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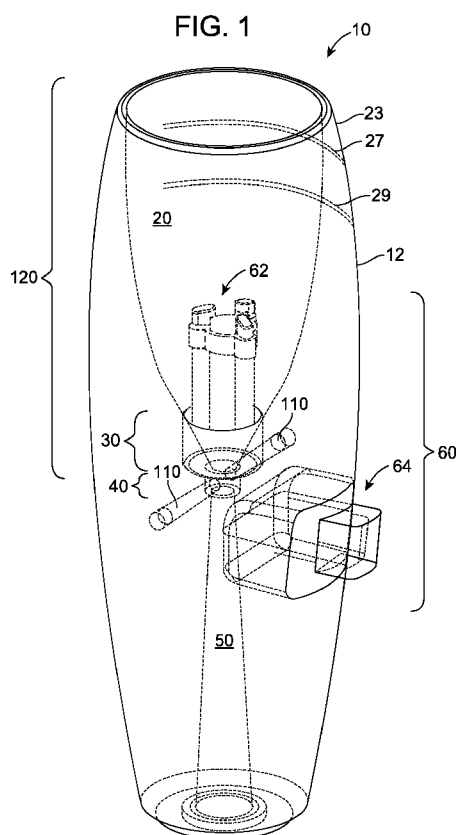
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(81) Designated States (unless otherwise indicated, for every
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HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD,
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[Continued on next page]

(54) Title: VENTURI APPARATUS



(57) Abstract: A Venturi apparatus includes: a body defining a receptacle chamber configured to receive a first fluid, a transition passageway in fluid communication with the receptacle chamber and configured to receive the first fluid from the receptacle chamber, a mixing chamber in fluid communication with the transition passageway and configured to receive the first fluid from the transition passageway, and a sidearm passageway in fluid communication with the mixing chamber and extending to an outer surface of the body and configured to allow a second fluid to pass from an exterior of the body into the mixing chamber; and a fluid flow regulator connected to the body, configured to affect a flow of the first fluid from the receptacle chamber into the mixing chamber, and including a valve mechanism configured to selectively engage the body to inhibit flow of the first fluid from the receptacle chamber into the mixing chamber.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *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:

22 November 2012

Published:

— *with international search report (Art. 21(3))*

A. CLASSIFICATION OF SUBJECT MATTER***B01F 5/06(2006.01)i, B01F 15/00(2006.01)i, B01F 3/04(2006.01)i***

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)

B01F 5/06; B01F 3/04; F16K 11/00; B01F 5/04; A62C 5/02

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: Venturi, aerate, fluid, mix, flow inhibition, transition passageway

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2007-097895 A2 (Exica, Inc. et al.) 30 August 2007. See the entire document.	1-30
A	US 2003-0015596 A1 (Richard O. Evans) 23 January 2003. See the entire document.	1-30
A	WO 93-10890 A1 (Technological Resources Ltd.) 10 June 1993. See the entire document.	1-30
A	US 05673725 A (William Knight Russell et al.) 07 October 1997. See the entire document.	1-30



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 application or patent 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 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

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Date of mailing of the international search report

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Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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City, 302-701, Republic of Korea

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INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US2012/027728**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:

Group 1: Claims 1-20, 29 and 30 relate to a Venturi apparatus characterized with a specific configuration of components.

Group 2: Claims 21-28 relate to a method of aerating a liquid with a Venturi apparatus.

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 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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/027728

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007-097895 A2	30.08.2007	AU 2007-218017 A1	30.08.2007
		AU 2007-218017 B2	04.08.2011
		BR P10707917 A2	17.05.2011
		CA 2642346 A1	30.08.2007
		CN 101437604 A	20.05.2009
		EP 1984103 A2	29.10.2008
		EP 1984103 A4	29.04.2009
		EP 1984103 B1	11.04.2012
		EP 2277618 A1	26.01.2011
		JP 04-967102 B2	13.04.2012
		JP 2009-526646 A	23.07.2009
		JP 2011-224571 A	10.11.2011
		KR 10-2008-0108091 A	11.12.2008
		MX 2008010461 A	19.01.2009
		US 2007-0187848 A1	16.08.2007
		US 2010-0072637 A1	25.03.2010
		US 2011-0042835 A1	24.02.2011
		US 7614614 B2	10.11.2009
		US 7841584 B2	30.11.2010
		WO 2007-097895 A3	30.08.2007
		WO 2007-097895 A3	20.11.2008
		ZA 200807014 A	28.10.2009
US 2003-0015596 A1	23.01.2003	CN 1405443 A0	26.03.2003
		EP 1264981 A1	11.12.2002
		GB 0113735 D0	25.07.2001
		JP 2003-003910 A	08.01.2003
		KR 10-2002-0092835 A	12.12.2002
WO 93-10890 A1	10.06.1993	AT 149875 T	15.03.1997
		BR 9205582 A	02.08.1994
		CA 2101627 A1	03.06.1993
		CA 2101627 C	03.04.2007
		DE 4224912 A1	03.06.1993
		DE 69218181 D1	17.04.1997
		DE 69218181 T2	19.06.1997
		EP 0573626 A1	15.12.1993
		EP 0573626 A4	13.07.1994
		EP 0573626 B1	12.03.1997
		FI 107237B1	29.06.2001
		FI 933415 A	30.09.1993
		FI 933415D0	30.07.1993
		JP 03-161734 B2	23.02.2001
		JP 6505432 T	23.06.1994
		KR 10-0274386 B1	02.04.2001
		NZ 246021 A	26.07.1995
		RU 2139131 C1	10.10.1999
		US 2001-0011778 A1	09.08.2001
		US 2002-0033543 A1	21.03.2002

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/027728

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 05673725 A	07. 10. 1997	US 6565070 B2	20. 05. 2003
		WO 93-10890A1	10. 06. 1993
		ZA 9209334 A	28. 03. 1996
		None	