**Claim rejection under 35 USC 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

**Claims 1-19 are rejected under 35 U.S.C. 102(a)(1) as being anticipated by XXXXX et al (US )**

**Claim rejection under 35 USC 103**

**The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:**

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this titleif the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimedinvention to a person having ordinary skill in the art to which the claimed invention pertains.Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-11 are rejected under 35 U.S.C. 103 as being unpatentable over XXXXXXX (US 20160142003) in view of XXXXXXX. (US ).**

**Regarding claim 1**. A power supply device comprising:  
an output unit configured to connect a load; an input unit configured to input an AC input varying at a predetermined period between a positive voltage and a negative voltage; a rectifier circuit configured to convert the AC input from the input unit into a rectified output which is one of the positive voltage and a negative voltage and include a smoothing capacitor that smoothes the rectified output; a switching circuit configured to connect the smoothing capacitor as an input, connect the output unit as an output, and switch between an ON-state in which an input impedance viewed from the smoothing capacitor is low and an OFF-state in which an input impedance is higher than the input impedance in the ON-state at a switching period shorter than the predetermined period; and a controller configured to set a modulation duty ratio such that at least a portion of a period in which a modulation width of the modulation duty ratio becomes a maximum value is included in a period from a time at which an input current input to the smoothing capacitor is generated to a time at which a voltage of the smoothing capacitor becomes a maximum when the switching circuit is controlled to switch between the ON-state and the OFF-state while outputting the modulation duty ratio at which a duty ratio which is a ratio of a period in which the ON-state is maintained to the switching period is modulated in accordance with a variation in the rectified output.   
   
**Regarding claim 2**. The power supply device according to claim 1, wherein the controller includes a measurement unit that measures a voltage of the rectified output.   
   
**Regarding claim 3**. The power supply device according to claim 1, wherein the smoothing capacitor is an electrolytic capacitor.   
   
**Regarding claim 4**. The power supply device according to claim 1, wherein the controller sets the modulation duty ratio such that at least the portion of the period in which the modulation width of the modulation duty ratio becomes the maximum value is included in a period in which an absolute value of a voltage of the rectified output increases.   
   
**Regarding claim 5**. The power supply device according to claim 1, wherein the controller sets a modulation width of the modulation duty ratio as a periodic variation deviating by a predetermined time from a periodic variation of the rectified output.   
   
**Regarding claim 6**. The power supply device according to claim 5, wherein the predetermined time is determined based on a frequency of the AC input.   
   
**Regarding claim 7**. The power supply device according to claim 5, wherein the controller sets the modulation width of the modulation duty ratio based on a reciprocal of an absolute value of a previous voltage of the rectified output before the predetermined time.   
   
**Regarding claim 8**. The power supply device according to claim 5, wherein the controller periodically varies the modulation width of the modulation duty ratio in a triangular waveform and sets a timing at which the modulation width of the modulation duty ratio of a triangular waveform becomes a maximum value to a timing later than a timing at which an absolute value of a voltage of the rectified output becomes a minimum.   
   
**Regarding claim 9**. The power supply device according to claim 1, wherein the controller sets the modulation width of the modulation duty ratio to the maximum value from a time at which an absolute value of a voltage of the rectified output becomes a first voltage set near a minimum value of the absolute value of the voltage of the rectified output to a time at which an absolute value of a voltage of the rectified output becomes a second voltage set near a maximum value of the absolute value of the voltage of the rectified output.   
   
**Regarding claim 10**. The power supply device according to claim 1, wherein the controller sets the modulation width of the modulation duty ratio to the maximum value during a period in which an absolute value of a voltage of the rectified output increases.   
   
**Regarding claim 11**. The power supply device according to claim 1, wherein the switching circuit is an inverter circuit.   
   
**Regarding claim 12**. The power supply device according to claim 1, wherein the controller sets the modulation duty ratio based on a difference between a target power output to the output unit and an actual power output to the output unit.   
   
**Regarding claim 13**. The power supply device according to claim 1, wherein the controller calculates the modulation duty ratio based on a basic duty ratio set independently from a variation in the rectified output and the variation of the rectified output.   
   
**Regarding claim 14**. The power supply device according to claim 13, wherein the basic duty ratio is set based on a difference between a target power output to the output unit and an actual power output to the output unit.   
   
**Regarding claim 15**. The power supply device according to claim 13, wherein the basic duty ratio varies at a predetermined period.   
   
**Regarding claim 16**. The power supply device according to claim 13,  
wherein the switching circuit includes a plurality of switching elements having mutually different phases and switches between the ON-state and the OFF-state at the switching period, and wherein the basic duty ratio is set as a ratio of a period in which the ON-state of each switching element is maintained to the switching period independently from the variation in the rectified output.   
   
**Regarding claim 17**. The power supply device according to claim 16, wherein the basic duty ratio of each switching element is set based on a difference between a target power output to the output unit and an actual power output to the output unit.   
   
**Regarding claim 18**. The power supply device according to claim 16, wherein the basic duty ratio of each switching element varies at a predetermined period of which a phase is different from the basic duty ratio of the other switching elements.   
   
**Regarding claim 19**. The power supply device according to claim 18, wherein the controller modulates the basic duty ratio of each switching element by a two-phase modulation scheme.   
   
**Regarding claim 20**. A driving device comprising:  
the power supply device according to claim 1; and a motor connected to the output unit.   
   
**Regarding claim 21**. The driving device according to claim 20, wherein the controller sets the modulation duty ratio based on a difference between a target rotation speed of the motor and an actual rotation speed of the motor.   
   
**Regarding claim 22**. A power supply device comprising:  
an output unit configure to connect a load; an input unit configured to input an AC input varying at a predetermined period between a positive voltage and a negative voltage; a rectifier circuit configured to convert the AC input from the input unit into a rectified output which is one of the positive voltage and the negative voltage and include a smoothing capacitor that smoothes the rectified output; a switching circuit configured to connect the smoothing capacitor as an input, connect the output unit as an output, and switch between an ON-state in which an input impedance viewed from the smoothing capacitor is low and an OFF-state in which an input impedance is higher than the input impedance in the ON-state at a switching period shorter than the predetermined period; and a controller configured to set the switching period such that at least a portion of a period in which the switching period is a second period is included in a period from a time at which an input current input to the smoothing capacitor is generated to a time at which a voltage of the smoothing capacitor becomes a maximum when the switching circuit is controlled to switch between the ON-state and the OFF-state by varying the switching period between a first period and the second period greater than the first period.   
   
**Regarding claim 23**. A control method for a power supply device including:  
an output unit that connects a load, an input unit that inputs an AC input varying at a predetermined period between a positive voltage and a negative voltage, and a rectifier circuit that converts the AC input from the input unit into a rectified output which is one of the positive voltage and the negative voltage and includes a smoothing capacitor that smoothes the rectified output, and a switching circuit that connects the smoothing capacitor as an input, connects the output unit as an output, and switches between an ON-state in which an input impedance viewed from the smoothing capacitor is low and an OFF-state in which an input impedance is higher than the input impedance in the ON-state at a switching period shorter than the predetermined period, the control method comprising steps of: setting a modulation duty ratio such that at least a portion of a period in which a modulation width of the modulation duty ratio becomes a maximum value is included in a period from a time at which an input current input to the smoothing capacitor is generated to a time at which a voltage of the smoothing capacitor becomes a maximum when outputting a modulation duty ratio at which a duty ratio which is a ratio of a period in which the ON-state is maintained to the switching period is modulated in accordance with a variation in the rectified output; and controlling the switching between the ON-state and the OFF-state of the switching circuit by adjusting a length in which the ON-state is maintained and a length in which the OFF-state is maintained in accordance with the set modulation duty ratio.   
   
**Regarding claim 24**. The control method according to claim 23, wherein the step of setting the modulation duty ratio includes a step of calculating the modulation duty ratio based on a basic duty ratio set independently from the variation in the rectified output and the variation of the rectified output.   
   
**Regarding claim 25**. The control method according to claim 24,  
wherein the switching circuit includes a plurality of switching elements having mutually different phases and switches between the ON-state and the OFF-state at the switching period, and wherein the basic duty ratio is set as a ratio of a period in which the ON-state of each switching element is maintained to the switching period independently from the variation in the rectified output.   
   
**Regarding claim 26**. The control method according to claim 25, wherein, in the step of setting the modulation duty ratio, the basic duty ratio of each switching element is set based on a difference between a target power output to the output unit and an actual power output to the output unit.   
   
**Regarding claim 27**. The control method according to claim 25, wherein the basic duty ratio of each switching element varies at a predetermined period of which a phase is different from the basic duty ratio of the other switching elements.   
   
**Regarding claim 28**. The control method according to claim 27, wherein, in the step of setting the modulation duty ratio, the basic duty ratio is modulated by a two-phase modulation scheme.   
   
**Regarding claim 29**. A control method for a power supply device including an output unit that connects a load, an input unit that inputs an AC input varying at a predetermined period between a positive voltage and a negative voltage, a rectifier circuit that converts the AC input from the input unit into a rectified output which is one of the positive voltage and the negative voltage and includes a smoothing capacitor that smoothes the rectified output, and a switching circuit that connects the smoothing capacitor as an input, connects the output unit as an output, and switches between an ON-state in which an input impedance viewed from the smoothing capacitor is low and an OFF-state in which an input impedance is higher than the input impedance in the ON-state at a switching period shorter than the predetermined period, the control method comprising steps of:  
setting the switching period such that at least a portion of a period in which the switching period is a second period is included in a period from a time at which an input current input to the smoothing capacitor is generated to a time at which a voltage of the smoothing capacitor becomes a maximum when the switching circuit is controlled to switch between the ON-state and the OFF-state by varying the switching period between a first period and the second period greater than the first period; and switching between the ON-state and the OFF-state of the switching circuit at the set switching period.   
   
**Regarding claim 30**. A storage medium storing a program, wherein the program causes a computer to perform the control method according to claim 23.