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(71) Applicant: **EBARA CORPORATION**
11-1, Haneda Asahi-cho
Ohta-ku Tokyo(JP)

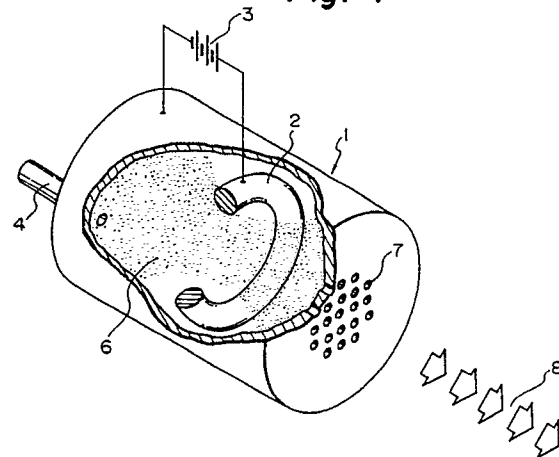
(72) Inventor: **Nagai, Kazutoshi**
c/o Ebara Research Co. Ltd., 4-2-1,
Honfujisawa
Fujisawa-shi, Kanagawa-ken(JP)

(74) Representative: **Wagner, Karl H. et al**
WAGNER & GEYER European Patent
Attorneys Gewürzmühlstrasse 5
W-8000 München 22(DE)

(54) **Fast atom beam source.**

(57) A fast atom beam source comprises a evacuated cylinder, an anode set at one end or an intermediate portion of the cylinder, a cathode with fast atom emission orifices on it, and set at the other end of the cylinder, and a DC high voltage power supply for generating gas discharge by applying a high voltage between the anode and the cathode. A slit is provided on inside wall of the cylinder and a reservoir for oil or low-melting point metal is connected to the slit. A heater is set on the reservoir for vapourizing the oil or low-melting point metal. It supplies vapor of oil or low-melting point metal into the cylinder. Many ions of oil or low melting point metal are generated in glow through gas (the oil, vapor or the metal vapor) discharge by high voltage applying. They are accelerated towards the cathode. Then, they are neutralized after collision with the vapor of oil or low-melting point metal remaining near the cathode and are emitted from the orifices on the cathode. They constitute a fast atom beam. During such operation, the vapor of oil or low-melting point metal enters the cylinder through the slit and maintains an equilibrium condition of gas density in the cylinder. Thus, an automatic supply of the gas consumed as a fast atom beam is effected without any gas feeding device or any gas adjusting device.

Fig. 4



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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-3 005 121 (J. GEORGE) * Columns 1-2; figure 1 * -- -- --	1	H 05 H 3/02
A	NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH/SECTION B, vol. B33, nos 1-4, 2nd June 1988, pages 867-870, Amsterdam, NL; F. SHIMOKAWA et al.: "A low-energy fast-atom source" * Page 867; figure 1 * -- -- --	1	
A	US-A-3 523 210 (M.P. ERNSTENE et al.) * Abstract; figures 1-2; claims 1,2 * -- -- --	1	
A	US-A-4 328 667 (D.R. VALENTIAN et al.) * Figures 11,12; column 4, last paragraph - column 5, paragraph 1 * -- -- --	1	
A	US-A-4 516 052 (P.D. PREWETT et al.) * Column 4, lines 17-32; figure 1 * -- -- -- --	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			H 05 H 3/00 H 01 J 27/00 H 05 H 1/00 H 01 J 37/00 F 03 H 1/00
Place of search		Date of completion of search	Examiner
The Hague		19 August 91	HULNE S.L.
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