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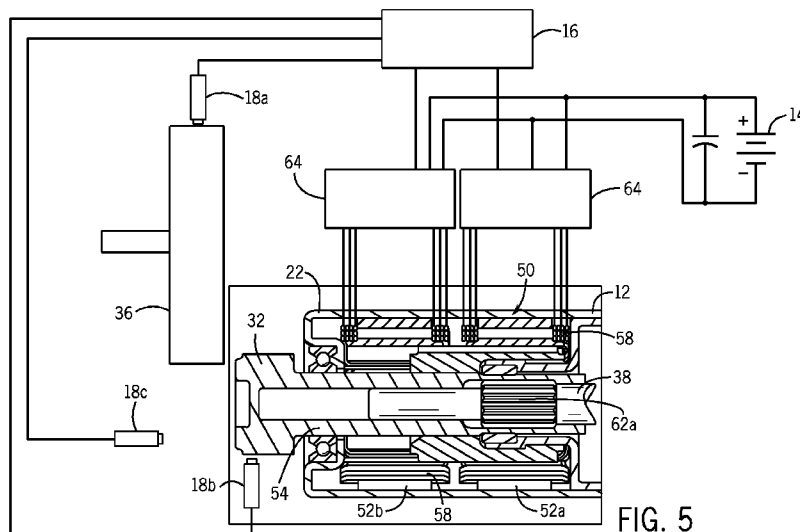




FIG. 5

(57) Abstract: Embodiments of the invention provide a starter machine comprising a housing. A motor can be positioned within the housing and coupled to a gear train, which can be coupled to a shaft. A switched reluctance solenoid assembly can be positioned within the housing and capable of being coupled to inverters that communicate with an electronic control unit. The switched reluctance solenoid assembly includes at least two switched reluctance stator assemblies and a rotor that is coupled to the shaft. The rotor can also include an integral pinion and is movably positioned within the switched reluctance stator assemblies. The rotor is capable of linear and rotational movement.



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER		
<i>F02N 11/02(2006.01)i, F02N 15/02(2006.01)i</i>		
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) F02N 11/02; F02N 11/00; H02K 7/18		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean utility models and applications for utility models Japanese utility models and applications for utility models		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: starter, switched, reluctance, solenoid, stator, assembly, rotor, ring gear, gear train, pinion, clutch		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-099038 A (MITSUBISHI ELECTRIC CORP) 10 April 2001 See figures 1-4, paragraphs [0007]-[0029].	1-20
A	US 2004-0112319 A1 (MILOSLAV HNILICA) 17 June 2004 See abstract, figure 1 and paragraph [0014].	1-20
A	US 2007-0215089 A1 (LAURENT-YVES GRAND et al.) 20 September 2007 See abstract, figure 1 and paragraphs [0036]-[0038].	1-20
A	US 2005-0051126 A1 (MASANORI OOMI et al.) 10 March 2005 See abstract, figure 1 and paragraphs [0024]-[0031].	1-20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>		
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