CLAIMS

1. A plasma processing apparatus (1) comprising:

a balun (103) including a first input terminal (201) supplied with high frequency, a second input terminal (202) which is grounded, a first output terminal (211), and a second output terminal (212);

a vacuum container (110);

a first electrode (106) insulated from the vacuum container and electrically connected to the first output terminal; and

a second electrode (111) insulated from the vacuum container and electrically connected to the second output terminal,

the first output terminal (211) and the first electrode (106) are electrically connected to each other via a blocking capacitor (104)

characterized in that

the second electrode (111) has a tubular shape and is arranged to surround an entire circumference of the first electrode, the first electrode (106) and the second electrode (111) being arranged to form a coaxial structure,

and

the second output terminal (212) and the second electrode (111) are electrically connected to each other not through a capacitor, the second electrode (111) being grounded via the balun (103).

2. The plasma processing apparatus (1) according to claim 1, wherein the first electrode (106) is configured to hold a member that is a substrate or a target, and an inner diameter of the second electrode (111) that has the tubular shape is larger than the member.

3. The plasma processing apparatus (1) according to claim 2, wherein the first electrode (106) has a columnar shape which has a surface configured to hold the member.

4. The plasma processing apparatus (1) according to any one of claims 1 to 3, wherein the vacuum container (110) includes a grounded portion.

5. The plasma processing apparatus (1) according to any one of claims 1 to 4, wherein the first electrode (106) serves as a cathode, and the second electrode (111) serves as an anode.

6. The plasma processing apparatus (1) according to any one of claims 1 to 5, wherein, in use,

an impedance between the first electrode (106) and the second electrode (111) is lower than an impedance between the first electrode (106) and the vacuum container (110).

7. The plasma processing apparatus (1) according to claim 2 or 3, wherein, in use,

self-bias voltage is generated at the surface of the target.

8. The plasma processing apparatus (1) according to any one of claims 1 to 6, wherein the first electrode (106) holds a substrate (112), and the plasma processing apparatus (1) is configured as an etching apparatus which is configured to etch the substrate held by the first electrode.

9. The plasma processing apparatus (1) according to any one of claims 1 to 7, further comprising a substrate holding unit (132) configured to hold a substrate (112),

wherein the first electrode (106) holds a target (109),

wherein the first electrode (106) and the second electrode (111) are arranged to face a space on the side of the substrate holding unit (132), and

wherein the plasma processing apparatus (1) is configured as a sputtering apparatus which is configured to form a film on the substrate by sputtering of the target.

10. The plasma processing apparatus (1) according to any one of claims 1 to 9, further comprising:

a high-frequency power supply (101); and

an impedance matching circuit (102) arranged between the high-frequency power supply (101) and the balun (103).