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[Continued on next page]

(54) Title: FILTER ASSEMBLY FOR FUEL SUPPLY TO ACTUATORS AND FUEL CONTROL SYSTEM OF AIRCRAFT ENGINE AND METHOD

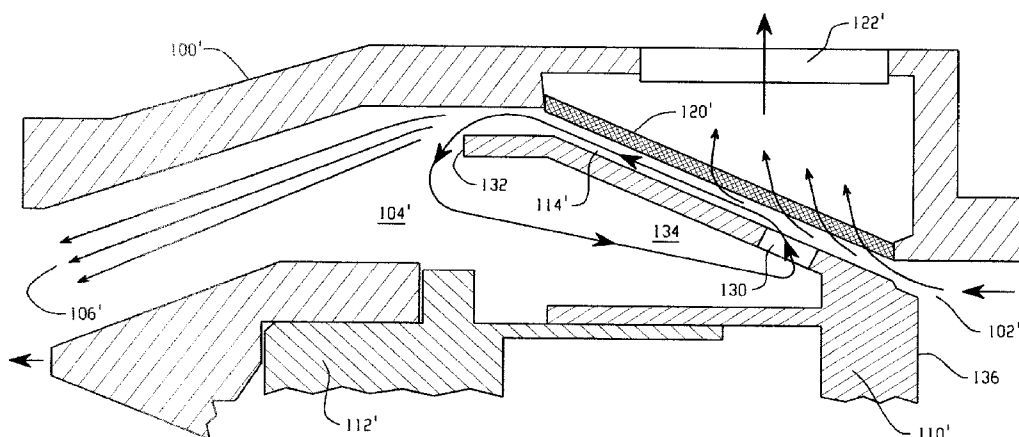


Fig. 4

(57) Abstract: A filter assembly for a fuel delivery system for actuators and fuel control system of an aircraft engine includes a wash flow filter. Fuel flow velocity is increased through the filter through use of a recirculating passage that is effectively achieved through use of an ejector pump. A portion of the pressurized fuel delivered by the main fuel pump is diverted and serves as a motive fluid that scavenges unfiltered flow from downstream of the filter and recirculates or discharges the recirculated flow to an inlet of the filter. This provides increased velocity to maintain sufficient washing of the filter openings.

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Previous Correction:

see Notice of 31 July 2008

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER

INV. B01D29/25 B01D37/00 B01D29/90 B01D29/11

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)

B01D F02M B64D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 622 004 A (MEYER GENE A) 23 November 1971 (1971-11-23)	1-9
X	abstract; figures 1,3 column 1, line 41 - line 67 -----	17-20
A	US 5 149 433 A (LIEN LARRY A [US]) 22 September 1992 (1992-09-22) abstract; figure 1 column 2, line 27 - line 43 -----	1-9
A	EP 0 311 162 A (SEPARATION DYNAMICS INC [US]) 12 April 1989 (1989-04-12) abstract; figure 1 ----- -/--	1-9

☒ 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 document 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 another 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.
- *G* document member of the same patent family

Date of the actual completion of the international search

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/011052 A1 (CLEMENTS MARTIN A [US]) 22 January 2004 (2004-01-22) abstract; figures 2,3 paragraphs [0026], [0027], [0032], [0033] -----	10-13
X	US 3 109 809 A (VERRANDO JR MARCEL G) 5 November 1963 (1963-11-05) column 5, line 29 - column 6, line 18; figure 2 -----	10,14, 23,29,32
X	US 3 193 102 A (SIMISTER BOTTOMS HARRY ET AL) 6 July 1965 (1965-07-06) column 2, line 18 - line 44; figure 1 -----	10,14,23
X	US 3 422 956 A (HADDEN EDWARD H) 21 January 1969 (1969-01-21) column 2, line 1 - column 3, line 22; figure 1 -----	23

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/083748

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:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9 and 17-22

Claims 1-9 refer to a wash flow filter assembly and additionally comprise the features of a recirculation and an ejector pump which receives fuel from the main pump and the filter outlet for the unfiltered fuel. Claim 1 is silent about any purpose for the filtered and unfiltered fuel and not even defines a flow of the unfiltered fuel to a receiver other than the recirculation loop.

Claims 17-22 refer to a wash flow filter comprising a housing and a recirculation loop. The filtration device comprises a movable poppet disposed along the flow path in order to vary the amount of flow along the flow path. Although two different inventions are concerned, the two groups, i.e. claims 1-9 and 17-22 could be searched without any extra effort.

2. claims: 10-16

Claims 10-16 refer to a very specific method using a wash flow filter for the delivery of fuel to associated actuators and to an associated fuel control system. Claim 10 mentions to increase the flow velocity in order to wash the filter, however, no fuel recirculation, valves or nozzles are mentioned.

3. claims: 23-34

Claims 23-34 are directed to a wash flow filter having an inlet and two outlets. A recirculation loop is not defined but the device comprises a nozzle or a poppet urged toward a first, low flow position in order to maintain a desired flow velocity through the first outlet for unfiltered fuel. Contrary to the definition of claims 17-22, it is therefore not the aim to vary the flow along a not specified flow path within the filter but to maintain a desired flow velocity at a specific position using a biased nozzle or poppet.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/083748

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