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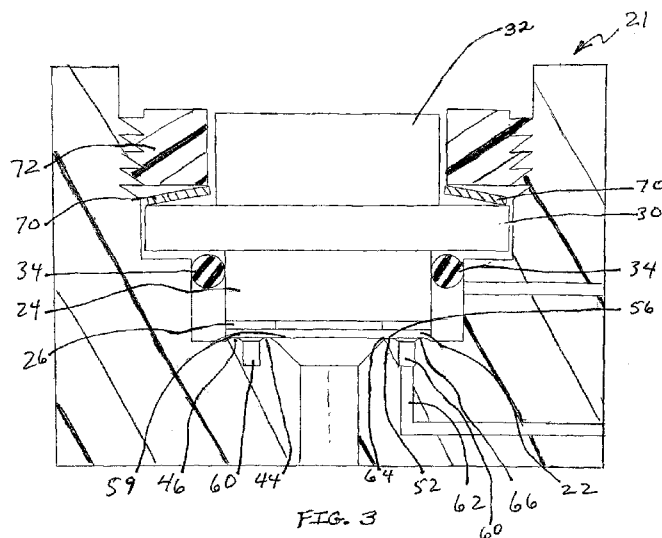
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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) **Date of publication of the international search report:**
4 March 2010

(54) **Title:** INTEGRAL FACE SEAL



(57) **Abstract:** A fluid seal generally comprising a first fitting portion (50) and a second fitting portion (28), wherein at least one of the fitting portions can be deformed or deflected in a sealing relationship relative to the other fitting portion to form the fluid seal. A fitting includes a first fitting portion comprising a small projection (52) extending from a substantially planar surface. The fitting further includes a fitting portion comprising a substantially planar second surface (59). A fluid seal is created by forcing the small projection of the first fitting portion and substantially planar surface of the second fitting portion together. As they are forced together, the projection deforms to form the fluid seal. The fitting can be used to connect tubes, pipes, a valve, a manifold, and combinations thereof. The sealing method can also be used to protect the components of a pressure sensor from the corroding effects of process fluid vapors.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/082291

A. CLASSIFICATION OF SUBJECT MATTER

INV. F16L39/00 F16L47/04 F16L49/06

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)
F16L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 87 16 334 U1 (STRUVE, ARMIN, 5090 LEVERKUSEN, DE) 4 February 1988 (1988-02-04)	1
Y	page 2, paragraph 1 page 3, line 5 - line 6; figures	4-6
X	DE 40 28 237 A1 (FRIEDRICHSFELD AG [DE]) 12 March 1992 (1992-03-12)	1-3
Y	abstract; figures column 5, line 26 - line 29	17, 19, 20
X	BE 785 548 A1 (ANCIENS ETS J CAP PAR ABREVIAT) 16 October 1972 (1972-10-16)	1-3
X	GB 825 222 A (BEN J WHITEHOUSE LTD) 9 December 1959 (1959-12-09) column 2, line 32 - line 34	1
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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.

"&" document member of the same patent family

Date of the actual completion of the international search

21 October 2009

Date of mailing of the international search report

14/01/2010

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/082291

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 491 984 A (PALL CORP [US]) 1 July 1992 (1992-07-01) figures column 5, line 1 - line 6 -----	4-6, 17, 19, 20

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/082291

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 all searchable 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 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.:

1-6, 17, 19, 20

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: 1-6,17,19(in not dependent on 18), 20

Document DE8716334U is considered to be the closest state of the art, and discloses all features of claim 1. The special technical feature of the first group of invention is, that there are a plurality of curved ridges. The objective problem solved by this special technical feature is, to improve the sealing.

2. claims: 1,7,8,18

The special technical feature of the second group of inventions is that the second member is operably connected to a valve.
The objective problem solved by this special technical feature is to be able to stop the flow through the connector.

3. claims: 9-16,21-23

The special technical feature of the third group of invention is a fluid sensor.
The objective problem solved by this special technical feature is to sense fluids.

4. claim: 24

Document BE785548 is considered to be the closest state of the art for the fourth group of inventions. The special technical feature of the fourth group of inventions is the annular face has a vent through the housing component to the exterior of the housing component.
With this special technical feature, fluid leaking through the first sealing can be evacuated.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2008/082291

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 8716334	U1	04-02-1988	NONE
DE 4028237	A1	12-03-1992	NONE
BE 785548	A1	16-10-1972	NONE
GB 825222	A	09-12-1959	NONE
EP 0491984	A	01-07-1992	CA 2057952 A1 25-06-1992
		DE 59003979 D1	03-02-1994
		ES 2047238 T3	16-02-1994
		JP 5052282 A	02-03-1993
		US 5257835 A	02-11-1993