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(54) **METHOD AND APPARATUS FOR PLASMA GENERATION**

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(57) **ABSTRACT**

In a simple method and device for producing plasma flows of a metal and/or a gas electric discharges are periodically produced between the anode and a metal magnetron sputtering cathode in crossed electric and magnetic fields in a chamber having a low pressure of a gas. The discharges are produced so that each discharge comprises a first period with a low electrical current passing between the anode and cathode for producing a metal vapor by magnetron sputtering, and a second period with a high electrical current passing between the anode and cathode for producing an ionization of gas and the produced metal vapor. Instead of the first period a constant current discharge can be used. Intensive gas or metal plasma flows can be produced without forming contracted arc discharges. The self-sputtering phenomenon can be used.

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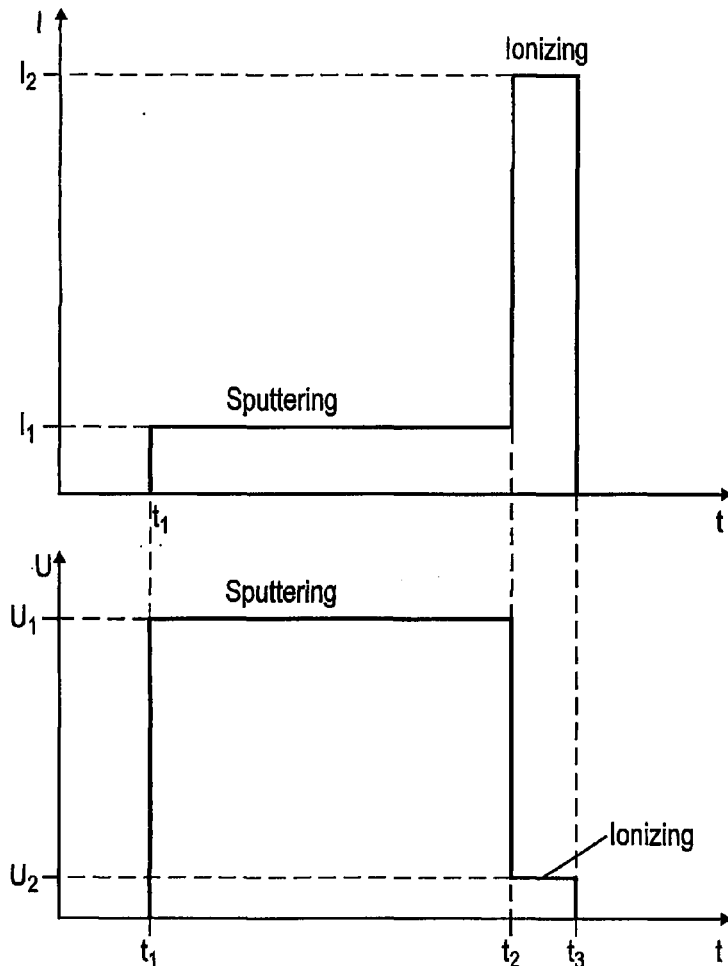
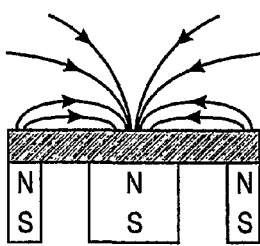
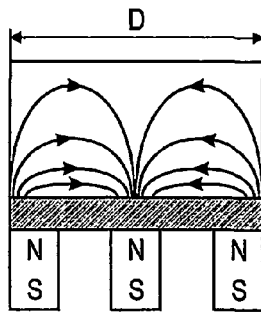


Fig. 1a



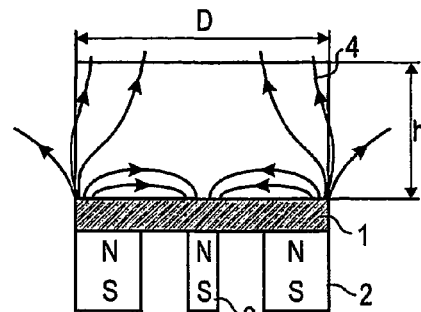
Unbalanced
Type I

Fig. 1b



Balanced

Fig. 1c



Unbalanced
Type II

Fig. 1d

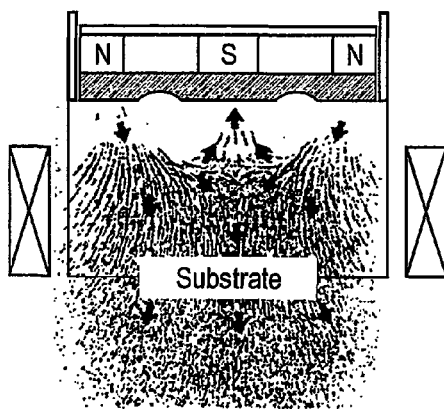


Fig. 1e

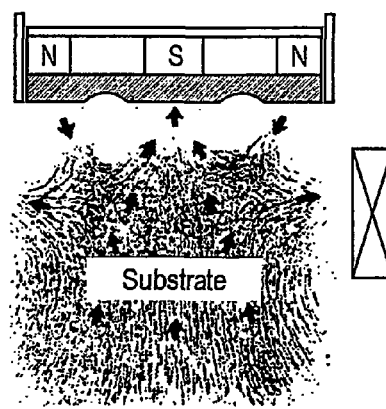
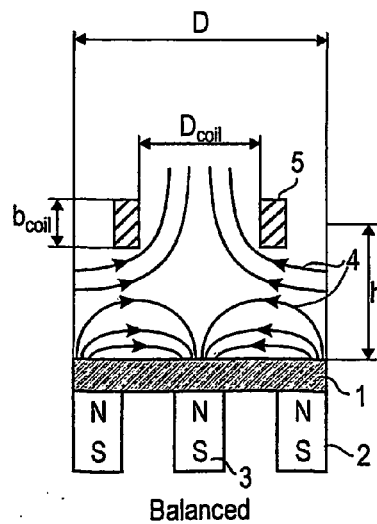


Fig. 1f



Balanced

Fig. 1g

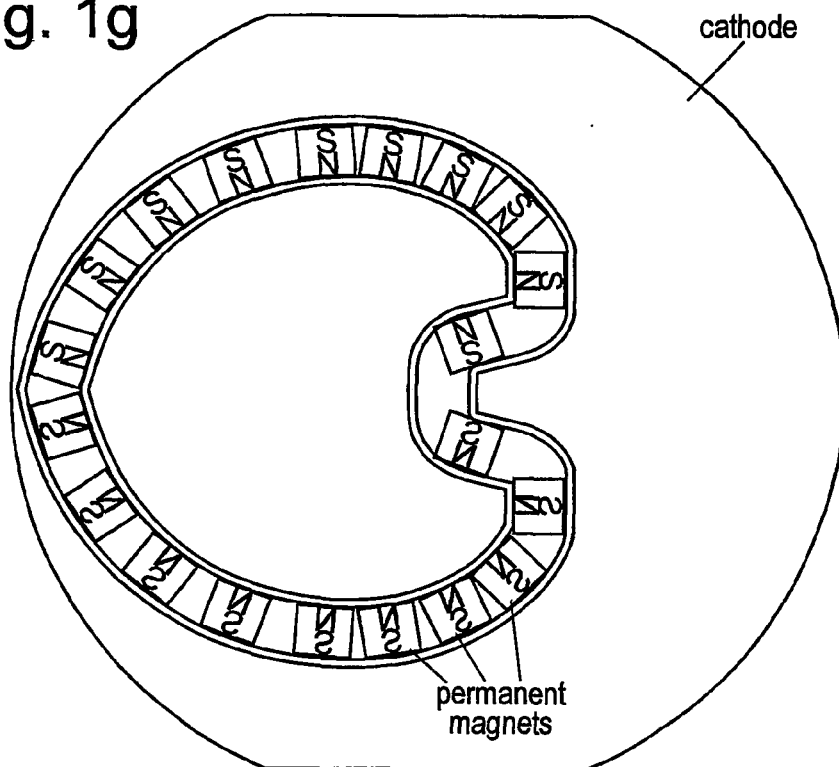
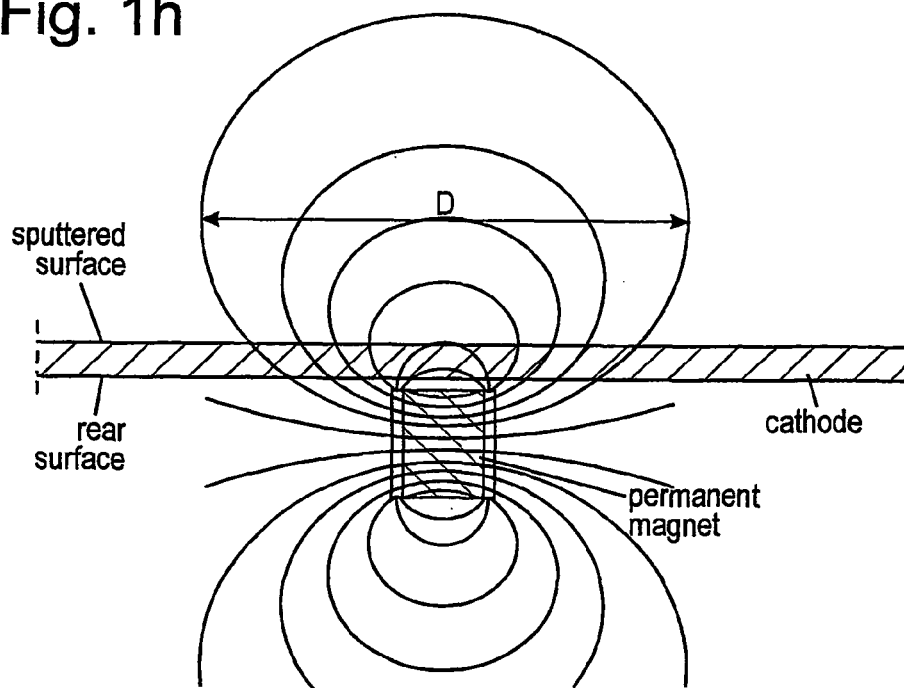


Fig. 1h



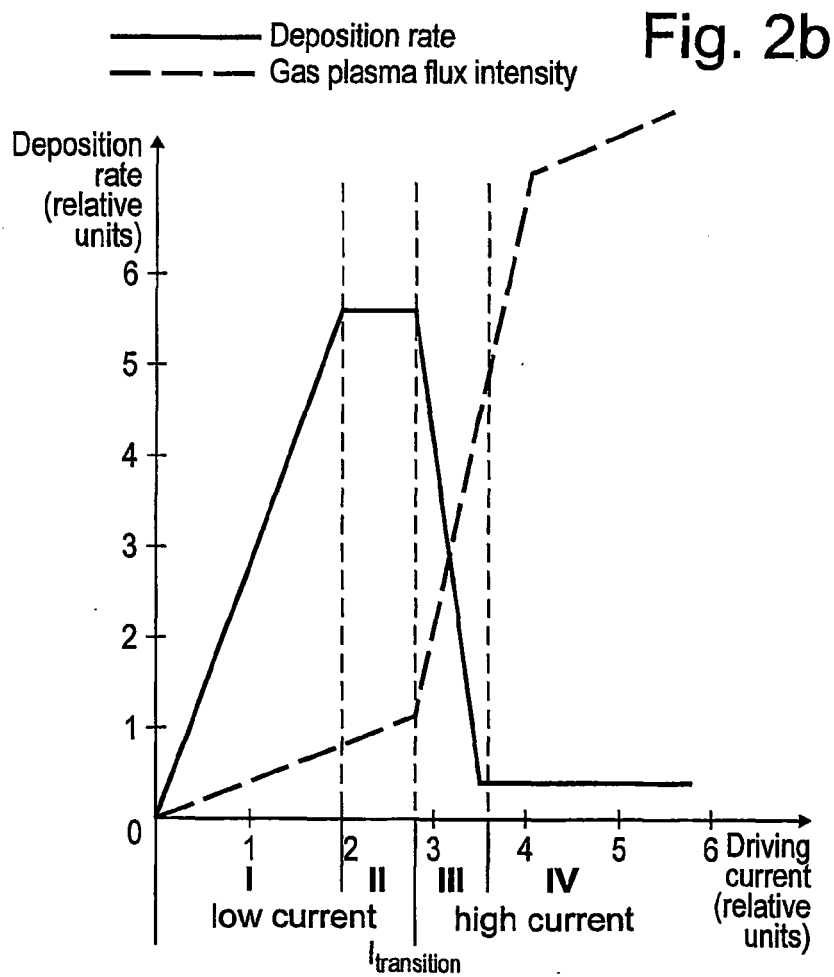
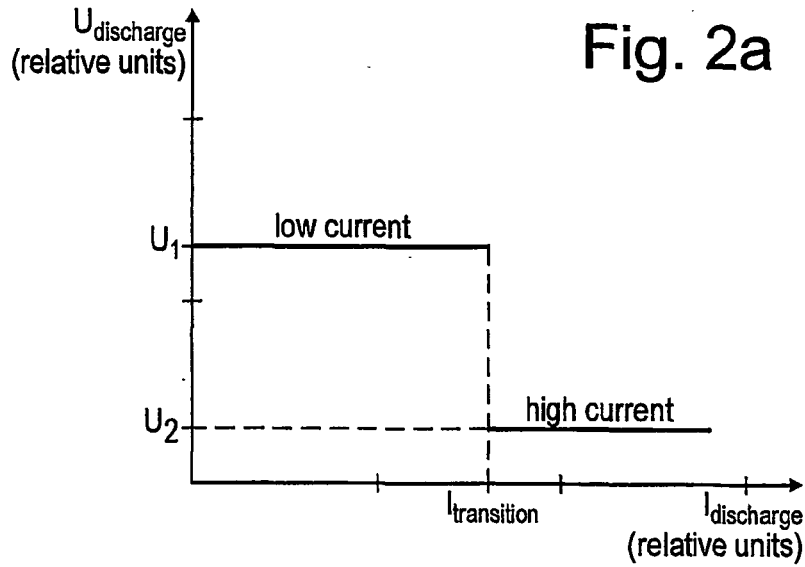


Fig. 3b

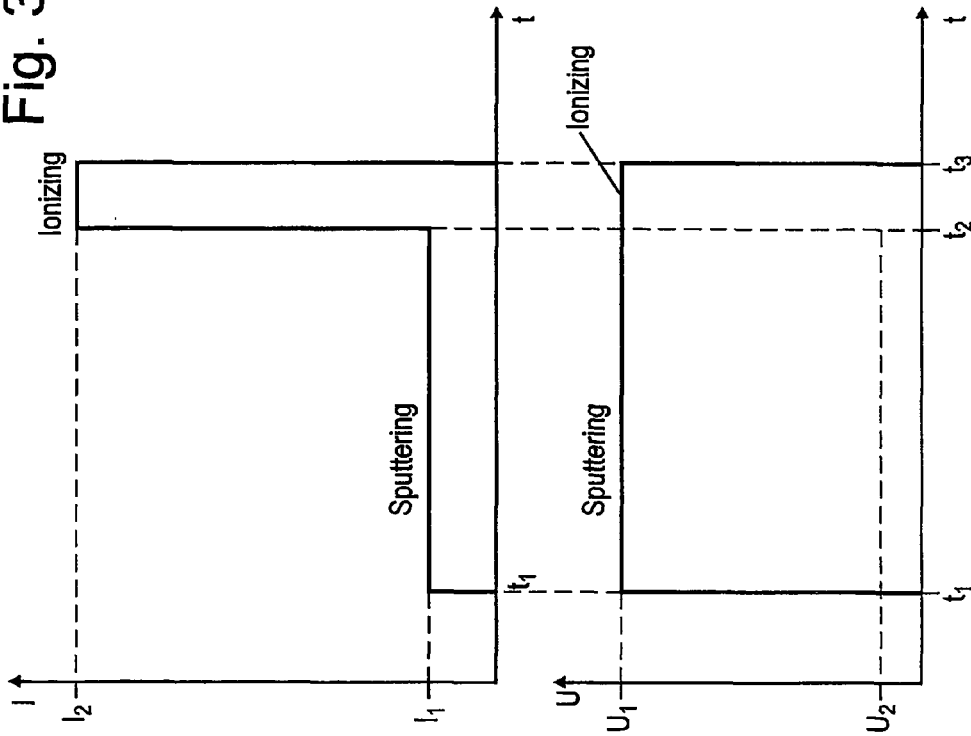
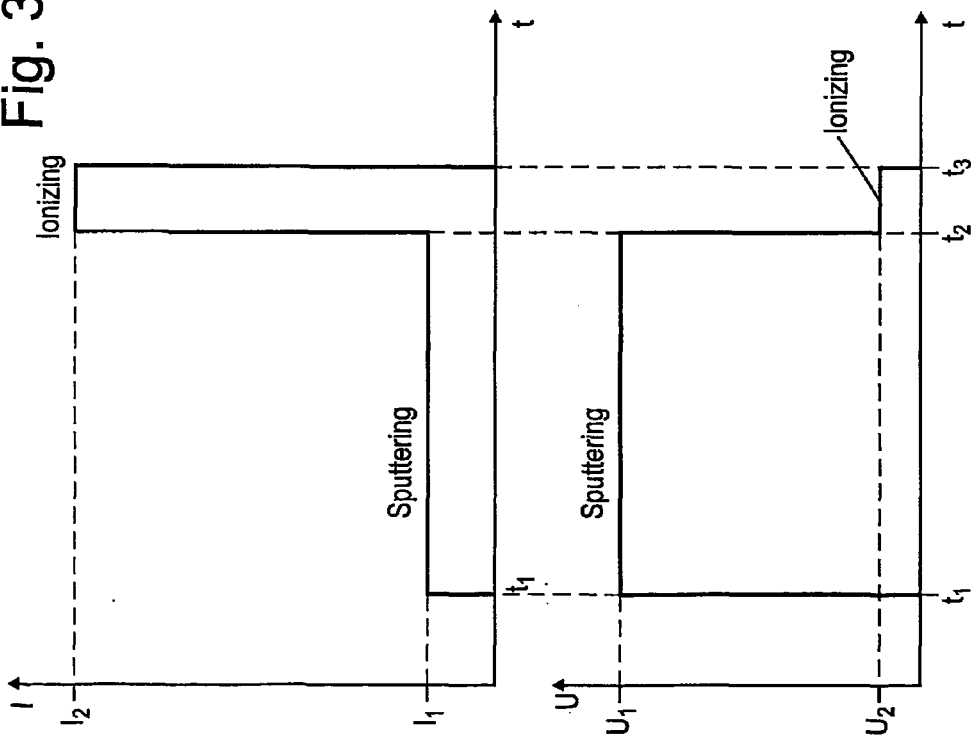


Fig. 3a



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