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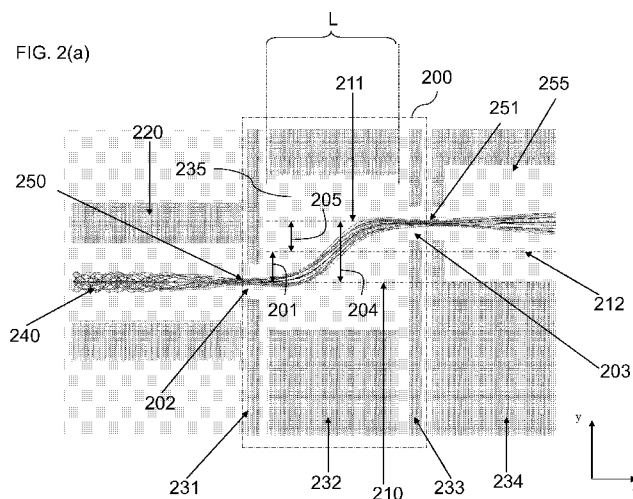
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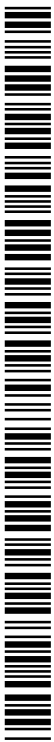
— with international search report (Art. 21(3))

(88) Date of publication of the international search report:
17 April 2014

(54) Title: ELECTROSTATIC LENSES AND SYSTEMS INCLUDING THE SAME



(57) Abstract: A system includes an electrostatic lens positioned between a charged-particle source and a detector. The lens includes: a first electrode having a first aperture in the path and aligned with a first axis; a second electrode in the path between the first electrode and the charged-particle detector, the second electrode having a second aperture positioned in the path and aligned with a second axis parallel to the first axis and displaced from the first axis along a first direction; a third electrode in the path between the first electrode and the second electrode; and a potential generator coupled to the first, second, and third electrodes. During operation, the potential generator applies first, second, and third potentials to the first, second, and third electrodes, respectively, so that the electrostatic lens directs a beam of charged particles from the charged-particle source propagating along the first axis to propagate along the second axis.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/027547

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - H01J 37/147 (2012.01) USPC - 250/397 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(8) - H01J 3/14, 3/18, 3/26, 3/28, 3/30, 37/08, 37/147 (2012.01) USPC - 250/396R, 397, 492.21, 423 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 practicable, search terms used) MicroPatent, Google Patents, ProQuest		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---	US 2009/0266984 A1 (HIRANO) 29 October 2009 (29.10.2009) entire document	41 -----
Y		1-12, 22-36, 38-40
Y	US 3,634,645 A (LEMPERT et al) 11 January 1972 (11.01.1972) entire document	1-12, 22-36, 38-40
Y	US 7,223,974 B2 (PETROV et al) 29 May 2007 (29.05.2007) entire document	11, 23-27, 39
Y	US 5,838,011 A (KRIJN et al) 17 November 1998 (17.11.1998) entire document	31, 35
A	US 5,420,415 A (TRUEIRA) 30 May 1995 (30.05.1995) entire document	1-12, 22-36, 38-41
A	US 7,791,047 B2 (HORSKY et al) 07 September 2010 (07.09.2010) entire document	1-12, 22-36, 38-41
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 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 28 April 2012		Date of mailing of the international search report 20 JUN 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/027547

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.: 13-21, 37
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:

- 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 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.:

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.