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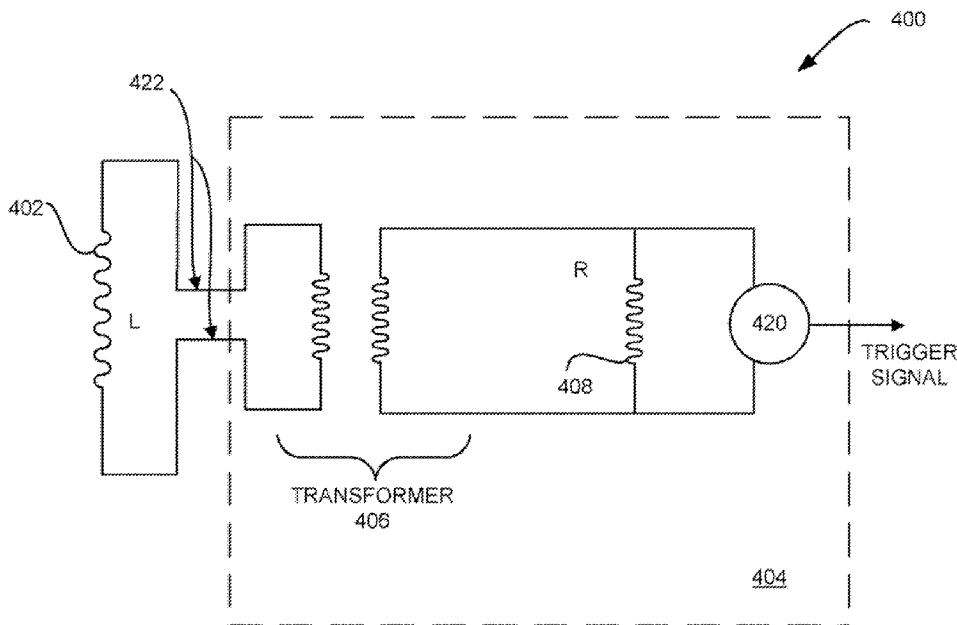
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(54) Title: METHODS AND APPARATUS FOR SENSING UNCONFINEMENT IN A PLASMA PROCESSING CHAMBER



(57) **Abstract:** Universal plasma unconfinement detection systems configured to detect the plasma unconfinement condition in the plasma processing chamber and methods therefor. The detection systems and methods are designed to reliably and accurately detect the existence of the plasma unconfinement condition in a process-independent and recipe-independent manner.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/2158

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G01R 23/00; H05B 7/16 (2007.01)

USPC - 216/61; 219/383

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) - G01R 23/00; H05B 7/16 (2007.01)

USPC - 216/61; 219/383

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IPC(8) - G01R 23/00; H05B 7/16 (2007.01) -see keyword below-

USPC - 216/61; 219/383 -see keyword below-

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(USPT,PGPB,EPAB,JPAB); Google patent

Search terms: Plasma, confinement, chamber, current, sensor, location, position, placement, density, detector, probe, return current, RF current, coil, loop, plasma confinement

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,174,450 B1 (PATRICK et al.) 16 Jan 2001 (16.01.2001) Figures 1, 2, 4a, and 5: col. 2, ln. 35-38; col. 2, ln. 42-45; col. 4, ln. 27-34; col. 6, ln. 36-41; col. 6, ln. 42-47; col. 6, ln. 51-54; col. 6, ln. 59-61	1, 6, 10-13, 17, and 21-23
Y		2-4, 7-9, 14-16, and 18-20
Y	US 5,716,534 A (TSUCHIYA et al.) 10 Feb 1998 (10.02.1998) Figure 1	2, 3, 9, 14, 15, and 20
Y	US 6,583,572 B2 (VELTROP et al.) 24 Jun 2003 (24.06.2003) col. 2, ln. 27-30	4 and 16
Y	US 4,679,007 A (REESE et al.) 7 Jul 1987 (07.07.1987) Figure 17, abstract	7-9 and 18-20

 Further documents are listed in the continuation of Box C.

\* 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

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"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

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