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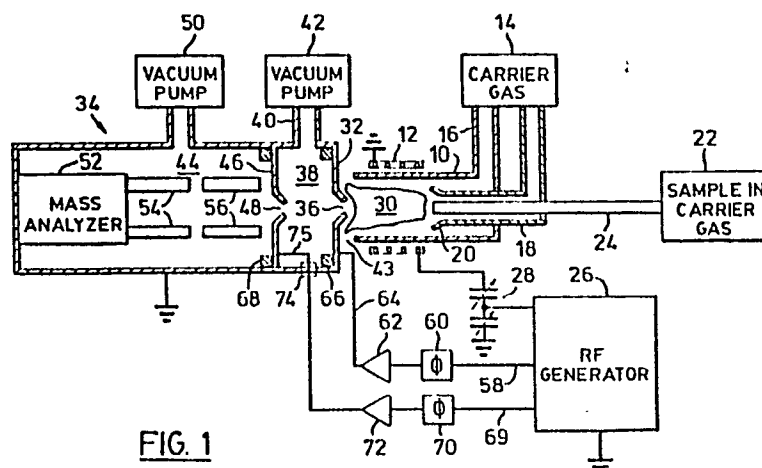
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**(54) Sampling plasma into a vacuum chamber.**

(57) A plasma generated within an induction coil (12) is sampled through a sampler orifice (36) into a first vacuum chamber stage (38) and then through a skimmer orifice (48) into a second vacuum chamber stage (44) for mass analysis of trace ions in the plasma. Arcing at the orifices is reduced or prevented by applying, to the plates containing the orifices, an RF bias voltage derived from the generator which powers

the coil. Since optimum ion transmission is highly dependent on the phase and amplitude of the RF bias, phase and amplitude adjustment networks are provided to optimize the ion count. Alternatively, arcing at the sampler orifice can be eliminated by grounding the induction coil at or near its center and the RF bias can be applied only to the plate containing the skimmer orifice.



**FIG. 1**



European Patent  
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# EUROPEAN SEARCH REPORT

**0199455**  
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EP 86 30 1974

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 4)
A	EP-A-0 112 004 (MDS HEALTH GROUP LTD.) * Claim 1 *	1, 5, 14 -16	H 01 J 49/04 H 01 J 49/10
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			TECHNICAL FIELDS SEARCHED (Int Cl 4)
			H 01 J H 05 H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 02-02-1987	Examiner GALANTI M.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			