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(54) **VAPOR SUPPLY SYSTEM AND VAPORIZATION DEVICE**

(57) Embodiments of this application relate to the field of e-cigarettes, and disclose a vapor supply system which can work normally and has a lower cost when a vaporization device and a power supply device are inserted rightly and reversely. The vaporization device includes a vaporizer and a first connection circuit. The power supply device includes a battery cell and a second connection circuit. The first connection circuit includes a data line port, a clock line port, two current input ports, a storage module connected to the data line port and the clock line port, and a bridge circuit connected between the storage module and the two current input ports. The second connection circuit includes two data transmission ports for corresponding connection to the data line port and the clock line port, a positive electrode output port and a negative electrode output port for corresponding connection to the two current input ports, and a controller connected to the two data transmission ports and two ends of the battery cell, where the controller is configured to control an output voltage of the battery cell to provide a directional current to the storage module through the bridge circuit when the vaporization device is engaged with the power supply device.

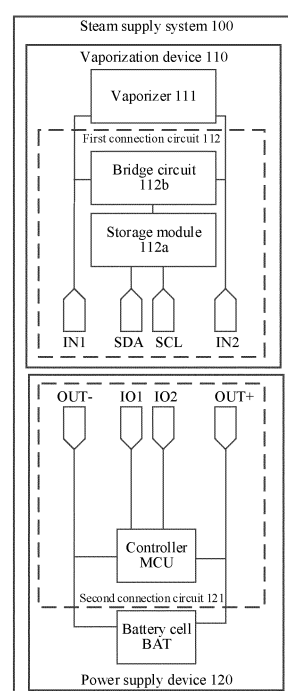


FIG. 1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202021848691.8, filed with the China National Intellectual Property Administration on August 27, 2020 and entitled "VAPOR SUPPLY SYSTEM AND VAPORIZATION DEVICE", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] Embodiments of this application relate to the field of e-cigarettes, and in particular, to a vapor supply system and a vaporization device.

BACKGROUND

[0003] Manufacturers and smokers have gradually increased requirements on a quality and experience of electronic cigarettes, and the electronic cigarettes are also developing in a direction of intelligence and multi-function.

[0004] In an implementation process of the embodiments of this application, it is found that the related art above has at least the following problems: At present, in a smart electronic cigarette/smart vaporizer, a module and a circuit for realizing data collection are usually set in a vaporization device, and a module and a circuit for realizing intelligent analysis and power supply are usually set in a power supply device. Due to a fixed electrical polarity of the module and the circuit, when using the smart electronic cigarette/smart vaporizer, a user needs to insert the vaporization device into the power supply device in a certain direction. To prevent electronic components in the smart vaporizer from being burned due to the reverse insertion by the user, currently, there are mainly two methods to avoid this situation.

[0005] One is an electronic vapor puffing device provided in the patent application CN106163305A. By arranging a switch circuit inside the vaporization device, which is configured to cut off current transmission to a heating element when transmitting data, a circuit is protected when the vaporization device is inserted reversely. However, this design will cause a complex circuit structure of the vaporization device. The other is to set a fool-proofing structure on a housing, but such a design will force a customer to lower an appearance standard. Adding concave and convex parts to prevent the consumer from reverse insertion operation reduces user experience and usually leads to an increase in a volume of the vaporizer.

SUMMARY

[0006] With regard to the foregoing defects in the related art, an objective of embodiments of this application

is to provide a vapor supply system which can work normally when a vaporization device and a power supply device are inserted rightly or reversely.

[0007] The objective of the embodiments of this application is achieved by using the following technical solutions:

To resolve the foregoing technical problem, according to a first aspect, an embodiment of this application provides a vapor supply system, including a vaporization device and a power supply device in wired communication, where the vaporization device includes a vaporizer and a first connection circuit, and the first connection circuit includes:

a data line port, a clock line port, two current input ports, a storage module connected to the data line port and the clock line port, and a bridge circuit connected between the storage module and the two current input ports; and the power supply device includes a battery cell and a second connection circuit, and the second connection circuit includes: two data transmission ports for corresponding connection to the data line port and the clock line port, a positive electrode output port and a negative electrode output port for corresponding connection to the two current input ports, and a controller separately connected to the two data transmission ports and two ends of the battery cell, where the controller is configured to control an output voltage of the battery cell to provide a directional current to the storage module through the bridge circuit when the vaporization device is engaged with the power supply device.

[0008] In some embodiments, when the vaporization device is engaged with the power supply device, the controller obtains a voltage of the first connection circuit through the two data transmission ports, and sets the two data transmission ports according to the voltage, to match the data line port and the clock line port in the first connection circuit.

[0009] In some embodiments, the second connection circuit further includes: an output control module connected between the battery cell and the positive electrode output port and the negative electrode output port, and the controller is further connected to the output control module to control the output control module to adjust the output voltage of the battery cell.

[0010] In some embodiments, the storage module includes a storage chip that includes a ground pin, a power supply pin, a data line pin connected to the data line port, and a clock line pin connected to the clock line port; and the bridge circuit includes:

a first diode, an anode of which is connected to one of the current input ports, and a cathode of which is

connected to the power supply pin;
 a second diode, an anode of which is connected to the ground pin, and a cathode of which is connected to the other current input port;
 a third diode, an anode of which is connected to the other current input port, and a cathode of which is connected to the power supply pin; and
 a fourth diode, an anode of which is connected to the ground pin, and a cathode of which is connected to the one of the current input ports, where a conduction voltage drop of the fourth diode is greater than conduction voltage drops of the first diode, the second diode, and the third diode.

[0011] In some embodiments, the bridge circuit further includes:

a first capacitor, two ends of which are separately connected to the ground pin and the power supply pin;
 a first resistor, connected in parallel between the two ends of the first capacitor;
 a second resistor, connected between the data line pin and the cathode of the third diode; and
 a third resistor, connected between the clock line pin and the cathode of the third diode.

[0012] In some embodiments, the conduction voltage drops of the first diode, the second diode, and the third diode are 0.3 V, and the conduction voltage drop of the fourth diode is 0.7 V.

[0013] In some embodiments, the second connection circuit further includes: an analog-to-digital converter, connected between the two data transmission ports and the controller.

[0014] In some embodiments, the storage chip is an electrically erasable programmable read-only memory.

[0015] In some embodiments, the vaporizer includes a heating element, and the heating element and the storage module are arranged in parallel between the two current input ports.

[0016] To resolve the foregoing technical problem, according to a second aspect, an embodiment of this application provides a vaporization device used in cooperation with a power supply device, including:

a vaporizer; and
 a first connection circuit, including:

a data line port, a clock line port, two current input ports,
 a storage module connected to the data line port and the clock line port, and
 a bridge circuit connected between the storage module and the two current input ports, where the two current input ports are configured to receive an input current and convert the input current through the bridge circuit to provide a direc-

tional current to the storage module when the vaporization device is engaged with the power supply device.

[0017] Compared with the related art, the beneficial effects of this application are as follows: different from the related art, the embodiments of this application provide a vapor supply system which can work normally and has a lower cost when a vaporization device and a power supply device are inserted rightly and reversely. The vaporization device includes a vaporizer and a first connection circuit. The power supply device includes a battery cell and a second connection circuit. The first connection circuit includes a data line port, a clock line port, two current input ports, a storage module connected to the data line port and the clock line port, and a bridge circuit connected between the storage module and the two current input ports. The second connection circuit includes two data transmission ports for corresponding connection to the data line port and the clock line port, a positive electrode output port and a negative electrode output port for corresponding connection to the two current input ports, and a controller connected to the two data transmission ports and two ends of the battery cell, where the controller is configured to control an output voltage of the battery cell to provide a directional current to the storage module through the bridge circuit when the vaporization device is engaged with the power supply device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the exemplary descriptions are not to be construed as limiting the embodiments. Elements/modules and steps in the accompanying drawings that have same reference numerals are represented as similar elements/modules and steps, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a principle block diagram of a vapor supply system according to Embodiment 1 of this application.

FIG. 2 is a principle block diagram of another vapor supply system according to Embodiment 1 of this application.

FIG. 3 is a schematic structural diagram of a circuit in a vapor supply system according to Embodiment 1 of this application.

FIG. 4 is a schematic diagram of a current direction of the vapor supply system shown in FIG. 3 when a vaporization device is inserted rightly into a power supply device.

FIG. 5 is a schematic diagram of a current direction of the vapor supply system shown in FIG. 3 when a vaporization device is inserted reversely into a power supply device.

DETAILED DESCRIPTION

[0019] This application is described in detail below with reference to specific embodiments. The following embodiments will help a person skilled in the art to further understand this application, but are not intended to limit this application in any form. It should be noted that a person of ordinary skill in the art may further make some variations and improvements without departing from the concept of this application. The variations and improvements shall all fall within the protection scope of this application.

[0020] To make objectives, technical solutions, and advantages of this application clearer and more understandable, this application is further described in detail below with reference to the accompanying drawings and the embodiments. It should be understood that the specific embodiments described herein are merely used for describing this application, instead of limiting this application.

[0021] It should be noted that if no conflict occurs, features in the embodiments of this application may be combined with each other and fall within the protection scope of this application. In addition, although functional module division is performed in the schematic diagram of the apparatus, in some cases, module division different from the module division in the apparatus may be used. In addition, words such as "first", "second" and "third" used in this specification do not limit data or an execution order, but are merely used for distinguishing same objects or similar objects whose functions and purposes are basically the same. When an element is described as being "connected" to another element, the element may be directly connected to the another element, or one or more intermediate elements may exist therebetween.

[0022] Unless otherwise defined, meanings of all technical and scientific terms used in this specification are the same as those usually understood by a person skilled in the art to which this application belongs. Terms used in the specification of this application are merely intended to describe objectives of the specific implementations, and are not intended to limit this application. The term "and/or" used in this specification includes any or all combinations of one or more related listed items.

[0023] In addition, technical features involved in the implementations of this application that are described below may be combined with each other provided that no conflict occurs.

[0024] To resolve the technical problem that a vaporization device in a current vapor supply system such as a smart vaporizer cannot be inserted rightly and reversely into a power supply device during operation, embodiments of this application provide a vapor supply system. A controller in the system is configured to control an output voltage of a battery cell to provide a directional current to a storage module through a bridge circuit when the vaporization device is engaged with a power supply device. In addition, a bridge circuit is provided to adjust a

current direction of the current in the vaporization device, so that both the vaporization device and the power supply device can work normally when inserted rightly and reversely.

[0025] Specifically, the embodiments of this application are further described below with reference to the accompanying drawings.

Embodiment 1

[0026] An embodiment of this application provides a vapor supply system. FIG. 1 shows a principle block diagram of a vapor supply system. The vapor supply system 100 includes a vaporization device 110 and a power supply device 120. The vaporization device 110 includes a vaporizer 111 and a first connection circuit 112, and the power supply device 120 includes a battery cell BAT and a second connection circuit 121.

[0027] The first connection circuit 112 includes: a data line port SDA, a clock line port SCL, two current input ports IN1 and IN2, a storage module 112a, and a bridge circuit 112b. The storage module 112a is connected to the data line port SDA and the clock line port SCL, the vaporizer 111 is connected to the two current input ports IN1 and IN2, and the bridge circuit 112b is connected between the storage module 112a and the two current input ports IN1 and IN2.

[0028] In some embodiments, a data line port SDA and a clock line port SCL in a vaporization device 110 are symmetrically arranged along a central axis of the vaporization device 110, and two current input ports IN1 and IN2 are also symmetrically arranged along the central axis of the vaporization device 110. Therefore, during use, the vaporization device 110 can realize connection and wired communication with the power supply device 120 in two orientations rotated 180 degrees relative to the central axis.

[0029] The second connection circuit 121 includes: two data transmission ports IO1 and IO2, a positive electrode output port OUT+, a negative electrode output port OUT-, and a controller MCU. The two data transmission ports IO1 and IO2 are connected to the data line port SDA and the clock line port SCL, the positive electrode output port OUT+ and the negative electrode output port OUT- are connected to the two current input ports IN1 and IN2, an anode of the battery cell BAT is connected to the positive electrode output port OUT+ and a cathode of the battery cell BAT is connected to the negative electrode output port OUT-, and the controller MCU is separately connected to the two data transmission ports IO1 and IO2 and two ends of the battery cell BAT. The controller MCU is configured to control an output voltage of the battery cell BAT to provide a directional current to the storage module 112a through the bridge circuit 112b when the vaporization device 110 is engaged with the power supply device 120. In some embodiments, the controller MCU is a chip having an analog-to-digital conversion ADC function.

[0030] When the vaporization device 110 is inserted

into the power supply device 120, that is, when the vaporization device 110 is engaged with the power supply device 120, the controller MCU obtains a voltage of the first connection circuit 112 through the two data transmission ports IO1 and IO2, and sets the two data transmission ports IO1 and IO2 according to the voltage, to match the data line port SDA and the clock line port SCL in the first connection circuit 112. The battery cell BAT supplies power to the first connection circuit 112 through the positive electrode output port OUT+ and the negative electrode output port OUT- after adjusting a current direction by the bridge circuit 112b.

[0031] In some embodiments, FIG. 2 shows a principle block diagram of another vapor supply system according to an embodiment of this application. Based on the vapor supply system 100 shown in FIG. 1, the second connection circuit 121 further includes: an output control module 121a connected between the battery cell BAT, the positive electrode output port OUT+, and the negative electrode output port OUT-, and the controller MCU is further connected to the output control module 121a to control the output control module 121a to adjust the output voltage of the battery cell BAT. In some embodiments, the output control module 121 may be a transformer.

[0032] In some embodiments, FIG. 3 shows a circuit structure of a vapor supply system according to an embodiment of this application. The storage module 112a is a storage chip, including a ground pin P_GND, a power supply pin P_VCC, a data line pin P_SDA connected to the data line port SDA, and a clock line pin P_SCL connected to the clock line port SCL.

[0033] The storage chip may be an electrically erasable programmable read-only memory EEPROM, which is configured to obtain and storage parameters related to the vaporization device 110. For example, the parameters include information such as a type of vaporized liquid, working parameters of a vaporizer, manufacturer information, remaining amount of the vaporized liquid, or remaining amount of time/number of times the vaporization device is inhalable. Another example is vaporization data, including information such as an appropriate temperature and smoke concentration for the operation of the vaporizer. In some other embodiments, the storage chip may further select non-volatile storage structures of other types or models.

[0034] The second connection circuit 121 further includes: an analog-to-digital converter (not shown in the figure), connected between the two data transmission ports IO1 and IO2 and the controller MCU, and configured to convert a collected voltage analog signal into a digital signal.

[0035] The bridge circuit 112b includes: a first diode D1, an anode of which is connected to one of the current input ports IN1, and a cathode of which is connected to the power supply pin P_VCC; a second diode D2, an anode of which is connected to the ground pin P_GND, and a cathode of which is connected to the other current input port IN2; a third diode D3, an anode of which is

separately connected to the other current input port IN2 and the cathode of the second diode D2, and a cathode of which is separately connected to the power supply pin P_VCC and the cathode of the first diode D1; and a fourth diode D4, an anode of which is separately connected to the ground pin P_GND and the anode of the second diode D2, and a cathode of which is separately connected to the one of the current input ports IN1 and the anode of the first diode D1, where a conduction voltage drop of the fourth diode D4 is greater than conduction voltage drops of the first diode D1, the second diode D2, and the third diode D3. The bridge circuit 112b provided in this embodiment of this application utilizes unilateral conductivity of the diode to achieve current commutation, and may further use a combination of a silicon diode and a germanium diode, or use a PN junction of a triode, a thyristor, or the like.

[0036] Specifically, in this embodiment of this application, the conduction voltage drops of the first diode D1, the second diode D2, and the third diode D3 are 0.3 V, and the conduction voltage drop of the fourth diode D4 is 0.7 V. The vaporizer 111 includes a heating element Rm, and the heating element Rm and the storage module 112a (the storage chip) are arranged in parallel between the two current input ports IN1 and IN2, and the heating element Rm is configured to vaporize e-liquid.

[0037] In some other embodiments, the bridge circuit 112b may further be composed of other switch tubes, for example, an MOS tube, a triode, or the like. Specifically, the switch tubes may be selected according to actual requirements without being limited to this embodiment of this application.

[0038] The bridge circuit 112b further includes: a first capacitor C1, two ends of which are separately connected to the ground pin P_GND and the power supply pin P_VCC; a first resistor R1, connected in parallel between the two ends of the first capacitor C1; a second resistor R2, connected between the data line pin P_SDA and the cathode of the third diode D3; and a third resistor R3, connected between the clock line pin P_SCL and the cathode of the third diode D3.

[0039] It should be noted that in this embodiment of this application, the bridge circuit 112b and the heating element Rm are connected in parallel between the two current input ports IN1 and IN2, so that the diodes or the switch tubes in the bridge circuit 112b do not need to consider a large current demand of the heating element Rm, and an optional range for the type of the diodes or the switch tubes in the bridge circuit 112b is larger.

[0040] The vapor supply system provided in this embodiment of this application has two working states.

[0041] State 1: When the vaporization device 110 is inserted rightly into the power supply device 120, referring to FIG. 4, FIG. 4 shows a current direction of the vapor supply system 100 shown in FIG. 3 when the vaporization device 110 is inserted rightly into the power supply device 120. Dashed lines indicate a direction of the current flowing from a positive electrode of the battery

cell BAT to the storage module 112a, and dotted lines indicate a direction of the current flowing out of the storage module 112a back to a negative electrode of the battery cell BAT. When the vaporization device 110 is inserted into and connected to the power supply device 120, the current input port IN1 is connected to the negative electrode output port OUT-, the data line port SDA is connected to the data transmission port IO1, the clock line port SCL is connected to the data transmission port IO2, and the current input port IN2 is connected to the positive electrode output port OUT+. The controller MCU obtains a voltage of the first connection circuit 112 as -0.7 V (the third diode D3 and the fourth diode D4 are conducted) through the two data transmission ports IO1 and IO2. In this case, the controller MCU can determine according to this that the vaporization device 110 is in a state of being inserted rightly into and connected to the power supply device 120, set the data transmission port IO1 as an interface connected to the data line port SDA and configured to receive a data signal, and set the data transmission port IO2 as an interface connected to the clock line port SCL and configured to receive a clock signal, so as to obtain data of a vaporizer collected by the storage module 112a. In addition, the battery cell BAT supplies power to the heating element Rm and the storage module 112a respectively. Specifically, a sequence of electronic components and ports where a current flows through the heating element Rm is as follows: a positive electrode of the battery cell positive electrode BAT, the positive electrode output port OUT+, the current input port IN2, the heating element Rm, the current input port IN1, the negative electrode output port OUT-, a negative electrode of the battery cell positive electrode BAT; and a sequence of electronic components and ports where a current flows through the storage module 112a is as follows: a positive electrode of the battery cell positive electrode BAT, the positive electrode output port OUT+, the current input port IN2, the third diode D3, the power supply pin P_VCC, the storage module 112a, the fourth diode D4, the current input port IN1, the negative electrode output port OUT-, a negative electrode of the battery cell positive electrode BAT.

[0042] State 2: When the vaporization device 110 is inserted reversely into the power supply device 120, referring to FIG. 5, FIG. 5 shows a current direction of the vapor supply system 100 shown in FIG. 3 when the vaporization device 110 is inserted reversely into the power supply device 120. Dashed lines indicate a direction of the current flowing from a positive electrode of the battery cell BAT to the storage module 112a, and dotted lines indicate a direction of the current flowing out of the storage module 112a back to a negative electrode of the battery cell BAT. When the vaporization device 110 is inserted into and connected to the power supply device 120, the current input port IN1 is inserted into the positive electrode output port OUT+, the data line port SDA is inserted into the data transmission port IO2, the clock line port SCL is inserted into the data transmission port

IO1, and the current input port IN2 is inserted into the negative electrode output port OUT-. The controller MCU obtains a voltage of the first connection circuit 112 as -0.3 V (the first diode D1 and the second diode D2 are conducted) through the two data transmission ports IO1 and IO2. In this case, the controller MCU determines according to this that the vaporization device 110 is inserted reversely into and connected to the power supply device 120, sets the data transmission port IO2 as an interface connected to the data line port SDA and configured to receive a data signal, and sets the data transmission port IO1 as an interface connected to the clock line port SCL and configured to receive a clock signal, so as to obtain data of a vaporizer collected by the storage module 112a. In addition, the battery cell BAT supplies power to the heating element Rm and the storage module 112a respectively. Specifically, a sequence of electronic components and ports where a current flows through the heating element Rm is as follows: a positive electrode of the battery cell positive electrode BAT, the positive electrode output port OUT+, the current input port IN1, the heating element Rm, the current input port IN2, the negative electrode output port OUT-, a negative electrode of the battery cell positive electrode BAT; and a sequence of electronic components and ports where a current flows through the storage module 112a is as follows: a positive electrode of the battery cell positive electrode BAT, the positive electrode output port OUT+, the current input port IN1, the first diode D1, the power supply pin P_VCC, the storage module 112a, the second diode D2, the current input port IN2, the negative electrode output port OUT-, a negative electrode of the battery cell positive electrode BAT.

Embodiment 2

[0043] An embodiment of this application provides a vaporization device used in cooperation with a power supply device, including:

a vaporizer; and
a first connection circuit, including:

a data line port, a clock line port, two current input ports,
a storage module connected to the data line port and the clock line port, and
a bridge circuit connected between the storage module and the two current input ports, where the two current input ports are configured to receive an input current and convert the input current through the bridge circuit to provide a directional current to the storage module when the vaporization device is engaged with the power supply device.

[0044] It should be noted that a structure, connection manner and working manner of the vaporization device

may be the same as those of the vaporization device 110 shown in the foregoing Embodiment 1 and the accompanying drawings 1 to 5. Specifically, for the structure and connection manner of the vaporization device 110, reference may be made to Embodiment 1 and the accompanying drawings 1 to 5, and details are not described herein again.

[0045] This embodiment of this application provides a vapor supply system which can work normally and has a lower cost when a vaporization device and a power supply device are inserted rightly and reversely. The vaporization device includes a vaporizer and a first connection circuit. The power supply device includes a battery cell and a second connection circuit. The first connection circuit includes a data line port, a clock line port, two current input ports, a storage module connected to the data line port and the clock line port, and a bridge circuit connected between the storage module and the two current input ports. The second connection circuit includes two data transmission ports for corresponding connection to the data line port and the clock line port, a positive electrode output port and a negative electrode output port for corresponding connection to the two current input ports, and a controller connected to the two data transmission ports and two ends of the battery cell, where the controller is configured to control an output voltage of the battery cell to provide a directional current to the storage module through the bridge circuit when the vaporization device is engaged with the power supply device.

[0046] It should be noted that the foregoing described device embodiments are merely examples. The units described as separate parts may or may not be physically separate, and the parts displayed as units may or may not be physical units, may be located in one position, or may be distributed on a plurality of network units. Some or all of the modules may be selected according to actual requirements to implement the objectives of the solutions of the embodiments.

[0047] Finally, it should be noted that: the foregoing embodiments are merely used for describing the technical solutions of this application, but are not intended to limit this application. Under the ideas of this application, the technical features in the foregoing embodiments or different embodiments may also be combined, the steps may be performed in any order, and many other changes of different aspects of this application also exists as described above, and these changes are not provided in detail for simplicity. Although this application is described in detail with reference to the foregoing embodiments, a person of ordinary skill in the art should understand that: modifications may still be made to the technical solutions described in the foregoing embodiments, or equivalent replacements may be made to some of the technical features; and these modifications or replacements do not cause the essence of corresponding technical solutions to depart from the scope of the technical solutions in the embodiments of this application.

Claims

1. A vapor supply system, comprising a vaporization device and a power supply device in wired communication, wherein the vaporization device comprises a vaporizer and a first connection circuit, and the first connection circuit comprises:

a data line port, a clock line port, two current input ports,
a storage module connected to the data line port and the clock line port, and
a bridge circuit connected between the storage module and the two current input ports; and
the power supply device comprises a battery cell and a second connection circuit, and the second connection circuit comprises:

two data transmission ports for corresponding connection to the data line port and the clock line port,
a positive electrode output port and a negative electrode output port for corresponding connection to the two current input ports, and
a controller separately connected to the two data transmission ports and two ends of the battery cell, wherein the controller is configured to control an output voltage of the battery cell to provide a directional current to the storage module through the bridge circuit when the vaporization device is engaged with the power supply device.

2. The vapor supply system according to claim 1, wherein when the vaporization device is engaged with the power supply device, the controller obtains a voltage of the first connection circuit through the two data transmission ports, and sets the two data transmission ports according to the voltage, to match the data line port and the clock line port in the first connection circuit.

3. The vapor supply system according to claim 1, wherein

the second connection circuit further comprises:
an output control module connected between the battery cell and the positive electrode output port and the negative electrode output port, and
the controller is further connected to the output control module to control the output control module to adjust the output voltage of the battery cell.

4. The vapor supply system according to any one of claims 1 to 3, wherein

the storage module comprises a storage chip

that comprises a ground pin, a power supply pin, a data line pin connected to the data line port, and a clock line pin connected to the clock line port; and the bridge circuit comprises:

a first diode, an anode of which is connected to one of the current input ports, and a cathode of which is connected to the power supply pin;
 a second diode, an anode of which is connected to the ground pin, and a cathode of which is connected to the other current input port;
 a third diode, an anode of which is connected to the other current input port, and a cathode of which is connected to the power supply pin; and
 a fourth diode, an anode of which is connected to the ground pin, and a cathode of which is connected to the one of the current input ports, wherein
 a conduction voltage drop of the fourth diode is greater than conduction voltage drops of the first diode, the second diode, and the third diode.

5. The vapor supply system according to claim 4, wherein the bridge circuit further comprises:

a first capacitor, two ends of which are separately connected to the ground pin and the power supply pin;
 a first resistor, connected in parallel between the two ends of the first capacitor;
 a second resistor, connected between the data line pin and the cathode of the third diode; and
 a third resistor, connected between the clock line pin and the cathode of the third diode.

6. The vapor supply system according to claim 4, wherein

the conduction voltage drops of the first diode, the second diode, and the third diode are 0.3 V, and the conduction voltage drop of the fourth diode is 0.7 V.

7. The vapor supply system according to claim 4, wherein

the second connection circuit further comprises: an analog-to-digital converter, connected between the two data transmission ports and the controller.

8. The vapor supply system according to claim 4, wherein

the storage chip is an electrically erasable programmable read-only memory.

9. The vapor supply system according to claim 1,

wherein

the vaporizer comprises a heating element, and the heating element and the storage module are arranged in parallel between the two current input ports.

10. A vaporization device used in cooperation with a power supply device, comprising:

a vaporizer; and
 a first connection circuit, comprising:

a data line port, a clock line port, two current input ports,
 a storage module connected to the data line port and the clock line port, and
 a bridge circuit connected between the storage module and the two current input ports, wherein the two current input ports are configured to receive an input current and convert the input current through the bridge circuit to provide a directional current to the storage module when the vaporization device is engaged with the power supply device.

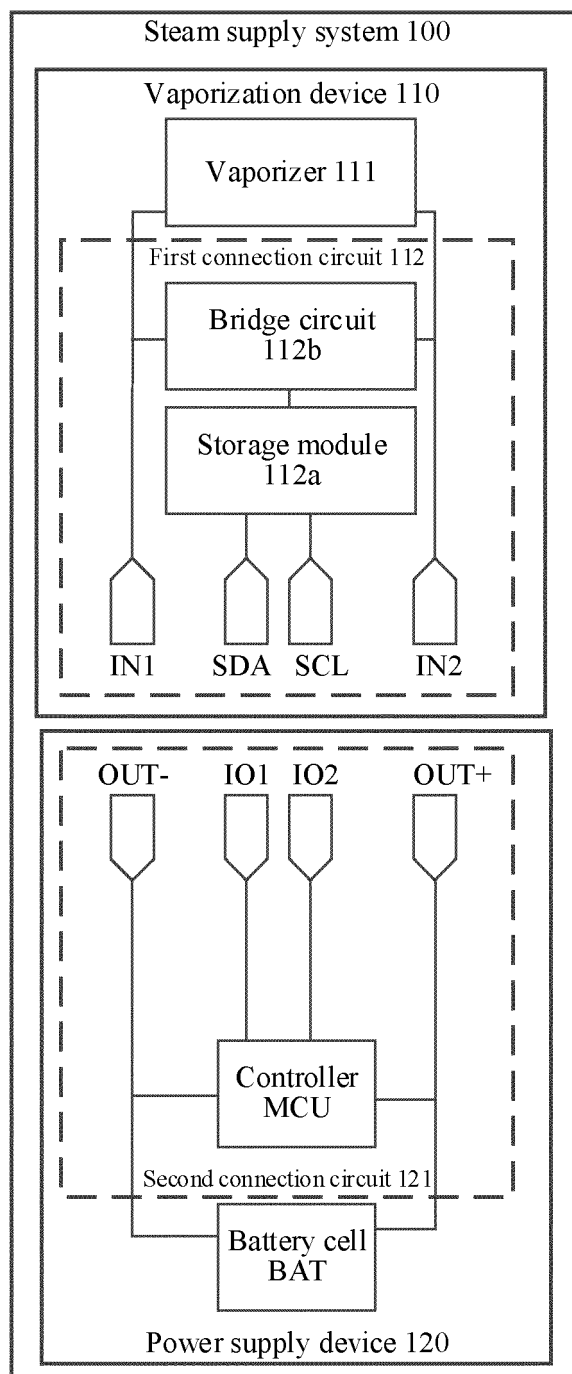


FIG. 1

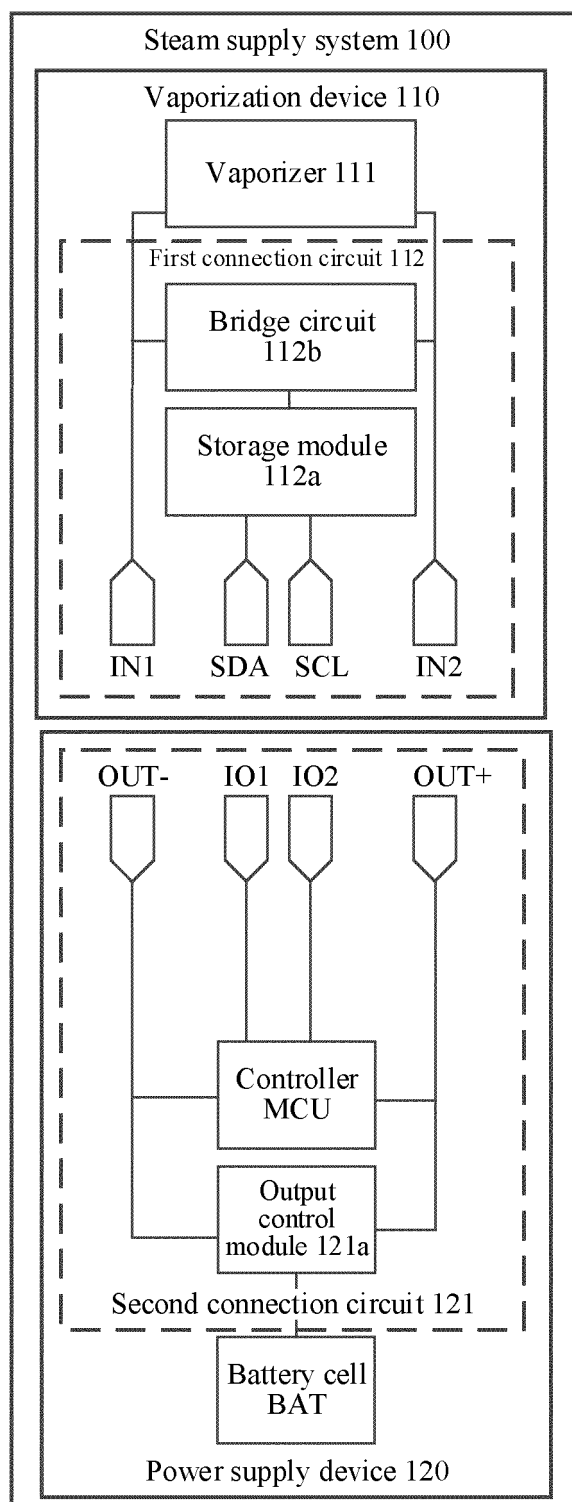


FIG. 2

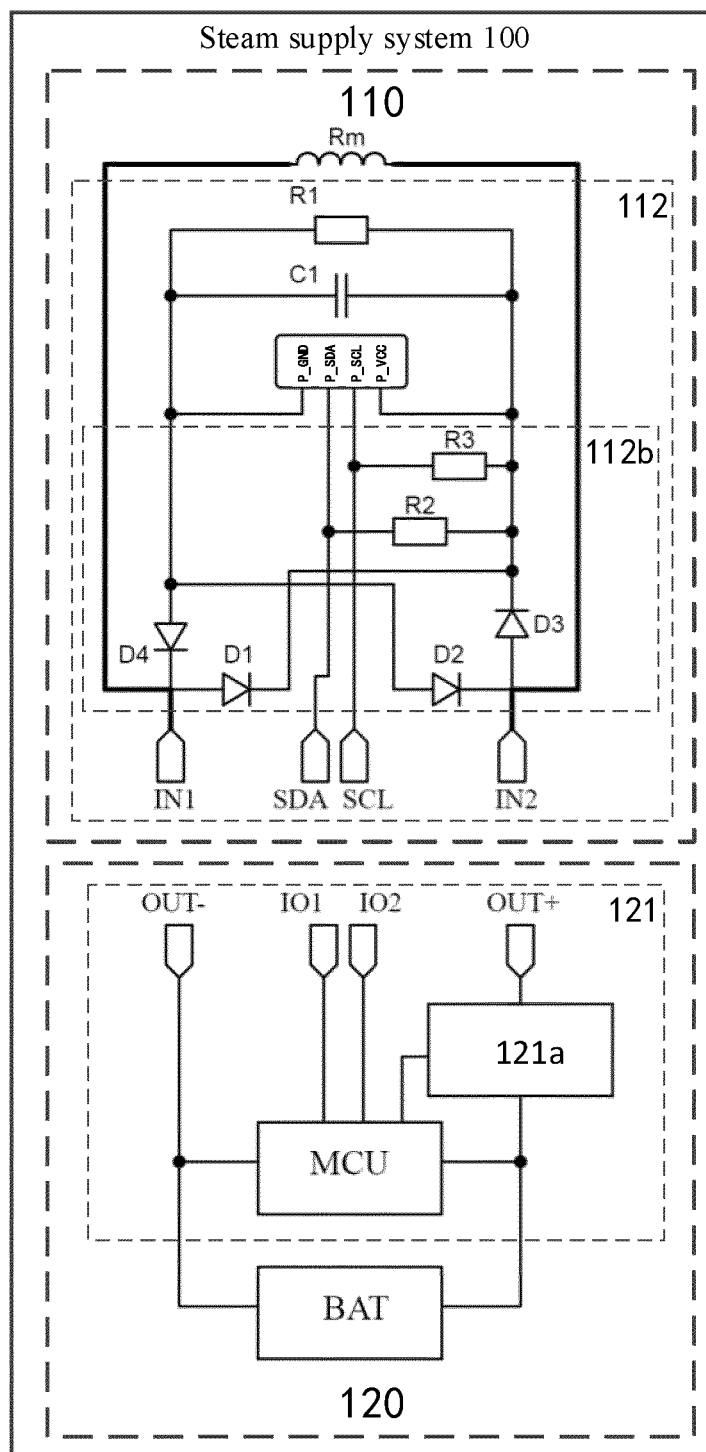


FIG. 3

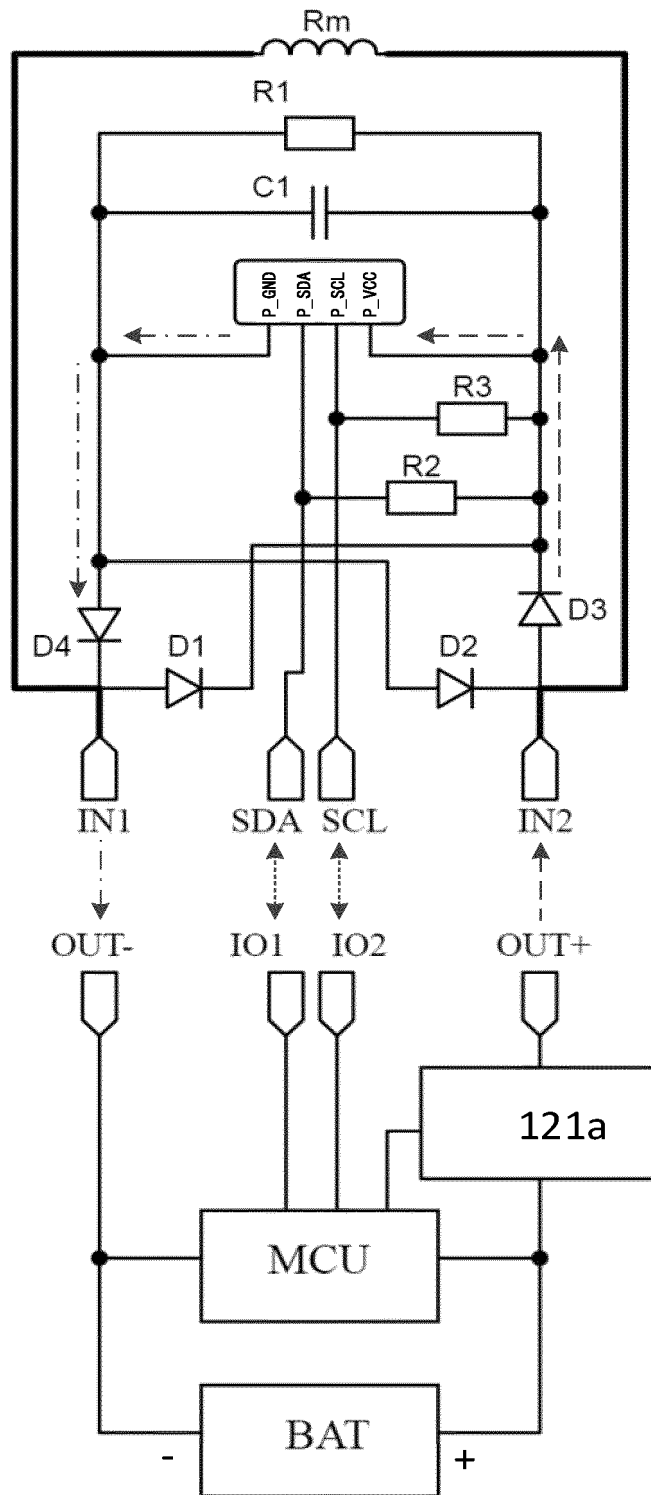


FIG. 4

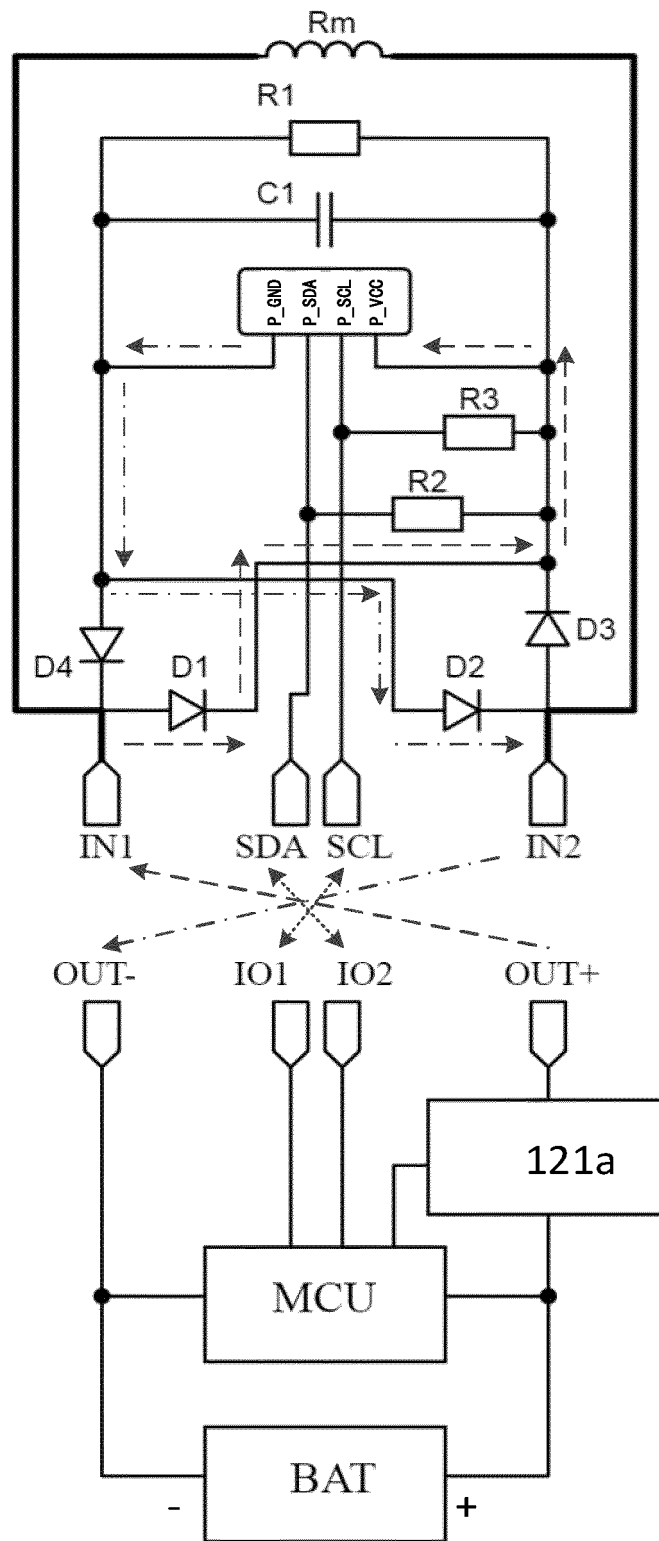


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/115052

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/10(2020.01)i; A24F 40/46(2020.01)i; A24F 40/40(2020.01)i

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)

A24F

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

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

CNABS; CNTXT; CNKI; VEN; WOTXT; USTXT; EPTXT: 深圳市合元科技, 匡换珍, 徐中立, 李永海, 蒸汽, 雾化, 汽化, 桥, 电路, 时钟, 存储, 定向电流, steam+, atomiz+, vapor+, bridge, circuit, clock, storage, directional current

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 213819833 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 30 July 2021 (2021-07-30) claims 1-10, description paragraphs [0054]-[0080], figures 1-5	1-10
Y	CN 210445690 U (SHENZHEN SIYUANBEIER TECHNOLOGY CO., LTD.) 05 May 2020 (2020-05-05) description, paragraphs [0035]-[0047], and figures 1-5	1-10
Y	CN 210780127 U (WU, Hao) 16 June 2020 (2020-06-16) description paragraphs [0040]-[0057], figures 1, 2	1-10
A	CN 105577167 A (XI'AN SYSTEM SENSOR ELECTRONICS CO., LTD.) 11 May 2016 (2016-05-11) entire document	1-10
A	CN 211183454 U (ANHUI HUAMI INFORMATION TECHNOLOGY CO., LTD.) 04 August 2020 (2020-08-04) entire document	1-10
A	CN 206727902 U (XINGYIDA (SHENZHEN) NEW ENERGY CO., LTD.) 08 December 2017 (2017-12-08) entire document	1-10

☐ Further documents are listed in the continuation of Box C.
☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 22 October 2021	Date of mailing of the international search report 17 November 2021
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 China	Authorized officer
Facsimile No. (86-10)62019451	Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/115052

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Patent document cited in search report			Publication date (day/month/year)		Patent family member(s)		Publication date (day/month/year)	
CN	213819833	U	30 July 2021		None			
CN	210445690	U	05 May 2020		None			
CN	210780127	U	16 June 2020		None			
CN	105577167	A	11 May 2016		CN	105577167	B	20 November 2018
CN	211183454	U	04 August 2020		None			
CN	206727902	U	08 December 2017		None			

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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