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(54) Title: ELECTRONICALLY CONTROLLED FLUID COUPLING DEVICE WITH FLUID SCAVENGE CONTROL AND ENHANCED COOLING

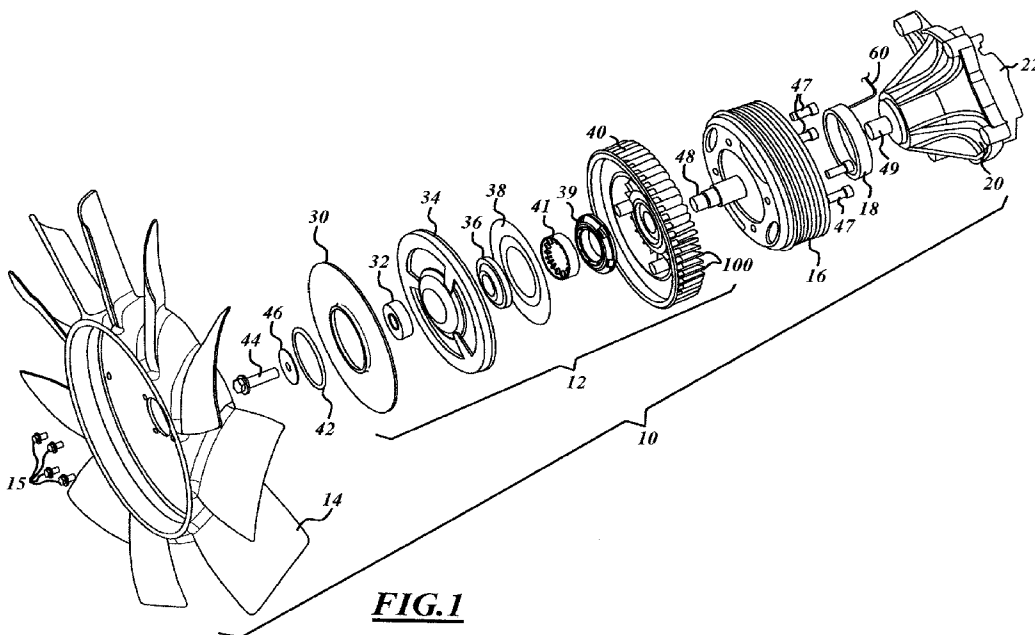


FIG. 1

(57) Abstract: A viscous fan drive with a front-mounted fan and electrical actuation without a tethered harness. The mechanical package includes an inverted viscous clutch, a drive pulley, a split electromagnetic actuator with the electrical portion mounted to a stationary mounting member. Enhanced cooling can be provided with breather openings in the pulley, breather slots in the body member, and fins in the reservoir.

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A. CLASSIFICATION OF SUBJECT MATTER*F16D 35/02(2006.01)i, F01P 7/02(2006.01)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)

IPC 8 F16D

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 since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

e-KIPASS (KIPO internal) & key words : "fan" and "cooling" and "clutch"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 3,968,866 A (LEICHLITER et al.) 13 Jul. 1976 See Column 2, Line 43 - Column 4, Line 46; Fig 1.	1, 4-7 2, 3, 8-15
Y A	US 6,129,193 A (LINK) 10 Oct. 2000 See Column 17, Line 65 - Column 18, Line 23; Fig 18.	1, 4-7 2, 3, 8-15
A	US 6,021,747 A (GEE et al.) 8 Feb. 2000 See the abstract and Fig 2.	1-15
A	US 4,320,723 A (WENDLING et al.) 23 Mar. 1982 See the abstract and Fig 2.	1-15

 Further documents are listed in the continuation of Box C. 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

Date of the actual completion of the international search

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The subject matter of independent claim 1 is obvious over US 3,968,866 A (LEICHLITER et al.) in view of US 6,129,193 A (LINK). Therefore, the requisite unity of invention (PCT Rule 13.1) no longer exists inasmuch as a technical relationship involving one or more of the same or corresponding special technical features in the sense of PCT Rule 13.2 does not exist between the subject matter of the following groups of dependent claim 2-15.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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