



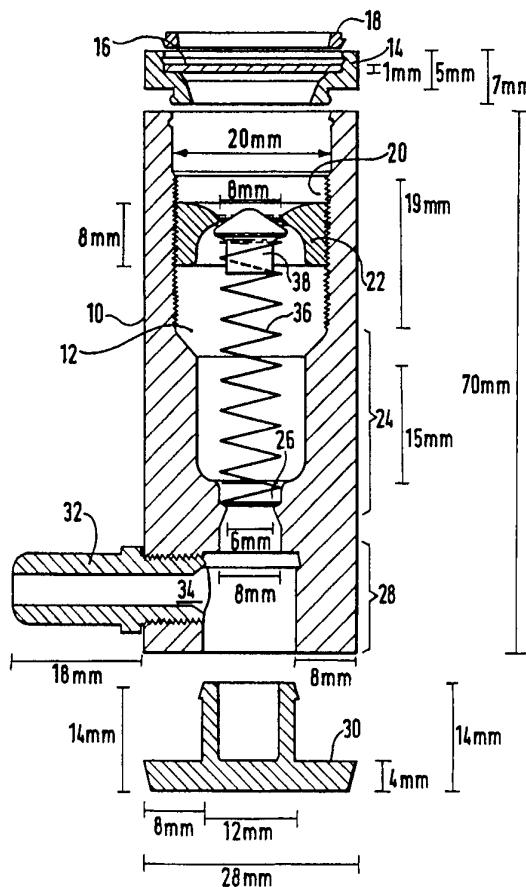
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : F02M 23/09</p>	<p>A3</p>	<p>(11) International Publication Number: WO 96/34194 (43) International Publication Date: 31 October 1996 (31.10.96)</p>
<p>(21) International Application Number: PCT/GB96/00999 (22) International Filing Date: 25 April 1996 (25.04.96) (30) Priority Data: 9508519.7 27 April 1995 (27.04.95) GB 9521576.0 20 October 1995 (20.10.95) GB (71)(72) Applicant and Inventor: BUSHELL, Richard, Nigel [GB/GB]; 7 Chapel Road, Worthing, West Sussex BN11 1EG (GB). (74) Agents: DOWNING, Michael, Philip et al.; Fry Heath & Spence, The Old College, 53 High Street, Horley, Surrey RH6 7BN (GB).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 20 February 1997 (20.02.97)</p>

(54) Title: AUTOMATIC VALVE FOR THE INLET MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

(57) Abstract

An automatic bleed valve is disclosed, suitable for attachment to the inlet manifold of an internal combustion engine in order to provide an effective embodiment of the "air bleed" principle. Small amounts of inlet air are allowed into the inlet manifold at periods of high vacuum (low pressure) present during deceleration. The valve closure (38) is biased by a biasing means (36), e.g. a compressing spring, which acts on the face of the closure disposed away from the seat (22). Other aspects provide for a valve seat which is adjustable in position relative to the closure, a closure and seat of different plastics materials, and a closure with a conical aspect, preferably paired with a seat with a complementary contact portion.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 96/00999

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 F02M23/09

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 6 F02M

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO,A,93 00508 (BAITEL MIKE ;FAULL SIMON H (VE)) 7 January 1993	1-4
Y	see abstract; figures 1,2	16-18
X	FR,A,2 084 305 (FISKER) 17 December 1971	12-15
Y	see page 1, paragraph 1; figure 1	16-18, 27-29
Y	WO,A,80 02727 (ZETTELMEIER H ;DUENNWALD H (DE); LINDNER A (DE)) 11 December 1980 see abstract; figure 3	27-29
A	GB,A,2 213 875 (NOLAN DAVID LAWRENCE) 23 August 1989 cited in the application see figures	1,5
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- "&" document member of the same patent family

Date of the actual completion of the international search

24 October 1996

Date of mailing of the international search report

04.11.96

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Alconchel y Ungria,J

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 96/00999

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB,A,496 409 (A. ELLIS) 30 November 1938 cited in the application see figure 3 ---	1,5
A	GB,A,2 243 431 (BROWNELL LIMITED) 30 October 1991 see abstract; figure 2 ---	1,5
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X	US,A,4 026 257 (MADDEN ALBERT JOHN ET AL) 31 May 1977 see figures ---	5,6,9,10
X	US,A,3 677 237 (HANSEN POUL E) 18 July 1972 see column 3, line 27 - line 37; figure 3 ---	5
A	WO,A,80 02310 (ALMQUIST E) 30 October 1980 see figures 2-4 ---	9-11
A	EP,A,0 114 449 (ECONOVAC LIMITED) 1 August 1984 see abstract; figure 1 ---	5
X	DE,A,38 23 569 (CONCORDIA FLUIDTECHNIK GMBH) 18 January 1990 see abstract see column 3, line 8 - line 11 see column 3, line 61 - column 4, line 14; figure 1 ---	19
A	US,A,4 852 539 (PANKOW CHESTER W) 1 August 1989 see column 7, line 21 - line 33; figures 11-13 ---	19-24
A	US,A,4 160 433 (OLSON DONEL R) 10 July 1979 see column 3, line 21 see column 4, line 10; figure 2 ---	19-21

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INTERNATIONAL SEARCH REPORT

International Application No
 PCT/GB 96/00999

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A,3 687 161 (GRGURIC ROBERT M ET AL) 29 August 1972 see column 2, line 20 - line 23 see column 4, line 1 - line 30 ---	19
A	FR,A,2 476 220 (TRICOIRE ALAIN) 21 August 1981 see column 5, last paragraph; figure 1 -----	19

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International application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

SEE ANNEX

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.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

- 1: Claims 1 - 4, 12 - 18 and 25 - 31
Air inlet bleed valve wherein the valve closure element is conical.
- 2: Claims 5 - 11
Air inlet bleed valve wherein the valve seat member is displaced longitudinally.
- 3: Claims 19 -24
Air inlet bleed valve wherein the closure and seat are of a different plastic materials.

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No
PCT/GB 96/00999

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