(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 12.08.2009 Bulletin 2009/33

(51) Int Cl.: **F02M** 59/26 (2006.01)

(43) Date of publication A2: **24.12.2008 Bulletin 2008/52**

(21) Application number: 08157962.5

(22) Date of filing: 10.06.2008

(84) Designated Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

Designated Extension States:

AL BA MK RS

(30) Priority: 22.06.2007 GB 0712032

(71) Applicant: **Delphi Technologies, Inc. Troy, Michigan 48007 (US)**

(72) Inventors:

- Felton, George N
 Gillingham, Kent ME8 0HD (GB)
- Karakaya, Nebi 35650, Ismir (TR)
- (74) Representative: Gregory, John David Charles
 Delphi Diesel Systems
 Patent Department
 Courteney Road
 Gillingham
 Kent ME8 0RU (GB)

(54) Fluid pump

(57)A pump (100) for fluid, comprising a pump body (102) defining a bore (104), a pumping plunger (108) having an end region which is slidably received within the bore, a spill port (154) defined by the pump body (102) in a wall of the bore (104) which port is coverable by the end region of the pumping plunger (108) as the plunger is driven on a pumping stroke, in use, so as to initiate fluid pressurisation within a pumping chamber (134); and a spill groove (172) defined by the pumping plunger (108) being arranged to uncover the spill port (154) during a pumping stroke so as to cause depressurisation of the pumping chamber (134). The pumping plunger (108) further defines a speed sensitive feature (176) configured to permit a controlled leak of fluid from the pumping chamber (134) to the spill port (154) towards the end of a pumping stoke. The invention also encompasses a pumping plunger particularly suited for use in the above described pump.

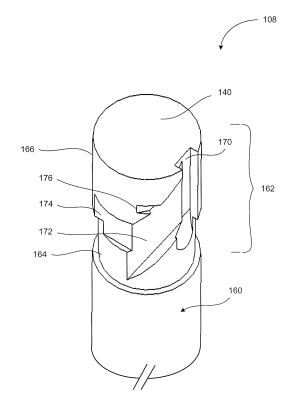


FIGURE 3

EP 2 006 529 A3



EUROPEAN SEARCH REPORT

Application Number

EP 08 15 7962

| | DOCUMENTS CONSID | ERED TO BE R | ELEVANT | | |
|---|--|----------------|---|----------------------|---|
| Category | Citation of document with in of relevant pass | | priate, | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
| Х | DE 29 06 688 A1 (IN HUBER E V) 28 Augus * page 3 - page 4; | st 1980 (1980- | ·08-28) | 1-4,7-1 | 12 INV. F02M59/26 |
| X | US 4 163 634 A (POW 7 August 1979 (1979 * column 3, line 15 figures 1-9 * | 9-08-07) | | 1-4, 6-11,14 | ı |
| Х | JP 04 272466 A (YAM 29 September 1992 (* abstract; figures | (1992-09-29) | IGINE CO) | 1-4,7-1 | .2 |
| Х | US 4 881 506 A (HOE 21 November 1989 (1 * column 4, line 16 figures 1-9 * | 1989-11-21) | , | 1-4,7-1 | 1 |
| X | GB 2 005 764 A (REN 25 April 1979 (1979 * page 2, line 56 - * | 9-04-25) ´ | | 1-3,7-9 | TECHNICAL FIELDS SEARCHED (IPC) F02M |
| | The present search report has | · | | | |
| | Place of search | | letion of the search | , | Examiner |
| | The Hague | 3 July | | | ıcker, Chava |
| X : parti Y : parti docu A : tech O : non | ATEGORY OF CITED DOCUMENTS cularly relevant if taken alone cularly relevant if combined with anot ment of the same category nological background written disclosure mediate document | her | T: theory or principle E: earlier patent docu after the filling date D: document cited in L: document cited for &: member of the sar document | the application | olished on, or n s |

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 08 15 7962

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-07-2009

| US 41 | 906688 163634 | A1 | 28-08-1980 | NONE | | | |
|-----------|----------------------|----|------------|----------------------------|---|---|--|
| | 163634 | | | | | | |
| JP 42 | | Α | 07-08-1979 | NONE | | | |
| | 272466 | Α | 29-09-1992 | NONE | | | |
| US 48 | 881506 | Α | 21-11-1989 | DE EP | 3804018 A1 0294822 A2 | | 24-08-19 14-12-19 |
| GB 20 | 005764 | Α | 25-04-1979 | AT CS DD HU SU | 362200 B 225351 B1 133346 A1 179572 B 983298 A1 | 1 | 27-04-19 13-02-19 27-12-19 29-11-19 23-12-19 |

FORM P0459 o For more details about this annex : see Official Journal of the European Patent Office, No. 12/82