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— *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))*

[Continued on next page]

(54) **Title**: WETTED WALL CYCLONE SYSTEM AND METHODS

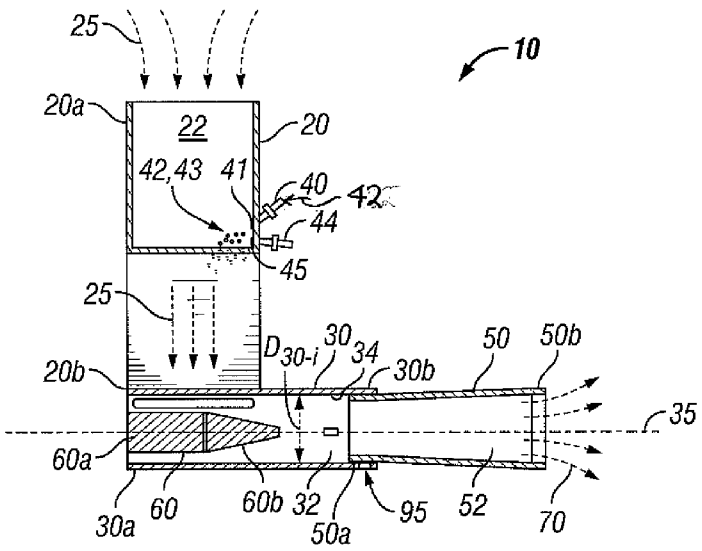

FIG. 3

(57) **Abstract**: In an embodiment, a wetted wall cyclone comprises a cyclone body including an inlet end, an outlet end, an inner flow passage, and an inner surface defining an inner diameter. In addition, the wetted wall cyclone comprises a cyclone inlet tangentially coupled to the cyclone body. The cyclone inlet includes an inlet flow passage in fluid communication with the inner flow passage. Further, the wetted wall cyclone comprises a skimmer extending coaxially through the outlet end of the cyclone body. The skimmer comprises an upstream end disposed within the cyclone body, a downstream end distal the cyclone body, and an inner exhaust passage in fluid communication with the inner flow passage. Still further, the wetted wall cyclone comprises a first annulus positioned radially between the upstream end and the cyclone body having a radial width W1 between 3% and 15% of the inner diameter of the cyclone body.

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A. CLASSIFICATION OF SUBJECT MATTER

G01N 33/487(2006.01)i, G01N 33/483(2006.01)i, G01N 33/48(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)
IPC : G01N

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 since 1975
Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS(KIPO internal), "wetted wall cyclone"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Manpreet Singh Phull, "An improved wetted-wall bioaerosol sampling cyclone", Graduates studies of Texas A&M University, thesis of master degree, 2005 see abstract, Figures 1, 2, 7, 8, 11, and DESIGN AND THEORY section	1-5, 10, 15
A	US 4,940,473 (BENHAM) 10 July 1990 see abstract and claims 1-16	1-40
A	US 4,246,013 (TRUHAN et al.) 20 January 1981 see abstract and claims 1-4	1-40

☐ 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
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"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	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4,940,473 A	10.07.1990	None	
US 4,260,401 A	07.04.1981	None	