

Title (en)
DEVICE FOR IMMOBILIZING CARBON DIOXIDE

Title (de)
VORRICHTUNG ZUR STABILISIERUNG VON KOHLENDIOXID

Title (fr)
DISPOSITIF D'IMMOBILISATION DE DIOXYDE DE CARBONE

Publication
EP 2594664 A4 20140226 (EN)

Application
EP 11806706 A 20110708

Priority
• JP 2010162130 A 20100716
• JP 2011065681 W 20110708

Abstract (en)
[origin: EP2594664A1] There is provided a carbon dioxide immobilization unit capable of easily immobilizing carbon dioxide in the form of an organic acid or a carbohydrate under a normal environment. An anode 1 and a cathode 2 both having a surface where an oxidoreductase is present are disposed to face each other with a proton conductor 3 in between. Then, when electric power is externally supplied to the carbon dioxide immobilization unit, in the anode 1, water is decomposed to produce protons, and in the cathode 2, an organic acid or a carbohydrate is produced from the protons produced in the anode 1 and carbon dioxide. At this time, while a carbon dioxide supply section 5 supplies a high concentration of carbon dioxide to the cathode 2, oxygen produced in the anode 1 and the organic acid or hydrocarbon produced in the cathode 2 are removed from a reaction system through an oxygen removal section 4 and a product recovery section 6, respectively.

IPC 8 full level
C25B 3/25 (2021.01); **C01B 32/50** (2017.01); **H01M 8/16** (2006.01)

CPC (source: EP US)
C25B 1/02 (2013.01 - EP US); **C25B 3/25** (2021.01 - EP US); **C25B 9/30** (2021.01 - US); **C25B 11/00** (2013.01 - EP US);
C25B 11/02 (2013.01 - US)

Citation (search report)
• [X] US 2006102468 A1 20060518 - MONZYK BRUCE F [US], et al
• [X] WO 2009113340 A1 20090917 - SONY CORP [JP], et al & EP 2259374 A1 20101208 - SONY CORP [JP]
• [Y] US 2009220388 A1 20090903 - MONZYK BRUCE F [US], et al
• [X] T. REDA ET AL: "Reversible interconversion of carbon dioxide and formate by an electroactive enzyme", PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, vol. 105, no. 31, 5 August 2008 (2008-08-05), pages 10654 - 10658, XP055051452, ISSN: 0027-8424, DOI: 10.1073/pnas.0801290105
• [XY] K. P. NEVIN ET AL: "Microbial Electrosynthesis: Feeding Microbes Electricity To Convert Carbon Dioxide and Water to Multicarbon Extracellular Organic Compounds", MBIO, vol. 1, no. 2, 26 May 2010 (2010-05-26), pages e00103 - 10, XP055096568, DOI: 10.1128/mBio.00103-10
• See references of WO 2012008376A1

Designated contracting state (EPC)
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EP 2594664 A1 20130522; EP 2594664 A4 20140226; CN 102985598 A 20130320; JP 2012021216 A 20120202; US 2013126336 A1 20130523;
WO 2012008376 A1 20120119

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