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(54) Title: COMPRESSION SPRING MEMBERS

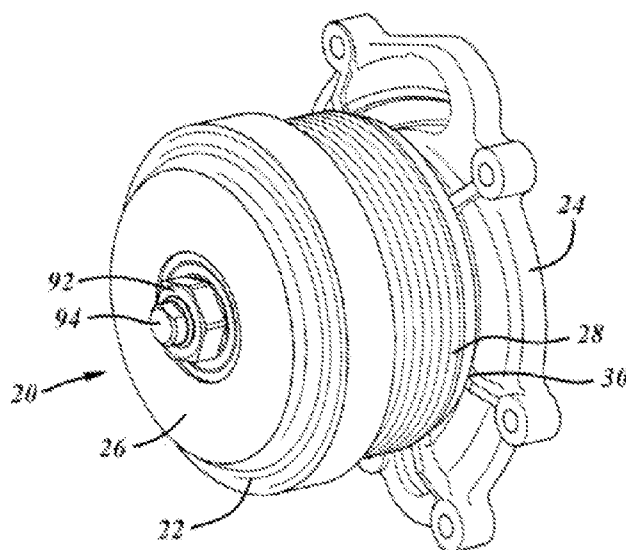


FIG. 1



(57) Abstract: Compression spring members, particularly for friction clutch assemblies. The compression spring members include a plurality of deformable members and where the amount of force necessary to compress the spring member lessens over displacement once a peak amount of force is reached. The compression spring members can comprise a plurality of buckling beam spring members, a plurality of connecting members, or the like. One or more ring members can be provided for attachment to the connecting members. The friction clutch assembly is preferably used for a hybrid coolant pump with two modes of operation, an electric motor operation and a mechanical pulley-driven operation.

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A. CLASSIFICATION OF SUBJECT MATTER		
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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) F16D 13/56; G11B 7/08; F16D 13/75; G02B 7/02; F16D 27/112; G11B 7/12; F16D 13/58		
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: spring, compression, friction, clutch		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 05361243 A (KASAHARA, AKIHIRO) 01 November 1994 See column 11, lines 14-33 and figures 13,14.	1,2,4-6 3,7-15
A	KR 10-2008-0111459 A (LUK LAMELLEN UND KUPPLUNGSBAU BETEILIGUNGS KG) 23 December 2008 See paragraph <24> and figure 2.	1-15
A	JP 58-175144 A (NIPPON TELEGR & TELEPH CORP) 14 October 1983 See page 4 and figure 5.	1-15
A	WO 2010-004412 A1 (DAYCO EUROPE S.R.L. et al.) 14 January 2010 See page 5, lines 22-27 and figure 2.	1-15
<input 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: "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 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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Name and mailing address of the ISA/KR  Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer LIM, Hae Young Telephone No. 82-42-481-5518 

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Information on patent family members

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