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[Continued on next page]

(54) Title: TRUE FOUR WHEEL DRIVE SYSTEM FOR VEHICLE

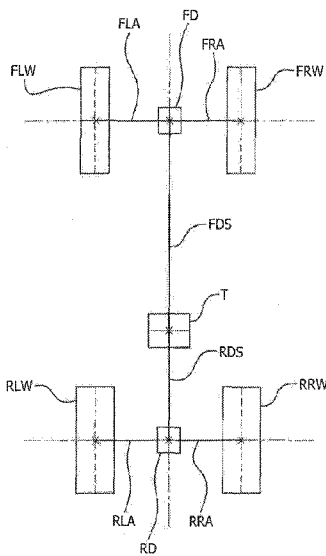


FIG. 1

(57) Abstract: A drive train for a four wheel drive vehicle including a front differential engaged with a front drive shaft and front axles through a front differential gear set. The front differential includes a front bi-directional overrunning clutch that controls transmission of torque transfer between the front drive shaft and the front axles. A rear differential is engaged with rear axles and the transmission through a rear differential gear set. The rear differential includes a rear bi-directional overrunning clutch that controls torque transfer between the transmission and the rear axles. The differentials are configured with a gear ratio that is within five percent of a 1 :1 gear ratio.

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<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - B60K 23/08 (2014.01) CPC - B60K 23/08 (2014.10) According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC(8) - B60K 23/08; B60W 10/12; F16H 48/06 (2014.01) CPC - B60K 17/344, 23/08 (2014.10)</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC -74/all subclasses; 180/all subclasses; 192/all subclasses; 475/all subclasses (keyword delimited)</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase, Google Patents, Google Search terms used: four wheel drive, overrunning, bidirectional, roller assembly, roller cage index, five percent speed difference, front axle, rear axle, differential, Hilliard</p>																				
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <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>A</td> <td>US 2013/0112520 A1 (HEATH et al) 09 May 2013 (09.05.2013) entire document</td> <td>1-15</td> </tr> <tr> <td>A</td> <td>US 4,989,686 A (MILLER et al) 05 February 1991 (05.02.1991) entire document</td> <td>1-15</td> </tr> <tr> <td>A</td> <td>US 2012/0152686 A1 (BREWER et al) 21 June 2012 (21.06.2012) entire document</td> <td>1-15</td> </tr> <tr> <td>A</td> <td>US 6,722,484 B2 (OCHAB et al) 20 April 2004 (20.04.2004) entire document</td> <td>1-15</td> </tr> <tr> <td>A</td> <td>US 6,176,359 B1 (KRISHER) 23 January 2001 (23.01.2001) entire document</td> <td>1-15</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	US 2013/0112520 A1 (HEATH et al) 09 May 2013 (09.05.2013) entire document	1-15	A	US 4,989,686 A (MILLER et al) 05 February 1991 (05.02.1991) entire document	1-15	A	US 2012/0152686 A1 (BREWER et al) 21 June 2012 (21.06.2012) entire document	1-15	A	US 6,722,484 B2 (OCHAB et al) 20 April 2004 (20.04.2004) entire document	1-15	A	US 6,176,359 B1 (KRISHER) 23 January 2001 (23.01.2001) entire document	1-15
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<p>Date of the actual completion of the international search</p> <p>23 October 2014</p>		<p>Date of mailing of the international search report</p> <p>14 NOV 2014</p>																		
<p>Name and mailing address of the ISA/US</p> <p>Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201</p>		<p>Authorized officer:</p> <p>Blaine R. Copenheaver</p> <p>PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>																		