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(54) Title: INERTIA ASSISTED ENGINE CRANKING

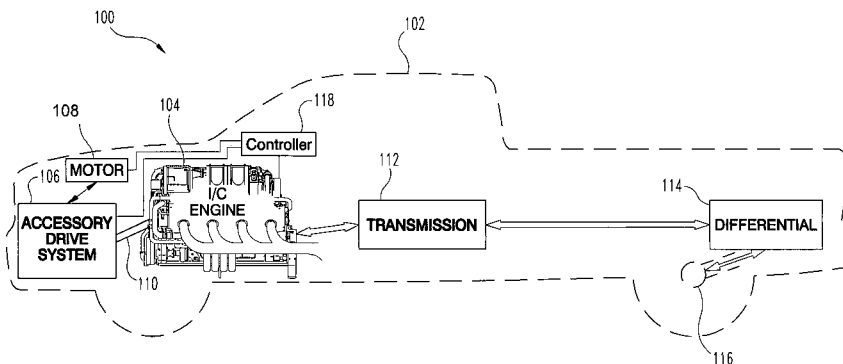


Fig. 1

(57) Abstract: An inertia assisted engine starting apparatus and method are disclosed. The apparatus includes an internal combustion engine and an accessory drive system including an accessory. The accessory includes a rotatable member. An electric motor is selectively rotationally coupled to the accessory drive system. A mechanical coupling device selectively transfers rotational kinetic energy from the accessory drive system to start the internal combustion engine.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/01714

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - B60K 1/02 (2012.01) USPC - 477/3 According to International Patent Classification (IPC) or to both national classification and IPC																												
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) USPC:477/3 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC:477/2, 3, 16, 19, 34, 70, 77, 167; B60K 1/02 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST:PGPB,USPT,EPAB,JPAB,DWPI,TDBD; Google Scholar Search Terms:combustion, engine, rotate, motor, generator, coolant, pump, fan, compressor, alternator, accessory, drive, predetermined.																												
C. DOCUMENTS CONSIDERED TO BE RELEVANT																												
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X ---- Y</td> <td>US 2010/0065001 A1 (Spicer et al.) 18 March 2010 (18.03.2010); entire document; especially fig 2; para [0015], [0033]-[0057].</td> <td>1, 3-6, 19, 20, 22-25 ----- 2, 7-18, 21</td> </tr> <tr> <td>Y</td> <td>US 2003/0160455 A1 (Hu et al.) 28 August 2003 (28.08.2003); entire document; especially abstract.</td> <td>7</td> </tr> <tr> <td>Y</td> <td>US 5,845,731 A (Buglione et al.) 08 December 1998 (08.12.1998) entire document; especially fig 4.</td> <td>8-13</td> </tr> <tr> <td>Y</td> <td>US 2010/0147646 A1 (Lannutti et al.) 17 June 2010 (17.06.2010); entire document; especially para [0003].</td> <td>2, 14-18, 21</td> </tr> <tr> <td>A</td> <td>US 5,176,581 A (Kumm) 05 January 1993 (05.01.1993); entire document.</td> <td>1-25</td> </tr> <tr> <td>A</td> <td>US 2008/0110683 A1 (Serkh) 15 May 2008 (15.05.2008); entire document.</td> <td>1-25</td> </tr> <tr> <td>A</td> <td>US 2009/0298646 A1 (Parsons) 03 December 2009 (03.12.2009); entire document.</td> <td>1-25</td> </tr> <tr> <td>A</td> <td>US 4,126,200 A (MILLER et al.) 21 November 1978 (21.11.1978), entire document</td> <td>1-25</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X ---- Y	US 2010/0065001 A1 (Spicer et al.) 18 March 2010 (18.03.2010); entire document; especially fig 2; para [0015], [0033]-[0057].	1, 3-6, 19, 20, 22-25 ----- 2, 7-18, 21	Y	US 2003/0160455 A1 (Hu et al.) 28 August 2003 (28.08.2003); entire document; especially abstract.	7	Y	US 5,845,731 A (Buglione et al.) 08 December 1998 (08.12.1998) entire document; especially fig 4.	8-13	Y	US 2010/0147646 A1 (Lannutti et al.) 17 June 2010 (17.06.2010); entire document; especially para [0003].	2, 14-18, 21	A	US 5,176,581 A (Kumm) 05 January 1993 (05.01.1993); entire document.	1-25	A	US 2008/0110683 A1 (Serkh) 15 May 2008 (15.05.2008); entire document.	1-25	A	US 2009/0298646 A1 (Parsons) 03 December 2009 (03.12.2009); entire document.	1-25	A	US 4,126,200 A (MILLER et al.) 21 November 1978 (21.11.1978), entire document	1-25	<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>
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