CLAIMS

1. Electrostatic precipitator (2), comprising:

an ionization stage (3),

a collector stage (4), and

a power supply, the power supply comprising a first high-voltage power supply unit (7) configured to apply a first DC high voltage to the ionization stage (3) and a second high-voltage power supply unit (8) configured to apply a second DC high voltage to the collector stage (4), wherein

the first high-voltage power supply unit (7) comprises a first current sensor and a voltage controller (11),

the first current sensor configured is to measure the ionization current flowing through the ionization stage (3),

the voltage controller (11) is configured to ensure that the first DC high voltage is adjusted in such a way that the measured ionization current reaches a predetermined value,

the electrostatic precipitator has a terminal which can be connected to earth ground,

the ionization stage (3) and the collector stage (4) contain electrodes which are connected to the terminal,

the first high-voltage power supply unit (7) and the second high-voltage power supply unit (8) are galvanically separated both from a mains connection (9) and from one another, and

the first current sensor is arranged in a return line which leads from the terminal to the first high-voltage power supply unit (7).

2. Electrostatic precipitator (2) according to claim 1, further comprising a control input to which a control signal can be applied, wherein the first high-voltage power supply unit (7) is configured to adjust the ionization current according to a value corresponding to the control signal.

3. Electrostatic precipitator (2) according to claim 2, wherein the second high voltage power supply unit (8) is configured to adjust the second DC high voltage according to a value corresponding to the control signal.

4. Electrostatic precipitator (2) according to any of claims 1 to 3, wherein the second high-voltage power supply unit (8) comprises a second current sensor, the second current sensor is configured to measure a collector current flowing through the collector stage (4) in a return line leading from the terminal to the second high-voltage power supply unit (8).

5. Electrostatic precipitator (2) according to claim 4, wherein an alarm signal or fault signal is generated when the measured collector current exceeds a predetermined maximum current.