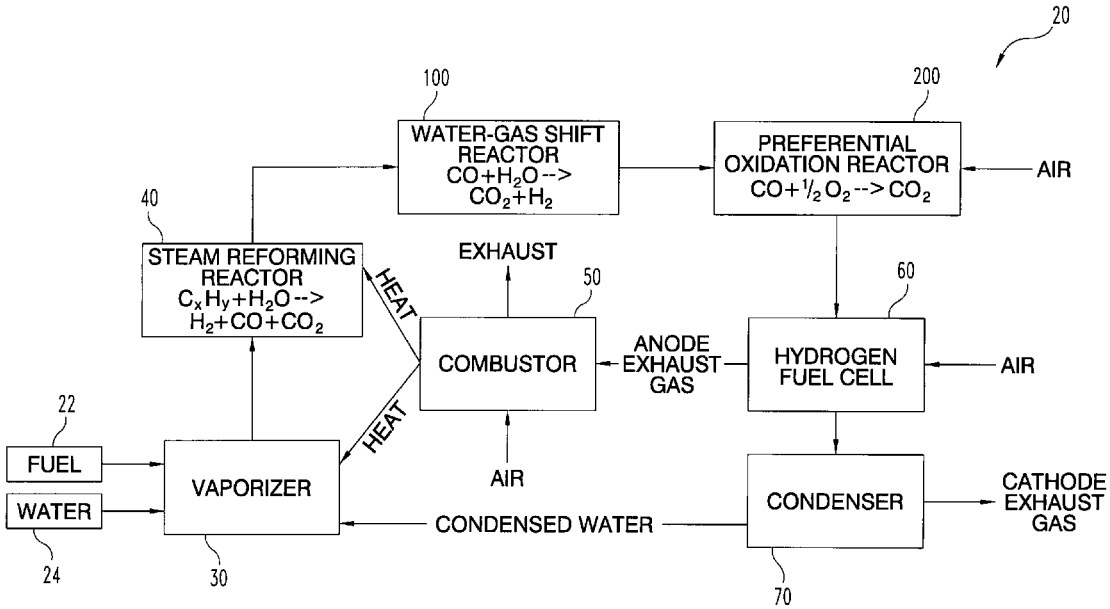
Primary Examiner—Glenn A Caldarola
Assistant Examiner—Taiwo Oladapo
(74) *Attorney, Agent, or Firm*—Derek H. Maughan

(57) **ABSTRACT**

A microchannel device includes several mass transfer microchannels to receive a fluid media for processing at least one heat transfer microchannel in fluid communication with a heat transfer fluid defined by a thermally conductive wall, and at several thermally conductive fins each connected to the wall and extending therefrom to separate the mass transfer microchannels from one another. In one form, the device may optionally include another heat transfer microchannel and corresponding wall that is positioned opposite the first wall and has the fins and the mass transfer microchannels extending therebetween.

20 Claims, 19 Drawing Sheets