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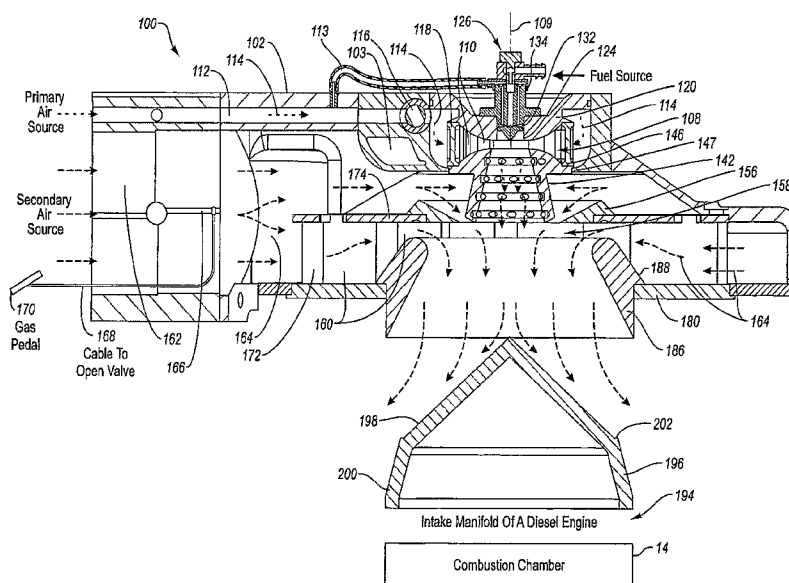
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report

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(54) Title: FUEL PROCESSOR APPARATUS AND METHOD FOR A DIESEL ENGINE



(57) Abstract: The present invention provides a diesel engine and methods and apparatus for premixing diesel fuel and oxidant for combustion. The methods and apparatus may include a two stage vortex, each stage accommodating different flow rate ranges. The vortex pulverizes diesel fuel and optimally mixes the diesel fuel with an oxidant prior to introduction into a combustion chamber. The premixing results in more complete combustion and, consequently, fuel efficiency is increased and pollution is decreased.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/05296

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F02B 19/08 (2008.04)

USPC - 123/262

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) - F02B 19/00 (2008.04)

USPC - 123/262

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 123/263, 279, 280, 281, 282, 283 (text search - see terms below)

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

PubWEST(USPT,PGPB,EPAB,JPAB); Google Scholar; Google Patents

Search Terms: diesel, engine, premix, fuel, air, oxidizer, combustion, chamber, second, flow, path, vacuum, two-stage, pre-combustion, vortex, conical, pillar, feature, outlet, turbocharger, water, jacket

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,116,207 A (Firey) 12 September 2000 (12.09.2000), Fig 1, 4C and 5, col 3, ln 22-24, col 6, ln 5-6, col 7, ln 30-33 and ln 42-45, col 10, ln 4-8 and ln 37-42, col 13, ln 11-13, col 16, ln 5-7, col 17, ln 53-58	1-43
Y	US 4,304,199 A (Formia et al.) 08 December 1981 (08.12.1981), col 1, ln 7-10	1-43
Y	US 2004/0177837 A1 (Bryant) 16 September 2004 (16.09.2004), para [0164]	2-3
Y	US 4,183,338 A (Lindberg) 15 January 1980 (15.01.1980), Fig 1	16 and 35
Y	US 5,447,130 A (Kawamura) 05 September 1995 (05.09.1995), col 7, ln 39-41	19
Y	US 4,879,959 A (Korenberg) 14 November 1989 (14.11.1989), col 4, ln 32-35	39

 Further documents are listed in the continuation of Box C.

* 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

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"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

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"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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