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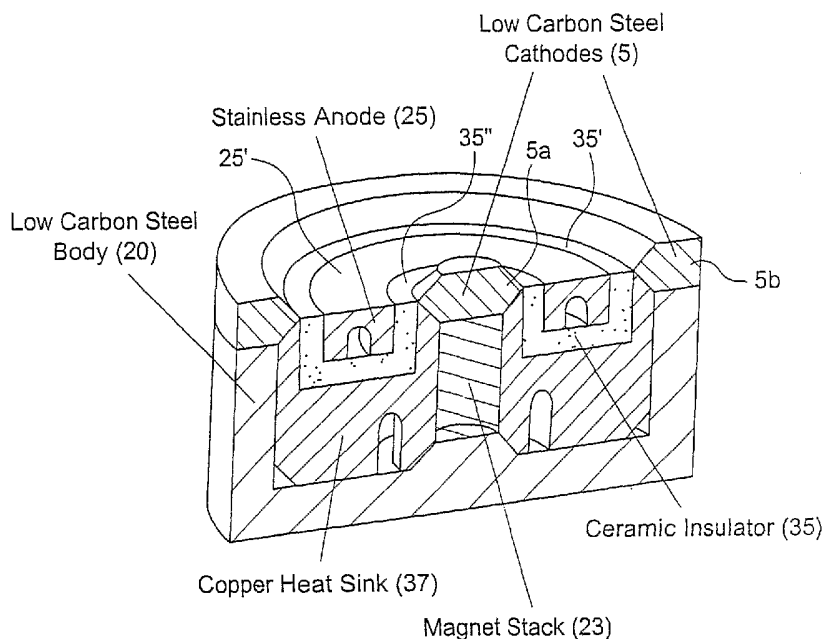
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[Continued on next page]

(54) Title: ION SOURCE WITH SUBSTANTIALLY PLANAR DESIGN



(57) Abstract: In certain example embodiments of this invention, there is provide an ion source including an anode (25) and a cathode (5). In certain example embodiments, the cathode does not overhang over the anode, or vice versa. Since no, or fewer, areas of overhang are provided between the anode and cathode, there is less undesirable build-up on the anode and/or cathode during operation of the ion source so that the source can run more efficiently. Moreover, in certain example embodiments, an insulator (35) such as a ceramic or the like is provided between the anode and cathode.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. H01J27/14 H01J37/08 H01J3/04

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)
H01J

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, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/074444 A1 (VEERASAMY VIYAYEN S ET AL) 22 April 2004 (2004-04-22) cited in the application paragraphs [0027] - [0040]; figures 4,5	1-9, 11-20, 22-24, 26-28
X	US 6 242 749 B1 (MAISHEV YURI ET AL) 5 June 2001 (2001-06-05) figures 4-7,10 column 4, line 39 - column 5, line 31 column 6, line 47 - column 7, line 31 column 8, lines 6-8 ----- -/--	1-3,5-8, 10-18, 22-24, 26,28

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

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 153 067 A (MAISHEV ET AL) 28 November 2000 (2000-11-28) figures 5,6,10,14-19 column 8 column 11, lines 32-55 -----	1-3, 5-18, 22-24, 26,28
X	"SUPERCONDUCTING MAGNETIC HALL EFFECT ION SOURCE" IBM TECHNICAL DISCLOSURE BULLETIN, IBM CORP. NEW YORK, US, vol. 35, no. 3, 1 August 1992 (1992-08-01), pages 345-346, XP000326293 ISSN: 0018-8689 figure 1 -----	14,16, 17,23,26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/040159

Box 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 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 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.:

1-13,20,21,14-19(alternative 1); 22-28

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/ US2005/ 040159

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13,20,21,14-19(alternative 1), 22-28

Ion source with a cathode and an anode, wherein the cathode comprises an inner electrode portion and an outer electrode portion and the anode is located between said two portions.

2. claims: 14-19(alternative 2)

Ion source with a cathode and an anode, wherein the anode comprises an inner electrode portion and an outer electrode portion and the cathode is located between said two portions.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internati application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004074444	A1	22-04-2004	NONE
US 6242749	B1	05-06-2001	NONE
US 6153067	A	28-11-2000	NONE