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(54) **Title**: METHOD FOR FABRICATION OF ELECTROCHEMICAL ENERGY CONVERTER AND THE ELECTROCHEMICAL ENERGY CONVERTER

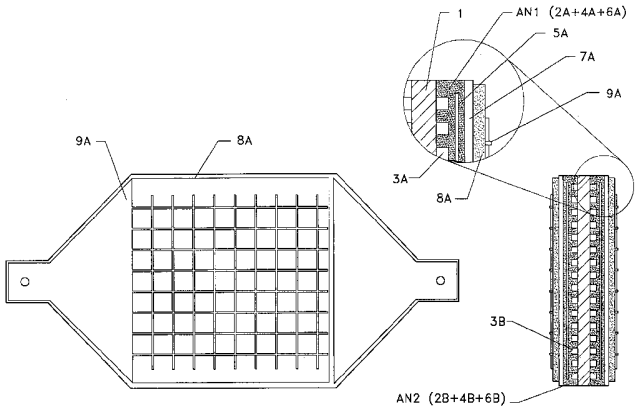

Fig. 2

(57) **Abstract**: The method for fabrication of the electrochemical energy converter characterised in that, cermet composition (2A)1 (2B) is applied on both sides of the central ceramic plate (1), wherein on both sides of the plate in the cermet composition (2A), (2B), channels (3A), (3B) are made, then the channels (3A), (3B) on both sides of the plate are covered with cermet composition layers (4A), (4B). Afterwards, both sides of the ceramic structure made in such a way are overlaid with conductive structures (5A), (5B) and then with subsequent layers of the cermet composition (6A). (6B) containing nickel, then both sides of the ceramic structure prepared in a such way are subsequently overlaid with: layers constituting the solid electrolyte (7A), (7B), layers constituting electrodes (8A), (8B) and contact layers (9A), (9B). The electrochemical energy converter has a flat layered ceramic base whose core is constituted by the central ceramic plate (D, permanently bonded with porous cermet layers (AN1). (AN2) in which the fuel distribution channels (3A), (3B) have been made. The ceramic base made in such a way has on both sides ceramic layers of solid electrolyte (7A), (7B), which in turn have been covered on a part of their surface with electrode layers (8A), (8B), which in turn have been covered on a part of their surface with contact layers (9A), (9B).

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— *with amended claims (Art. 19(1))*

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Amended Patent claims

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1.

The method for fabrication of the electrochemical energy converter which consists in deposition of subsequent cermet green tape layers, is characterised in that, the both sides of the central flat piece of ceramic material (1) featuring high density are covered with cermet green tapes (2A), (2B), in which open channels (3A), (3B) are made, then the open channels (3A), (3B) are covered with cermet green tapes containing nickel (4A), (4B), which are next fired in such a way, that analogous ceramic layers on both sides are fired simultaneously; then both sides of the ceramic structure made in such a way are overlaid with conductive structures (5A), (5B), and afterwards with subsequent cermet green tape layers (6A), (6B) containing nickel, then both sides of the ceramic structure prepared in such a way are subsequently overlaid with: layers constituting the solid electrolyte (7A), (7B), layers which are transparent for gases and conduct electric current, layers constituting electrodes (8A), (8B) and contact layers (9A), (9B), and afterwards electrical outputs are connected to the contact layers (9A), (9B).

2.

The method for fabrication of the electrochemical energy converter according to the claim 1 characterised in that the channels (3A), (3B) in the cermet composition are made by means of the mould casting method, wherein a central flat piece of ceramic material (1) has been earlier placed in the mould.

3.
The method for fabrication of the electrochemical energy converter according to the claim 1 characterised in that the open channels (3A), (3B) in the cermet green tape layers (2A), (2B) are made by means of machining.

4.
The method for fabrication of electrochemical energy converter according to the claim 1 characterised in that the structure of channels (3A), (3B) in the cermet green tape layers (2A), (2B) is made by means of photoforming.

5.
The method for fabrication of the electrochemical energy converter according to the claim 1 characterised in that the conductive structures (5A), (5B) are made of platinum layers transparent for gases.

6.
The method for fabrication of the electrochemical energy converter according to the claim 1 characterised in that the conductive structures (5A), (5B) are made of nickel nanotubes.

7.
The method for fabrication of the electrochemical energy converter according to the claim 1 characterised in that the conductive structures (5A), (5B) are made of nickel meshes.

8.
The electrochemical energy converter, containing solid electrolyte, characterised in that it has a flat ceramic base, which is constituted by the multilayer ceramic structure beneficially including a central flat piece of ceramic material (1) featuring high density, which is permanently bonded to containing nickel porous cermet layers (AN1), (AN2), in which the distribution channels (3A), (3B) have been made, the ceramic base made in such a way has on both sides on a part of the surface ceramic layers of solid electrolyte (7A), (7B), which have been applied and permanently combined with the flat ceramic base, and which on a

part of their surface are covered with electrode layers (8A), (8B), which in turn are covered with contact layers (9A), (9B) on a part of their surface.

9.
The electrochemical energy converter according to the claim 8 characterised in that it has metallic structures (5A), (5B) buried inside porous, containing nickel cermet layers (AN1), (AN2).

10.
The electrochemical energy converter according to the claim 9 characterised in that the buried metallic structures (5A), (5B) are made of platinum layers, transparent for gases.

11.
The electrochemical energy converter according to the claim 9 characterised in that the buried metallic structures (5A), (5B) are made of nickel nanotubes.

12.
The electrochemical energy converter according to the claim 9 characterised in that the buried metallic structures (5A), (5B) are made of nickel meshes.