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(71) Applicant: **IMPERIAL INNOVATIONS LIMITED**
[GB/GB]; 52 Princes Gate, South Kensington, London,
SW7 2PG (GB).

(72) Inventors: **OFFER, Gregory**; Imperial College London,
South Kensington Campus, London, SW7 2A (GB). **SIL-
VERSIDES, Richard**; Imperial College London, South
Kensington Campus, London, SW7 2AZ (GB). **PLANT,
Daniel**; Imperial College London, South Kensington Cam-
pus, London, SW7 2AZ (GB).

(74) Agent: **KILBURN & STRODE LLP**; 20 Red Lion Street,
London, WC1R 4PJ (GB).

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(54) Title: A PARALLEL DRIVE TRAIN FOR A HYBRID ELECTRIC VEHICLE AND A METHOD OF OPERATING SUCH A DRIVE TRAIN

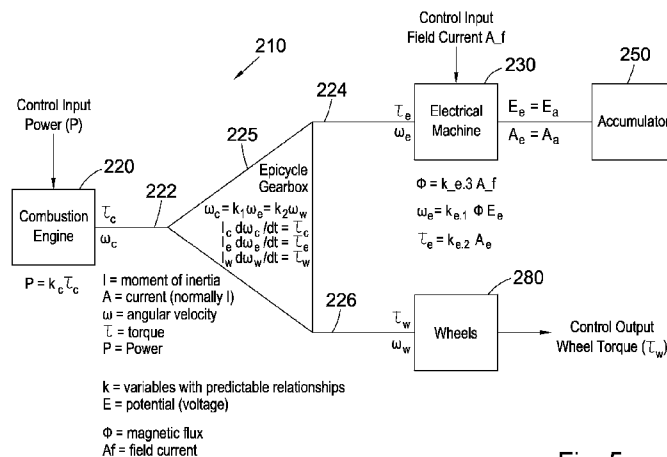
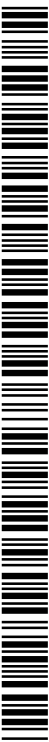


Fig. 5

(57) Abstract: A method of operating a drive train (210) for a hybrid electric vehicle, in which the drive train (210) comprises an internal combustion engine (220), an electrical machine (230) and electrical energy storage means (250). The electrical machine (230) is connected to supply electrical energy to and receive electrical energy from the electrical energy storage means (250). The internal combustion engine (220) is drivingly coupled to a first one of the sun, planet and annulus gears of an epicyclic gear arrangement (225). The electrical machine (230) is drivingly coupled to a second one of the sun, planet and annulus gears. The third one of the sun, planet and annulus gears drivingly coupled for driving wheels (280) of a hybrid electric vehicle. The method comprises the steps of sensing a parameter indicative of the voltage across the electrical energy storage means (250) and, in response to this sensed parameter, controlling the internal combustion engine (220) and/or the electrical machine (230) such that the first electrical machine (230) operates to give rise to a voltage output of the first electrical machine (230) such that the electrical energy storage means (250) is charged without the need for power electronics.



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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2010/042277 A1 (NAIK SANJEEV M [US] ET AL) 18 February 2010 (2010-02-18) abstract paragraph [0021] - paragraph [0025] paragraph [0029] - paragraph [0046] figures 1-5	1-27		
X	----- US 2012/010768 A1 (PHILLIPS ANTHONY MARK [US] ET AL) 12 January 2012 (2012-01-12) abstract paragraph [0019] - paragraph [0036] paragraph [0040] - paragraph [0046] paragraph [0060] - paragraph [0062] figures 1-6 ----- -/--	1-27		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none; vertical-align: top;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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