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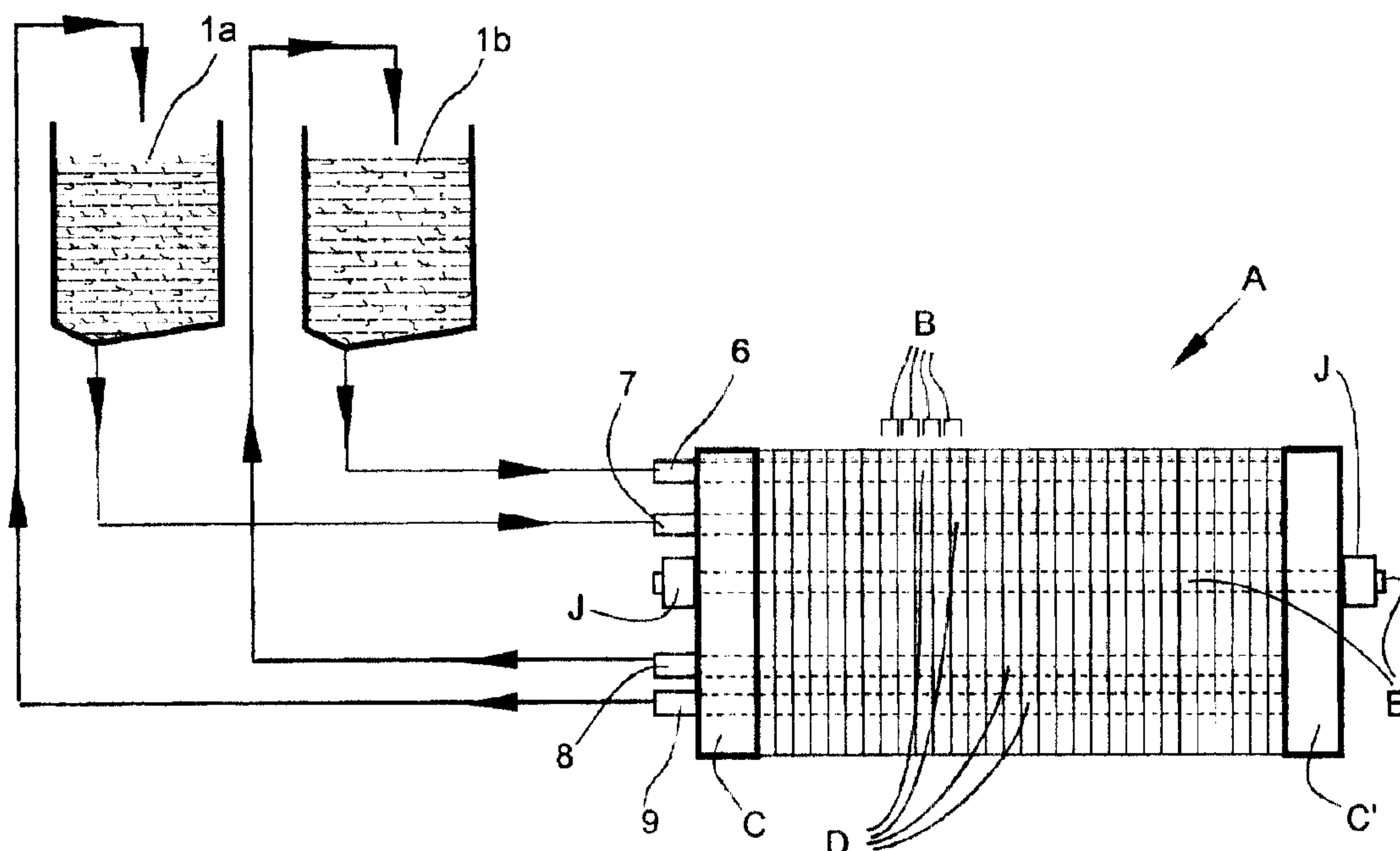
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(72) Inventeur/Inventor:
MACKELVIE, WINSTON R., CA

(73) Propriétaire/Owner:
MACKELVIE, WINSTON R., CA

(54) Titre : PROCEDE POUR AMELIORER UNE PILE A COMBUSTIBLE

(54) Title: FUEL CELL ENHANCEMENT PROCESS



(57) Abrégé/Abstract:

The present invention discloses a process to add a thin, active coating to all of the passageways, ports, and flow field channels of an assembled fuel cell or fuel cell stack. The coating substance may include, alone or in combination, ionomers (such as Nafion®), wicking fibers, catalyst, sealants, and water absorbents. The coating provides, alone or in combination, water management, electrochemistry enhancements, porosity control, and leak-seal functions. The invention is carried out in five steps. In the first step a coating fluid is prepared containing the desired substance(s) and a diluting carrier fluid such as alcohol. In the second step, the coating fluid is pumped or vacuum drawn into the cell/stack via an existing external connections (inlet/outlet ports). In the third step, the surplus coating fluid is removed by purging and/or vacuuming, leaving only a thin, coating or deposit behind. In the fourth step vacuuming and/or heating and/or spinning of the cell/stack is used to evaporate the carrier fluid. In the fifth step the stack is heated to a temperature that sets, inverts micelle structures, or otherwise makes the coating permanent. The process may be repeated to thicken the deposited layer or to add substances successively.

ABSTRACT

The present invention discloses a process to add a thin, active coating to all of the passageways, ports, and flow field channels of an assembled fuel cell or fuel cell stack. The coating substance may include, alone or in combination, ionomers (such as Nafion®), wicking fibers, catalyst, sealants, and water absorbents. The coating provides, alone or in combination, water management, electrochemistry enhancements, porosity control, and leak-seal functions. The invention is carried out in five steps. In the first step a coating fluid is prepared containing the desired substance(s) and a diluting carrier fluid such as alcohol. In the second step, the coating fluid is pumped or vacuum drawn into the cell/stack via an existing external connections (inlet/outlet ports). In the third step, the surplus coating fluid is removed by purging and/or vacuuming, leaving only a thin, coating or deposit behind. In the fourth step vacuuming and/or heating and/or spinning of the cell/stack is used to evaporate the carrier fluid. In the fifth step the stack is heated to a temperature that sets, inverts micelle structures, or otherwise makes the coating permanent. The process may be repeated to thicken the deposited layer or to add substances successively.

