

US Patent & Trademark Office

Patent Public Search | Text View

United States Patent Application Publication

20250260198

Kind Code

A1

Publication Date

August 14, 2025

Inventor(s)

Li; Feng et al.

ELECTRICAL DEVICE AND CONNECTING STRUCTURE THEREOF

Abstract

A connecting structure of an electrical device includes an input positive terminal, an output positive terminal, an input negative terminal, and an output negative terminal. Each of the input positive terminal, the output positive terminal, the input negative terminal and the output negative terminal includes a plugging part. Specifically, the plugging parts of the input positive terminal and the output positive terminal are different, so that the situation that a worker wrongly connects the input positive terminal and the output positive terminal is avoided; and/or, the plugging parts of the input negative terminal and the output negative terminal are different, so that the situation that a worker wrongly connects the input negative terminal and the output negative terminal is avoided.

Inventors: Li; Feng (Shanghai, CN), Wei; Shiyuan (Shanghai, CN), Yang; Yu (Shanghai, CN)

Applicant: Sungrow (Shanghai) Co., Ltd. (Shanghai, CN)

Family ID: 84816418

Assignee: Sungrow (Shanghai) Co., Ltd. (Shanghai, CN)

Appl. No.: 19/103443

Filed (or PCT Filed): May 30, 2023

PCT No.: PCT/CN2023/097042

Foreign Application Priority Data

CN 202222448371.9

Sep. 15, 2022

Publication Classification

Int. Cl.: H01R13/64 (20060101)

U.S. Cl.:

CPC H01R13/64 (20130101);

Background/Summary

[0001] This application claims the priority to Chinese Patent Application No. 202222448371.9, titled “ELECTRICAL DEVICE AND CONNECTING STRUCTURE THEREOF”, filed with the China National Intellectual Property Administration on Sep. 15, 2022, the entire disclosure of which is incorporated herein by reference.

FIELD

[0002] The present application relates to the technical field of wiring of electrical devices, and in particular to an electrical device and a connecting structure thereof.

BACKGROUND

[0003] At present, electrical devices are connected via terminals at direct-current sides.

Specifically, the electrical device has input terminals and output terminals. The input terminals include a positive input terminal and a negative input terminal, and the output terminals include a positive output terminal and a negative output terminal. Since the input terminals and the output terminals are both universal terminals, a worker is apt to confuse the input terminals with the output terminals for connection. For example, a positive input terminal might be mistakenly taken as a positive output terminal for connection with a corresponding device, or a negative output terminal might be mistakenly taken as a negative input terminal for connection with a corresponding device, causing the electrical device to fail to operate normally and leading to safety hazards. Furthermore, if the input terminals and the output terminals are mistakenly connected, the product has to be returned to the factory, resulting in a huge waste of money and time.

[0004] In summary, a problem to be solved by those skilled in the art is how to avoid mistaken connection of the input terminals and the output terminals by the worker.

SUMMARY

[0005] In view of this, an object of the present application is to provide a connecting structure of an electrical device, to avoid mistaken connection of an input terminal and an output terminal by a worker. Another object of the present application is to provide an electrical device that includes the above connecting structure.

[0006] To achieve the above objects, the following technical solutions are provided according to the present application.

[0007] A connecting structure of an electrical device includes a positive input terminal, a positive output terminal, a negative input terminal, and a negative output terminal, where [0008] the positive input terminal, the positive output terminal, the negative input terminal, and the negative output terminal each includes a plug connection portion; and [0009] the plug connection portion of the positive input terminal is different from the plug connection portion of the positive output terminal, and/or, the plug connection portion of the negative input terminal is different from the plug connection portion of the negative output terminal.

[0010] Optionally, the plug connection portion of the positive input terminal is different from the plug connection portion of the negative input terminal, and/or, the plug connection portion of the positive output terminal is different from the plug connection portion of the negative output terminal.

[0011] Optionally, the difference between the plug connection portions includes a difference in

shapes between the plug connection portions and/or a difference in sizes between the plug connection portions.

[0012] Optionally, the positive input terminal, the positive output terminal, the negative input terminal, and the negative output terminal each includes a connecting portion configured to connect a wire with the plug connection portion; where [0013] the connecting portion of the positive input terminal is different from the connecting portion of the positive output terminal, and/or, the connecting portion of the negative input terminal is different from the connecting portion of the negative output terminal.

[0014] Optionally, the connecting portion of the positive input terminal is different from the connecting portion of the negative input terminal, and/or, the connecting portion of the positive output terminal is different from the connecting portion of the negative output terminal.

[0015] Optionally, the difference between the connecting portions includes a difference in shapes between the connecting portions and/or a difference in sizes between the connecting portions.

[0016] Optionally, the connecting structure of the electrical device further includes: [0017] a positive input wire configured to connect a housing of the electrical device with the positive input terminal, [0018] a positive output wire configured to connect the housing with the positive output terminal, [0019] a negative input wire configured to connect the housing with the negative input terminal, and [0020] a negative output wire configured to connect the housing with the negative output terminal, where [0021] the positive input wire is different from the positive output wire, and/or, the negative input wire is different from the negative output wire.

[0022] Optionally, the positive input wire is different from the negative input wire, and/or, the positive output wire is different from the negative output wire.

[0023] Optionally, the positive input wire, the positive output wire, the negative input wire, and the negative output wire are wires, and the difference between the wires includes a difference in lengths between the wires, and/or a difference in colors between the wires, and/or a difference in outer diameters between the wires.

[0024] Optionally, the negative input terminal and the negative output terminal are both female plugs, and the positive input terminal and the positive output terminal are both male plugs.

[0025] Optionally, the number of the positive input terminal and the number of the negative input terminal are both one.

[0026] Optionally, the number of the positive input terminal and the number of the negative input terminal are both at least two, and the positive input terminals are in one-to-one correspondence with the negative input terminals.

[0027] Optionally, the plug connection portions of any two of the positive input terminals are the same, and/or, the plug connection portions of any two of the negative input terminals are the same.

[0028] Optionally, the positive output terminal of the electrical device is configured to be connected to a negative output terminal of another electrical device by insertion.

[0029] Based on the above connecting structure of the electrical device, an electrical device is further provided according to the present application, including the connecting structure of the electrical device according to any one of the above solutions.

[0030] According to the connecting structure of the electrical device provided in the present application, since the plug connection portions of the positive input terminal and the positive output terminal are different, the insertion cannot be achieved if the worker mistakenly use the positive input terminal as the positive output terminal, or use the positive output terminal as the positive input terminal, which avoids mistaken connection of the positive input terminal and the positive output terminal by the worker. And/or, since the plug connection portions of the negative input terminal and the negative output terminal are different, the insertion cannot be achieved if the worker mistakenly use the negative input terminal as the negative output terminal, or use the negative output terminal as the negative input terminal, which avoids mistaken connection of the negative input terminal and the negative output terminal by the worker. Thus, with the above

connecting structure of the electrical device, mistaken connection of the input terminals and the output terminals by the worker can be avoided.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] For more clearly illustrating embodiments of the present application or the technical solutions in the conventional technology, drawings referred to describe the embodiments or the conventional technology will be briefly described hereinafter. Apparently, the drawings in the following description are only some examples of the present application, and for those skilled in the art, other drawings may be obtained based on these drawings without any creative efforts.

[0032] FIG. 1 is a schematic view showing the structure of a connecting structure of an electrical device according to an embodiment of the present application;

[0033] FIG. 2 is a front view of the connecting structure of the electrical device according to the embodiment of the present application;

[0034] FIG. 3 is a schematic view showing the structure of a negative output terminal of the connecting structure of the electrical device according to an embodiment of the present application;

[0035] FIG. 4 is a schematic view showing the structure of a first negative input terminal of the connecting structure of the electrical device according to an embodiment of the present application;

[0036] FIG. 5 is a schematic view showing the structure of a first positive input terminal of the connecting structure of the electrical device according to an embodiment of the present application;

[0037] FIG. 6 is a schematic view showing the structure of a positive output terminal of the connecting structure of the electrical device according to an embodiment of the present application;

[0038] FIG. 7 is a schematic view showing the structure of a second positive input terminal of the connecting structure of the electrical device according to an embodiment of the present application;

[0039] FIG. 8 is a schematic view showing the structure of a second negative input terminal of the connecting structure of the electrical device according to an embodiment of the present application;

[0040] FIG. 9 is a schematic view showing the connection between two electrical devices according to an embodiment of the present application; and

[0041] FIG. 10 is a partially enlarged view of FIG. 9.

TABLE-US-00001 Reference numerals: 11 negative output terminal, 12 negative input terminal, 13 positive input terminal, 14 positive output terminal, 12a first negative input 12b second negative input terminal, terminal, 13a first positive input 13b second positive input terminal, terminal, 21 negative output wire, 22 negative input wire, 23 positive input wire, 24 positive output wire, 22a first negative input wire, 22b second negative input wire, 23a first positive input 23b second positive input terminal, terminal, 31 housing, 01 plug connection portion, 02 connecting portion.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0042] Technical solutions according to the embodiments of the present application will be described clearly and completely as follows in conjunction with the accompany drawings in the embodiments of the present application. It is obvious that the described embodiments are only a part of the embodiments according to the present application, rather than all of the embodiments. All the other embodiments obtained by those skilled in the art based on the embodiments in the present application without any creative work belong to the scope of protection of the present application.

[0043] As shown in FIGS. 1 and 2, a connecting structure of an electrical device according to an embodiment of the present application includes a positive input terminal 13, a positive output terminal 14, a negative input terminal 12, and a negative output terminal 11.

[0044] Specifically, the negative input terminal 12 and the positive input terminal 13 are both connected to a junction box or other devices, and the positive output terminal 14 and the negative

output terminal **11** are both connected to a junction box or other devices.

[0045] The positive input terminal **13**, the positive output terminal **14**, the negative input terminal **12**, and the negative output terminal **11** each includes a plug connection portion **01**. Specifically, the plug connection portion **01** of the positive input terminal **13** is different from the plug connection portion **01** of the positive output terminal **14**; and/or, the plug connection portion **01** of the negative input terminal **12** is different from the plug connection portion **01** of the negative output terminal **11**.

[0046] According to the above connecting structure of the electrical device, since the plug connection portions **01** of the positive input terminal **13** and the positive output terminal **14** are different, the insertion cannot be achieved if a worker mistakenly use the positive input terminal **13** as the positive output terminal **14**, or use the positive output terminal **14** as the positive input terminal **13**, realizing a fool-proofing effect, thereby avoiding mistaken connection of the positive input terminal **13** and the positive output terminal **14** by the worker. Since the plug connection portions **01** of the negative input terminal **12** and the negative output terminal **11** are different, the insertion cannot be achieved if the worker mistakenly use the negative input terminal **12** as the negative output terminal **11**, or use the negative output terminal **11** as the negative input terminal **12**, realizing a fool-proofing effect, thereby avoiding mistaken connection of the negative input terminal **12** and the negative output terminal **11**. Thus, with the above connecting structure of the electrical device, mistaken connection of the input terminals and the output terminals by the worker can be avoided.

[0047] In a specific example, the plug connection portion **01** of the positive input terminal **13** is different from the plug connection portion **01** of the negative input terminal **12**. As such, mistaken connection of the positive input terminal **13** and the negative input terminal **12** by the worker can be avoided.

[0048] Correspondingly, the plug connection portion **01** of the positive output terminal **14** is different from the plug connection portion **01** of the negative output terminal **11**. As such, mistaken connection of the positive output terminal **14** and the negative output terminal **11** by the worker can be avoided.

[0049] The above differences between the plug connection portions **01** can be realized in many ways. Specifically, the above differences between the plug connection portions **01** include a difference in shapes between the plug connection portions **01** and/or a difference in sizes between the plug connection portions **01**. Certainly, the plug connection portions **01** may be different from each other in colors, which is not limited in the present embodiment.

[0050] In the above connecting structure of the electrical device, each of the positive input terminal **13**, the positive output terminal **14**, the negative input terminal **12**, and the negative output terminal **11** further includes a connecting portion **02** configured for connecting a wire with the plug connection portion **01**.

[0051] As shown in FIGS. 2, 5, 6 and 7, the connecting portion **02** of the positive input terminal **13** may be different from the connecting portion **02** of the positive output terminal **14**, to avoid mistaken connections of the positive input terminal **13** and the positive output terminal **14**.

[0052] Correspondingly, as shown in FIGS. 2, 3, 4 and 8, the connecting portion **02** of the negative input terminal **12** may be different from the connecting portion **02** of the negative output terminal **11**, to avoid mistaken connections of the negative input terminal **12** and the negative output terminal **11**.

[0053] Correspondingly, as shown in FIGS. 2, 4, 5, 7 and 8, the connecting portion **02** of the positive input terminal **13** may be different from the connecting portion **02** of the negative input terminal **12**, to avoid mistaken connections of the positive input terminal **13** and the negative input terminal **12**.

[0054] Correspondingly, as shown in FIGS. 2, 3 and 6, the connecting portion **02** of the positive output terminal **14** may be different from the connecting portion **02** of the negative output terminal

11, to avoid mistaken connections of the positive output terminal **14** and the negative output terminal **11**.

[0055] The above differences between the connecting portions **02** can be realized in many ways. Specifically, the above differences between the connecting portions **02** include a difference in shapes between the connecting portions **02** and/or a difference in sizes between the connecting portions **02**. Certainly, the connecting portions **02** may be different from each other in colors, which is not limited in the present embodiment.

[0056] In a specific example, the above connecting structure of the electrical device further includes a positive input wire **23**, a positive output wire **24**, a negative input wire **22**, and a negative output wire **21**. The positive input wire **23** is configured to connect a housing **31** of the electrical device with the positive input terminal **13**, and the positive output wire **24** is configured to connect the housing **31** with the positive output terminal **14**. The negative input wire **22** is configured to connect the housing **31** with the negative input terminal **12**, and the negative output wire **21** is configured to connect the housing **31** with the negative output terminal **11**.

[0057] Each of the positive input wire **23**, the positive output wire **24**, the negative input wire **22** and the negative output wire **21** is generally referred to as the wire mentioned above.

[0058] In the present embodiment, the positive input wire **23** is different from the positive output wire **24**, to avoid mistaken connections of the positive input terminal **13** and the positive output terminal **14**. Correspondingly, the negative input wire **22** may be different from the negative output wire **21**, to avoid mistaken connections of the negative input terminal **12** and the negative output terminal **11**.

[0059] Correspondingly, the positive input wire **23** may be different from the negative input wire **22**, to avoid mistaken connections of the positive input terminal **13** and the negative input terminal **12**.

[0060] Correspondingly, the positive output wire **24** may be different from the negative output wire **21** to avoid mistaken connections of the positive output terminal **14** and the negative output terminal **11**.

[0061] As described hereinabove, the positive input wire **23**, the positive output wire **24**, the negative input wire **22**, and the negative output wire **21** are wires. The differences between the wires include a difference in lengths between the wires, and/or a difference in colors between the wires, and/or a difference in outer diameters between the wires. Certainly, the wires may be different from each other in shapes, i.e., the wires have different cross-sectional shapes.

[0062] As shown in FIG. 2, a length of the positive input wire **23** is smaller than a length of the positive output wire **24**, and a length of the negative input wire **22** is smaller than a length of the negative output wire **21**.

[0063] In other examples, as shown in FIG. 2, the length of the positive input wire **23** is equal to the length the negative input wire **22**, and the length of the positive output wire **24** is equal to the length of the negative output wire **21**, which are not limited to the above examples.

[0064] The plug connection portion **01** may be a jack or a pin. If the plug connection portion **01** is a jack, then the terminal having this plug connection portion **01** is a female plug. If the plug connection portion **01** is a pin, then the terminal having this plug connection portion **01** is a male plug.

[0065] The specific types of the positive input terminal **13**, the positive output terminal **14**, the negative input terminal **12**, and the negative output terminal **11** may be determined according to practice. Specifically, the negative input terminal **12** and the negative output terminal **11** are both female plugs, and the positive input terminal **13** and the positive output terminal **14** are both male plugs. Alternatively, the negative input terminal **12** and the negative output terminal **11** are both male plugs, and the positive input terminal **13** and the positive output terminal **14** are both female plugs, which are not limited to the above example.

[0066] As shown in FIGS. 2 and 3, the plug connection portion **01** of the negative output terminal

11 is a jack. As shown in FIGS. **2**, **4** and **8**, the plug connection portion **01** of the negative input terminal **12** is also a jack. A shape of the plug connection portion **01** of the negative output terminal **11** is different from a shape of the plug connection portion **01** of the negative input terminal **12**, that is, an outer surface of the jack of the negative output terminal **11** and an outer surface of the jack of the negative input terminal **12** are different in shape.

[0067] As shown in FIGS. **2**, **5** and **7**, the plug connection portion **01** of the positive input terminal **13** is a pin. As shown in FIGS. **2** and **6**, the plug connection portion **01** of the positive output terminal **14** is also a pin. A shape of the plug connection portion **01** of the positive input terminal **13** is different from a shape of the plug connection portion **01** of the positive output terminal **14**, that is, the pin of the positive input terminal **13** and the pin of the positive output terminal **14** are different in shape.

[0068] In the connecting structure of the electrical device, the number of the positive input terminal **13** and the number of the negative input terminal **12** may both be one, or may both be at least two.

[0069] It should be noted that, in a case that the number of the positive input terminal **13** and the number of the negative input terminal **12** are both at least two, the positive input terminals **13** are in one-to-one correspondence with the negative input terminals **12**. In a case that the number the positive input terminal **13** and the number of the negative input terminal **12** are both at least two, and the number of the positive input wire **23** and the number of the negative input wire **22** are both at least two, the positive input terminals **13** are in one-to-one correspondence with the positive input wires **23**, and the negative input terminals **12** are in one-to-one correspondence with the negative input wires **22**. Each of the positive input terminals **13** is different from the positive output terminal **14**, and each of the negative input terminals **12** is different from the negative output terminal **11**.

[0070] In a case that the number of the positive input terminal **13** and the number of the negative input terminal **12** are both at least two, the plug connection portions **01** of any two of the positive input terminals **13** may be the same, and the plug connection portions **01** of any two of the at least two negative input terminals **12** may be the same. Alternatively, as shown in FIG. **2**, the plug connection portions **01** of any two of the positive input terminals **13** are different, and the plug connection portions **01** of any two of the negative input terminals **12** are different.

[0071] Correspondingly, the connecting portions **02** of any two of the positive input terminals **13** may be the same, and the connecting portions **02** of any two of the negative input terminals **12** may be the same. Alternatively, as shown in FIG. **2**, the connecting portions **02** of any two of the positive input terminals **13** are different, and the connecting portions **02** of any two of the negative input terminals **12** are different.

[0072] Correspondingly, as shown in FIG. **2**, any two of the positive input wires **23** are the same, and any two of the negative input wires **22** are the same. Alternatively, any two of the positive input wires **23** may be different, and any two of the negative input wires **22** may be different.

[0073] The specific number of each of the positive input terminal **13** and the negative input terminal **12** may be determined according to practice, and is not limited in the present embodiment.

[0074] In the above connecting structure of the electrical device, the number of the positive output terminal **14** and the number of the negative output terminal **11** may both be one. To connect two electrical devices in series, as shown in FIGS. **9** and **10**, the positive output terminal **14** of one of the two electrical devices can be connected to the negative output terminal **11** of the other one of the two electrical devices in an insertion manner, which may also be understood as that, the negative output terminal **11** of one of the two electrical devices can be connected to the positive output terminal **14** of the other one of the two electrical devices in an insertion manner. It may be appreciated that, at least two electrical devices can be connected in series. The number of the electrical devices connected in series is determined according to practice, which is not limited in the present embodiment.

[0075] Specifically, one of the positive output terminal **14** and the negative output terminal **11** is a

male plug, and the other one is a female plug matching the male plug.

[0076] Based on the connecting structure of the electrical device according to the above embodiments, an electrical device is further provided in the present embodiment, including the connecting structure of the electrical device according to the above embodiments.

[0077] To facilitate description, the negative output terminal **11**, the negative input terminal **12**, the positive input terminal **13**, and the positive output terminal **14** are all referred to as terminals. The electrical device includes a housing **31**, and the terminals are arranged on the housing **31**.

Specifically, the housing **31** has a front face, a rear face and side faces connecting the front face with the rear faces. At least one of the terminals is connected to a side face of the housing **31**, and/or at least one of the terminals is connected to the front face of the housing **31**, and/or at least one of the terminals is connected to the rear face of the housing **31**.

[0078] As shown in FIG. **1**, the negative output terminal **11**, the negative input terminal **12**, the positive input terminal **13**, and the positive output terminal **14** are all arranged on the side faces of the housing **31**. The number of the side faces of the housing **31** is four. The number of the negative input terminal **12** is two, namely a first negative input terminal **12a** and a second negative input terminal **12b**. The number of the positive input terminal **13** is two, namely a first positive input terminal **13a** and a second positive input terminal **13b**. The negative output terminal **11**, the first negative input terminal **12a** and the first positive input terminal **13a** are all located at one of the side faces of the housing **31**, and the positive output terminal **14**, the second negative input terminal **12b** and the second positive input terminal **13b** are all located at another one of the side faces of the housing **31**.

[0079] In other examples, the negative output terminal **11** and the positive output terminal **14** may be located at different side faces, the first negative input terminal **12a** and the second negative input terminal **12b** may be located at the same side face, and the first positive input terminal **13a** and the second positive input terminal **13b** may be located at the same side face, which are not limited in this embodiment.

[0080] The housing **31** may be a metal housing, a plastic housing or the like, which is not limited in this embodiment.

[0081] Since the connecting structure of the electrical device according to the above embodiments has the above technical effects, and the above electrical device includes the above connecting structure of the electrical device, the above electrical device also has the corresponding technical effects, which are not described in detail herein.

[0082] The type of the electrical device can be chosen according to practice. For example, the electrical device may be a circuit breaker, which is not limited in the present embodiment.

[0083] Based on the above description of the disclosed embodiments, those skilled in the art are capable of carrying out or using the present application. It is obvious for those skilled in the art to make many modifications to these embodiments. The general principle defined herein may be applied to other embodiments without departing from the spirit or scope of the present application. Therefore, the present application is not limited to the embodiments illustrated herein, but should be defined by the broadest scope consistent with the principle and novel features disclosed herein.

Claims

1. A connecting structure of an electrical device, comprising a positive input terminal, a positive output terminal, a negative input terminal, and a negative output terminal, wherein the positive input terminal, the positive output terminal, the negative input terminal, and the negative output terminal each comprises a plug connection portion; and the plug connection portion of the positive input terminal is different from the plug connection portion of the positive output terminal, and/or, the plug connection portion of the negative input terminal is different from the plug connection portion of the negative output terminal.

2. The connecting structure of the electrical device according to claim 1, wherein the plug connection portion of the positive input terminal is different from the plug connection portion of the negative input terminal, and/or, the plug connection portion of the positive output terminal is different from the plug connection portion of the negative output terminal.
3. The connecting structure of the electrical device according to claim 1, wherein the difference between the plug connection portions comprises a difference in shapes between the plug connection portions and/or a difference in sizes between the plug connection portions.
4. The connecting structure of the electrical device according to claim 1, wherein the positive input terminal, the positive output terminal, the negative input terminal, and the negative output terminal each comprises a connecting portion configured for connecting a wire with the plug connection portion; wherein the connecting portion of the positive input terminal is different from the connecting portion of the positive output terminal, and/or, the connecting portion of the negative input terminal is different from the connecting portion of the negative output terminal.
5. The connecting structure of the electrical device according to claim 4, wherein the connecting portion of the positive input terminal is different from the connecting portion of the negative input terminal, and/or, the connecting portion of the positive output terminal is different from the connecting portion of the negative output terminal.
6. The connecting structure of the electrical device according to claim 4, wherein the difference between the connecting portions comprises a difference in shapes between the connecting portions and/or a difference in sizes between the connecting portions.
7. The connecting structure of the electrical device according to claim 1, comprising: a positive input wire configured to connect a housing of the electrical device with the positive input terminal, a positive output wire configured to connect the housing with the positive output terminal, a negative input wire configured to connect the housing with the negative input terminal, and a negative output wire configured to connect the housing and the negative output terminal, wherein the positive input wire is different from the positive output wire, and/or, the negative input wire is different from the negative output wire.
8. The connecting structure of the electrical device according to claim 7, wherein the positive input wire is different from the negative input wire, and/or, the positive output wire is different from the negative output wire.
9. The connecting structure of the electrical device according to claim 7, wherein the positive input wire, the positive output wire, the negative input wire, and the negative output wire are wires, and the difference between the wires comprises a difference in lengths between the wires, and/or a difference in colors between the wires, and/or a difference in outer diameters between the wires.
10. The connecting structure of the electrical device according to claim 1, wherein the negative input terminal and the negative output terminal are both female plugs, and the positive input terminal and the positive output terminal are both male plugs.
11. The connecting structure of the electrical device according to claim 1, wherein the number of the positive input terminal and the number of the negative input terminal are both one.
12. The connecting structure of the electrical device according to claim 1, wherein the number of the positive input terminal and the number of the negative input terminal are both at least two, and the positive input terminals are in one-to-one correspondence with the negative input terminals.
13. The connecting structure of the electrical device according to claim 12, wherein the plug connection portions of any two of the positive input terminals are the same, and/or, the plug connection portions of any two of the negative input terminals are the same.
14. The connecting structure of the electrical device according to claim 1, wherein the positive output terminal of the electrical device is configured to be connected to a negative output terminal of another electrical device by insertion.
15. An electrical device, comprising the connecting structure of the electrical device according to claim 1.

- 16.** An electrical device, comprising the connecting structure of the electrical device according to claim 2.
- 17.** An electrical device, comprising the connecting structure of the electrical device according to claim 3.
- 18.** An electrical device, comprising the connecting structure of the electrical device according to claim 4.
- 19.** An electrical device, comprising the connecting structure of the electrical device according to claim 7.
- 20.** An electrical device, comprising the connecting structure of the electrical device according to claim 10.
-