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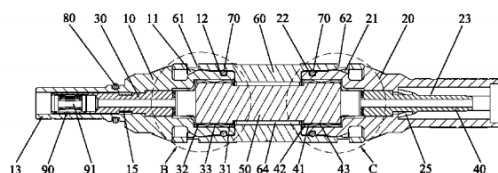
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(54) Title of invention

FUSE HOLDER FOR SOLAR PHOTOVOLTAIC POWER GENERATION SYSTEM

(57) Abstract

The present invention discloses a fuse holder for a solar photovoltaic power generation system, the fuse holder being configured to be electrically connected to an input cable and an output cable, and comprising a first housing, a second housing, a first electric terminal, a second electric terminal, and a fuse. The first housing is connected to the second housing in a butted manner; the first electric terminal is disposed in the first housing, and has one end electrically connected to the output cable and the other end extending to form a first clamping sheet that is configured in a tubular shape to form a first clamping region, the first clamping sheet protruding towards the inside of the first clamping region to form a flexible first abutting and clamping portion; the second electric terminal is disposed in the second housing, and has one end electrically connected to the input cable and the other end electrically abutting against the fuse; and the other end of the fuse is inserted into the first clamping region, so that the first clamping sheet tightly holds one end of the fuse. The fuse holder for a solar photovoltaic power generation system according to the present invention can reduce the cost and is suitable for working in an outdoor environment, and can also achieve firmer contact and better shock resistance of the fuse.



Claims

1. A fuse holder for a solar photovoltaic power generation system, the fuse holder being configured to be electrically connected between an input cable and an output cable in the solar photovoltaic power generation system, and comprising a first housing, a second housing, a first electric terminal, a second electric terminal, and a fuse, wherein the first housing is connected to the second housing in a sealing and butted manner; the first electric terminal is disposed in the first housing, and one end of the first electric terminal is electrically connected to the output cable; the other end of the first electric terminal extends in a direction in which the first housing is connected to the second housing in a butted manner to form a first clamping sheet, the first clamping sheet is configured in a tubular shape to form a first clamping region, and the first clamping sheet also protrudes towards the inside of the first clamping region to form a flexible first abutting and clamping portion; the second electric terminal is disposed in the second housing, one end of the second electric terminal is electrically connected to the input cable, and the other end of the second electric terminal electrically abuts against one end of the fuse; and the other end of the fuse is inserted into the first clamping region, so that the first clamping sheet tightly holds the end of the fuse inserted into the first clamping region.

2. The fuse holder for a solar photovoltaic power generation system according to claim 1, wherein the end of the second electric terminal electrically abutting against the fuse extends in a direction parallel to the direction in which the first housing is connected to the second housing in a butted manner to form a second clamping sheet, the second clamping sheet is configured in a tubular shape to form a second clamping region,

and the second clamping sheet also protrudes towards the inside of the second clamping region to form a flexible second abutting and clamping portion; and the end of the fuse electrically abutting against the second electric terminal is inserted into the second clamping region, so that the second clamping sheet tightly holds the end of the fuse electrically abutting against the second electric terminal.

3. The fuse holder for a solar photovoltaic power generation system according to claim 2, wherein a plurality of first separation through-slots are provided around the first clamping sheet and in a direction in which the first clamping sheet extends, the two adjacent first separation through-slots define one flexible first abutting and clamping strip from the first clamping sheet, and the first abutting and clamping strips form the first abutting and clamping portion; and a plurality of second separation through-slots are provided around the second clamping sheet and in a direction in which the second clamping sheet extends, the two adjacent second separation through-slots define one flexible second abutting and clamping strip from the second clamping sheet, and the second abutting and clamping strips form the second abutting and clamping portion.

4. The fuse holder for a solar photovoltaic power generation system according to any one of claims 1-3, wherein the first clamping sheet is further provided with at least two first notches, the first clamping sheet is divided by the first notches to form first clamping sheet blocks which are disposed correspondingly in a spaced and suspended manner, and the first clamping sheet blocks are in contact with the corresponding internal portions of the first housing; and the second clamping sheet is further provided with at least two second notches, the second clamping sheet is divided by the second notches to form second clamping sheet blocks which are disposed correspondingly

in a spaced and suspended manner, and the second clamping sheet blocks are in contact with the corresponding internal portions of the second housing.

5. The fuse holder for a solar photovoltaic power generation system according to claim 1, the fuse holder further comprising a sleeving member of a hollow structure, wherein the sleeving member is located outside the fuse, one end of the sleeving member is connected to the first housing in a sealing engagement and sleeving manner, the other end of the sleeving member is connected to the second housing in a sealing engagement and sleeving manner, and the second housing is connected to the first housing in a sealing and butted manner by means of the sleeving member.

6. The fuse holder for a solar photovoltaic power generation system according to claim 5, wherein the sleeving member is provided with a first engagement slot at the end connected to the first housing in a sealing engagement and sleeving manner , the sleeving member is provided with a second engagement slot at the end connected to the second housing in a sealing engagement and sleeving manner, the first housing correspondingly extends to form a first engagement block that extends into the first engagement slot, and the second housing correspondingly extends to form a second engagement block that extends into the second engagement slot.

7. The fuse holder for a solar photovoltaic power generation system according to claim 6, wherein the hollow structure of the sleeving member forms an engagement and sleeving cavity that has openings at two ends, inner walls at the two ends of the engagement and sleeving cavity are inclined in directions in which the openings expand, the first engagement slot and the second engagement slot penetrate the parts of the sleeving member

located at the inclined inner walls of the engagement and sleeving cavity, the first engagement block is disposed away from the sleeving member and obliquely in such a way to enlarge the protruding distance of the first engagement block, and the second engagement block is disposed away from the sleeving member and obliquely in such a way to enlarge the protruding distance of the second engagement block.

8. The fuse holder for a solar photovoltaic power generation system according to claim 5, the fuse holder further comprising a first sealing ring, wherein the first sealing ring is sleeved on the first housing and the second housing, the first sealing ring sleeved on the first housing abuts between the first housing and the sleeving member in a sealing manner, and the first sealing ring sleeved on the second housing abuts between the second housing and the sleeving member in a sealing manner.

9. The fuse holder for a solar photovoltaic power generation system according to claim 1, wherein the input cable and the output cable are each provided with a plug-in connection component, the plug-in connection component on the output cable is in plug-fit with the first housing in a sealing manner, and the plug-in connection component on the input cable is in plug-fit with the second housing in a sealing manner.

10. The fuse holder for a solar photovoltaic power generation system according to claim 9, wherein the plug-in connection component on the input cable is a plug, the plug-in connection component on the output cable is a socket, the first housing is provided with a first plug-in connection portion connected to the socket in a plug-in manner and a first engagement sheet engaged with the socket, the first engagement sheet is disposed in a suspended and flexible manner, the first engagement sheet is located outside the first plug-in connection portion, and the

end of the first electric terminal electrically connected to the output cable extends into the first plug-in connection portion; and the second housing is provided with a second plug-in connection cavity connected to the plug in a plug-in manner and a second engagement cavity engaged with the plug, the second engagement cavity is located outside the second plug-in connection cavity, and the end of the second electric terminal electrically connected to the input cable extends into the second plug-in connection cavity.

Description

FUSE HOLDER FOR SOLAR PHOTOVOLTAIC POWER GENERATION SYSTEM

Technical Field

[0001] The present invention relates to a fuse holder, and in particular to a fuse holder for a solar photovoltaic power generation system.

Background Art

[0002] With the rapid and continuous growth of the world economy, the shortage of energy has become an important factor restricting future development. Meanwhile, global climate warming and energy supply security have become major strategic issues of common concern to all countries in the world. In this new situation, the vigorous development and utilization of renewable energy resources is not only an inevitable trend of world energy development, but also an inevitable choice of China's energy strategy. Moreover, China's new energy resources are widely distributed. According to the preliminary resource evaluation, China's renewable energy resources have huge potential, especially in terms of solar energy resources. Therefore, the development and utilization of solar energy resources is an important measure for China's future economic development. It provides a strong guarantee for solving the energy shortage problem in the sustainable development of China's economy, and also provides strong support for China's environmental protection. The development and utilization of solar energy resources is in line with the requirements of China's new path of industrialization, and embodies the harmonious and coordinated development of human and nature. The use of solar panels for power generation is one of many uses in the development and utilization of solar energy resources.

[0003] A solar panel is a device that uses solar energy for

power generation. Solar energy is converted into electrical energy by means of the solar panel, and then the electrical energy converted by the solar panel is transmitted to AC loads, DC loads and batteries by means of junction boxes, cable assemblies, controllers and inverters, so that the solar energy is effectively converted into energy for people's daily life or work. At present, with the significant improvement of solar panel technology and the reduction of cost, the photoelectric conversion efficiency has also been greatly improved, so that the use of solar panels for power generation has broad market application prospects.

[0004] In order to ensure the normal operation of the entire solar photovoltaic power generation system, it is necessary to provide a fuse protector in a solar photovoltaic power generation system accordingly. This is because the solar panels of the solar photovoltaic power generation system are prone to overload, which easily results in damage to the load device and the solar panel itself, under the influence of external factors during the conversion of solar energy to electrical energy. Therefore, fuse protectors are more and more widely used in solar photovoltaic power generation systems.

[0005] As we all know, the fuse protectors used in solar photovoltaic power generation systems are very large (that is, there are many fuse units on the fuse protector) and are also expensive, and the fuse protectors are generally only used in high-power solar photovoltaic power generation systems due to the high cost of fuse protectors. In a low-power solar photovoltaic power generation system, the use of such a fuse protector will cause some fuse units to be in a non-use state, which increases the investment cost of the low-power solar photovoltaic power generation system and increases the burden on investors. Meanwhile, fuse protectors are not waterproof, and generally can only be mounted in waterproof working environments, thus limiting the range of application of fuse protectors.

Furthermore, in the fuse protector, a fuse is in contact with an electric terminal in such a manner that one end of the fuse abuts against an electric terminal that is fixed on the body of the fuse protector, and the other end of the fuse abuts against an electric terminal that is slidably retractable on the body of the fuse protector, so that the two end surfaces of the fuse abut between the two electric terminals by means of the sliding retraction of one of the electric terminals. In the environment of external vibration, the existing contact mode between the fuse and the electric terminal tends to make the fuse deviate from the correct contact position with the electric terminal, so that the fuse and the electric terminal are misaligned at the contact position, which will affect the reliability of the contact between the fuse and the electric terminal on the one hand, and result in poor shock resistance between the fuse and the electric terminal on the other hand.

[0006] Therefore, it is necessary to provide a fuse holder for a solar photovoltaic power generation system to overcome the above defects.

Summary of the Invention

[0007] The objective of the present invention is to provide a fuse holder for a solar photovoltaic power generation system. On the one hand, the fuse holder for a solar photovoltaic power generation system can reduce the investment cost of the solar photovoltaic power generation system, and can be adapted to work in an outdoor environment to expand the range of application of the fuse holder for a solar photovoltaic power generation system according to the present invention; and on the other hand, the contact reliability and shock resistance reliability of the fuse are improved.

[0008] To achieve the foregoing objective, the present invention provides a fuse holder for a solar photovoltaic power generation system, the fuse holder being configured to be electrically

connected between an input cable and an output cable in the solar photovoltaic power generation system, and including a first housing, a second housing, a first electric terminal, a second electric terminal, and a fuse. The first housing is connected to the second housing in a sealing and butted manner; the first electric terminal is disposed in the first housing, and one end of the first electric terminal is electrically connected to the output cable; the other end of the first electric terminal extends in a direction in which the first housing is connected to the second housing in a butted manner to form a first clamping sheet, the first clamping sheet is configured in a tubular shape to form a first clamping region, and the first clamping sheet also protrudes towards the inside of the first clamping region to form a flexible first abutting and clamping portion; the second electric terminal is disposed in the second housing, one end of the second electric terminal is electrically connected to the input cable, and the other end of the second electric terminal electrically abuts against one end of the fuse; and the other end of the fuse is inserted into the first clamping region, so that the first clamping sheet tightly holds the end of the fuse inserted into the first clamping region.

[0009] Preferably, the end of the second electric terminal electrically abutting against the fuse extends in a direction parallel to the direction in which the first housing is connected to the second housing in a butted manner to form a second clamping sheet, the second clamping sheet is configured in a tubular shape to form a second clamping region, and the second clamping sheet also protrudes towards the inside of the second clamping region to form a flexible second abutting and clamping portion; and the end of the fuse electrically abutting against the second electric terminal is inserted into the second clamping region, so that the second clamping sheet tightly holds the end of the fuse electrically abutting against the second electric terminal. By means of the second clamping sheet and the flexible

second abutting and clamping portion mentioned above, the size of the second clamping region can be adjusted, which, on the one hand, is convenient for the fuse to be inserted into the second clamping region, and on the other hand, allows the fuse inserted into the second clamping region to be held by the second clamping sheet more tightly, so as to further improve the shock resistance between the second electric terminal and the fuse. Specifically, a plurality of first separation through-slots are provided around the first clamping sheet and in a direction in which the first clamping sheet extends, the two adjacent first separation through-slots define one flexible first abutting and clamping strip from the first clamping sheet, and the first abutting and clamping strips form the first abutting and clamping portion; and a plurality of second separation through-slots are provided around the second clamping sheet and in a direction in which the second clamping sheet extends, the two adjacent second separation through-slots define one flexible second abutting and clamping strip from the second clamping sheet, and the second abutting and clamping strips form the second abutting and clamping portion. The configuration of the above first separation through-slots facilitates formation of processing of the first abutting and clamping portion, and the configuration of the above second separation through-slots facilitates formation and processing of the second abutting and clamping portion.

[0010] Preferably, the first clamping sheet is further provided with at least two first notches, the first clamping sheet is divided by the first notches to form first clamping sheet blocks which are disposed correspondingly in a spaced and suspended manner, and the first clamping sheet blocks are in contact with the corresponding internal portions of the first housing; and the second clamping sheet is further provided with at least two second notches, the second clamping sheet is divided by the second notches to form second clamping sheet blocks which are

disposed correspondingly in a spaced and suspended manner, and the second clamping sheet blocks are in contact with the corresponding internal portions of the second housing. The first clamping sheet is divided by the first notches to form the first clamping sheet blocks, and the second clamping sheet is divided by the second notches to form the second clamping sheet blocks, so that the first electric terminal is conveniently assembled to or disassembled from the first housing, and the second electric terminal is conveniently assembled to or disassembled from the second housing. The contact between the first clamping sheet blocks and the corresponding internal portions of the first housing allows the first clamping sheet to apply an abutting force when the fuse is inserted into the first clamping region, so as to ensure the clamping effect of the first abutting and clamping portion on the fuse. Similarly, the contact between the second clamping sheet blocks and the corresponding internal portions of the second housing allows the second clamping sheet to apply an abutting force when the fuse is inserted into the second clamping region, so as to ensure the clamping effect of the second abutting and clamping portion on the fuse.

[0011] Preferably, the fuse holder for a solar photovoltaic power generation system according to the present invention further includes a sleeving member of a hollow structure, where the sleeving member is located outside the fuse, one end of the sleeving member is connected to the first housing in a sealing engagement and sleeving manner, the other end of the sleeving member is connected to the second housing in a sealing engagement and sleeving manner, and the second housing is connected to the first housing in a sealing and butted manner by means of the sleeving member. By means of the above sleeving member, the detachable connection between the sleeving member and the first housing and the detachable connection between the sleeving member and the second housing are achieved, thereby simplifying the assembly relationship of the fuse holder for a solar

photovoltaic power generation system according to the present invention.

[0012] Preferably, the sleeving member is provided with a first engagement slot at the end connected to the first housing in a sealing engagement and sleeving manner, the sleeving member is provided with a second engagement slot at the end connected to the second housing in a sealing engagement and sleeving manner, the first housing correspondingly extends to form a first engagement block that extends into the first engagement slot, and the second housing correspondingly extends to form a second engagement block that extends into the second engagement slot. By means of the fitting between the first engagement block and the first engagement slot and the fitting between the second engagement block and the second engagement slot, the connection between the first housing and the sleeving member and the connection between the second housing and the sleeving member are simpler.

[0013] Preferably, the hollow structure of the sleeving member forms an engagement and sleeving cavity that has openings at two ends, inner walls at the two ends of the engagement and sleeving cavity are inclined in directions in which the openings expand, the first engagement slot and the second engagement slot penetrate the parts of the sleeving member located at the inclined inner walls of the engagement and sleeving cavity, the first engagement block is disposed away from the sleeving member and obliquely in such a way to enlarge the protruding distance of the first engagement block, and the second engagement block is disposed away from the sleeving member and obliquely in such a way to enlarge the protruding distance of the second engagement block. By means of allowing the inner walls at the two ends of the engagement and sleeving cavity to be disposed obliquely in the directions in which the openings expand, allowing the first engagement block to be disposed obliquely in such a way to enlarge the protruding distance of the first engagement block,

and allowing the second engagement block to be disposed obliquely in such a way to enlarge the protruding distance of the second engagement block, the sleeving member can be assembled to or disassembled from the first housing and the second housing more easily.

[0014] Preferably, the fuse holder for a solar photovoltaic power generation system according to the present invention further includes a first sealing ring, where the first sealing ring is sleeved on the first housing and the second housing, the first sealing ring sleeved on the first housing abuts between the first housing and the sleeving member in a sealing manner, and the first sealing ring sleeved on the second housing abuts between the second housing and the sleeving member in a sealing manner. By means of the above first sealing ring, the sealing between the sleeving member and the first housing and the second housing is simple and practical.

[0015] Preferably, the input cable and the output cable are each provided with a plug-in connection component, the plug-in connection component on the output cable is in plug-fit with the first housing in a sealing manner, and the plug-in connection component on the input cable is in plug-fit with the second housing in a sealing manner. In this way, the fuse holder for a solar photovoltaic power generation system according to the present invention can be assembled to or disassembled from the input cable or the output cable more conveniently and easily.

[0016] Preferably, the plug-in connection component on the input cable is a plug, the plug-in connection component on the output cable is a socket, the first housing is provided with a first plug-in connection portion connected to the socket in a plug-in manner and a first engagement sheet engaged with the socket, the first engagement sheet is disposed in a suspended and flexible manner, the first engagement sheet is located outside the first plug-in connection portion, and the end of the first electric terminal electrically connected to the output cable extends into

the first plug-in connection portion; and the second housing is provided with a second plug-in connection cavity connected to the plug in a plug-in manner and a second engagement cavity engaged with the plug, the second engagement cavity is located outside the second plug-in connection cavity, and the end of the second electric terminal electrically connected to the input cable extends into the second plug-in connection cavity. By means of the first engagement sheet and the first plug-in connection portion mentioned above, the first housing is in plug-fit with the socket on the output cable more simply and practically. By means of the above first engagement sheet that is disposed in a suspended and flexible manner, the first housing and the socket on the output cable which are in plug-fit with each other can be disengaged to facilitate the disassembly of the first housing from the socket on the output cable. By means of the second engagement cavity and the second plug-in connection cavity mentioned above, the second housing is in plug-fit with the plug on the input cable more simply and practically.

[0017] Compared with the prior art, in the present invention, the first electric terminal extends in the direction in which the first housing is connected to the second housing in a butted manner to form the first clamping sheet, the first clamping sheet is configured in a tubular shape to form the first clamping region, and the first clamping sheet also protrudes towards the inside of the first clamping region to form the flexible first abutting and clamping portion, so that the size of the first clamping region can be automatically adjusted, and thus when the fuse pushes away the first abutting and clamping portion of the first clamping region and is inserted into the first clamping region, the first abutting and clamping portion tightly holds around the fuse inserted into the first clamping region, which achieves better shock resistance of the fuse on the one hand, and achieves firmer contact of the fuse on the other hand. Moreover, the first housing, the second housing, the first

electric terminal, the second electric terminal and the fuse mentioned above form the fuse holder for a solar photovoltaic power generation system according to the present invention, so that the fuse holder for a solar photovoltaic power generation system according to the present invention has a simpler structure and lower cost than the existing fuse protector, and the number of fuse holders for a solar photovoltaic power generation system according to the present invention can be flexibly selected according to the needs of the solar photovoltaic power generation system, thereby further reducing the investment cost of investors. Furthermore, the first housing is connected to the second housing in a sealing and butted manner as described above, so that the fuse holder for a solar photovoltaic power generation system according to the present invention can be adapted to work in an outdoor environment so as to expand the range of application of the fuse holder for a solar photovoltaic power generation system according to the present invention.

[0018] The present invention will become clearer through the following description in combination with the accompanying drawings, which are used to illustrate the embodiments of the present invention.

Brief Description of the Drawing

[0019] FIG. 1 is a perspective view of a structure of a fuse holder for a solar photovoltaic power generation system according to the present invention.

[0020] FIG. 2 is an exploded view of FIG. 1.

[0021] FIG. 3 is a plan view of a structure of the fuse holder for a solar photovoltaic power generation system according to the present invention.

[0022] FIG. 4 is a sectional view of line A-A in FIG. 3.

[0023] FIG. 5 is an enlarged view of part B in FIG. 4.

[0024] FIG. 6 is an enlarged view of part C in FIG. 4.

[0025] FIG. 7 is a perspective view of a structure of a first

electric terminal of the fuse holder for a solar photovoltaic power generation system according to the present invention.

[0026] FIG. 8 is a perspective view of a structure of a second electric terminal of the fuse holder for a solar photovoltaic power generation system according to the present invention.

[0027] FIG. 9 is an exploded perspective view of a structure of the second electric terminal of the fuse holder for a solar photovoltaic power generation system according to the present invention.

Detailed Description of Embodiments

[0028] Embodiments of the present invention will now be described with reference to the accompanying drawings, in which like reference numerals represent like elements.

[0029] Referring to FIGS. 1 to 4, a fuse holder 100 for a solar photovoltaic power generation system according to the present invention is configured to be electrically connected between an input cable and an output cable in the solar photovoltaic power generation system. The fuse holder 100 for a solar photovoltaic power generation system includes a first housing 10, a second housing 20, a first electric terminal 30, a second electric terminal 40, and a fuse 50.

[0030] The first housing 10 is connected to the second housing 20 in a sealing and butted manner to achieve waterproof performance at the connection between the first shell 10 and the second housing 20, so that the fuse holder 100 for a solar photovoltaic power generation system according to the present invention can be adapted to work in an outdoor environment. Specifically, the first housing 10 is connected to the second housing 20 in a sealing and butted manner in such a manner that the fuse holder 100 for a solar photovoltaic power generation system according to the present invention is further provided with a sleeving member 60 of a hollow structure, the sleeving member 60 is located outside the fuse 50, a right end of the

sleeving member 60 is connected to the first housing 10 in a sealing engagement and sleeving manner, and a left end of the sleeving member 60 is connected to the second housing 20 in a sealing engagement and sleeving manner, so that the second housing 20 is connected to the first housing 10 in a sealing and butted manner by means of the sleeving member 60. In addition, by means of the above sleeving member 60, the detachable connection between the sleeving member 60 and the first housing 10 and the detachable connection between the sleeving member 60 and the second housing 20 are simpler, thereby simplifying the assembly relationship of the fuse holder 100 for a solar photovoltaic power generation system according to the present invention.

[0031] Moreover, the first electric terminal 30 is disposed in the first housing 10, a right end of the first electric terminal 30 is electrically connected to the output cable, a left end of the first electric terminal 30 extends in a direction in which the first housing 10 is connected to the second housing 20 in a butted manner (i.e., the opposite direction to that indicated by an arrow near the fuse 50 in FIG. 2) to form a first clamping sheet 31, the first clamping sheet 31 is configured in a tubular shape to form a first clamping region 32, and the first clamping sheet 31 also protrudes towards the inside of the first clamping region 32 to form a flexible first abutting and clamping portion 33. The second electric terminal 40 is disposed in the second housing 20, a left end of the second electric terminal 40 is electrically connected to the input cable, a right end of the second electric terminal 40 electrically abuts against a left end of the fuse 50, and a right end of the fuse 50 is inserted into the first clamping region 32, so that the first clamping sheet 31 tightly holds the right end of the fuse 50. Specifically, in this embodiment, the right end of the fuse 50 inserted into the first clamping region 32 is clamped by means of the first clamping sheet 31 as the principle that the right end of the

fuse 50 pushes away the first abutting and clamping portion 33 in a direction in which the first clamping region 32 expands, so that the first abutting and clamping portion 33 is pressed to apply an elastic abutting force, and thus after the right end of the fuse 50 is inserted into the first clamping region 32, the first abutting and clamping portion 33 tightly holds the right end of the fuse 50 under the action of the elastic abutting force.

[0032] In order to allow the left end of the fuse 50 to be also tightly held by the second electric terminal 40 to further improve the shock resistance and contact performance of the fuse 50, as mentioned above, the right end of the second electric terminal 40 extends in a direction parallel to the direction in which the first housing 10 is connected to the second housing 20 in a butted manner (i.e., the direction indicated by the arrow near the fuse 50 in FIG. 2) to form a second clamping sheet 41, the second clamping sheet 41 is configured in a tubular shape to form a second clamping region 42, the second clamping sheet 41 also protrudes towards the inside of the second clamping region 42 to form a flexible second abutting and clamping portion 43, and the left end of the fuse 50 is inserted into the second clamping region 42, so that the second clamping sheet 41 tightly holds the left end of the fuse 50. The principle of the second clamping sheet 41 clamping the left end of the fuse 50 inserted into the second clamping region 42 is the same as that of the first clamping sheet 31 clamping the right end of the fuse 50 inserted into the first clamping region 32, which will not be described in detail here. More specifically, it will be described as follows.

[0033] Preferably, in this embodiment, several first separation through-slots 34 disposed in rows are provided around the first clamping sheet 31 and in a direction in which the first clamping sheet 31 extends (i.e., the opposite direction to that indicated by the arrow near the fuse 50 in FIG. 2), the two adjacent first

separation through-slots 34 define one flexible first abutting and clamping strip 33a from the first clamping sheet 31, the first abutting and clamping strip 33a is curved towards the inside of the first clamping region 32, the first abutting and clamping strip 33a is preferably curved in an arc shape towards the inside of the first clamping region 32, and the first abutting and clamping strips 33a curved in an arc shape form the first abutting and clamping portion 33; and several second separation through-slots 44 disposed in rows are provided around the second clamping sheet 41 and in a direction in which the second clamping sheet 41 extends (i.e., the direction indicated by the arrow near the fuse 50 in FIG. 2), the two adjacent second separation through-slots 44 define one flexible second abutting and clamping strip 43a from the second clamping sheet 41, the second abutting and clamping strip 43a is curved towards the inside of the second clamping region 42, the second abutting and clamping strip 43a is preferably curved in an arc shape towards the inside of the second clamping region 42, and the second abutting and clamping strips 43a curved in an arc shape form the second abutting and clamping portion 43. The configuration of the above first separation through-slots 34 to facilitate formation and processing of the first abutting and clamping portion 33, the configuration of the above second separation through-slots 44 to facilitate formation and processing of the second abutting and clamping portion 43, the selection of number of the above first separation through-slots 34 and second separation through-slots 44, the first abutting and clamping strips 33a defined by the first separation through-slots 34, and the second abutting and clamping strips 43a defined by the second separation through-slots 44 are all well known to those skilled in the art according to actual needs, so that the number of first separation through-slots 34 and the number of second separation through-slots 44 are not limited here.

[0034] Moreover, the first clamping sheet 31 is further provided

with at least two first notches 31a, the first clamping sheet 31 is divided by the first notches 31a to form first clamping sheet blocks 31b which are disposed correspondingly in a spaced and suspended manner, and the first clamping sheet blocks 31b are in contact with the corresponding internal portions of the first housing 10; and the second clamping sheet 41 is further provided with at least two second notches 41a, the second clamping sheet 41 is divided by the second notches 41a to form second clamping sheet blocks 41b which are disposed correspondingly in a spaced and suspended manner, and the second clamping sheet blocks 41b are in contact with the corresponding internal portions of the second housing 20. In this embodiment, two first notches 31a and two second notches 41a are provided, the first clamping sheet 31 is divided by the two first notches 31a to form two first clamping sheet blocks 31b, the two first clamping sheet blocks 31b are preferably symmetrical; and similarly, the second clamping sheet 41 is divided by the two second notches 41a to form two second clamping sheet blocks 41b, and the two second clamping sheet blocks 41b are preferably symmetrical. The first clamping sheet 31 is divided by the first notches 31a to form the first clamping sheet blocks 31b, and the second clamping sheet 41 is divided by the second notches 41a to form the second clamping sheet blocks 41b, so that the first electric terminal 30 is conveniently assembled to or disassembled from the first housing 10, and the second electric terminal 40 is conveniently assembled to or disassembled from the second housing 20. The contact between the first clamping sheet blocks 31b and the corresponding internal portions of the first housing 10 allows the first clamping sheet 31 to apply an abutting force when the right end of the fuse 50 is inserted into the first clamping region 32, so that the right end of the fuse 50 is tightly held by the first abutting and clamping portion 33. Similarly, the contact between the second clamping sheet blocks 41b and the corresponding internal portions of the second housing 20 allows

the second clamping sheet 41 to apply an abutting force when the left end of the fuse 50 is inserted into the second clamping region 42, so that the left end of the fuse 50 is tightly held by the second abutting and clamping portion 43.

[0035] Referring to FIG. 7, the first electric terminal 30 mentioned above has a first body 30a and a first base 30b, the above first clamping sheet 31 extends from the first base 30b and is fixed to the first body 30a via the first base 30b by means of welding or riveting, the first body 30a includes a first cylinder 35 and a second cylinder 36 which are circular and arranged coaxially, the first cylinder 35 radially protrudes out of the second cylinder 36 to form a first abutting step 37, and the first abutting step 37 facilitates the positioning and mounting of the first electric terminal 30 on the first housing 10. In order to facilitate fixing of the first electric terminal 30 that is positioned and mounted on the first housing 10, the second cylinder 36 radially protrudes to form a raised ring 38, and the raised ring 38 is disposed obliquely towards the end of the second cylinder 36 close to the first cylinder 35 in such a way to enlarge the protruding distance of the raised ring 38, so that the first electric terminal 30 disposed in the first housing 10 is fixed into the first housing 10 by means of an external second fixing member 25.

[0036] Referring to FIGS. 8 to 9, the second electric terminal 40 mentioned above has a second body 40a and a second base 40b, the second clamping sheet 41 mentioned above extends from the second base 40b and is fixed to the second body 40a via the second base 40b by means of welding or riveting, the second body 40a includes a third cylinder 45 and a fourth cylinder 46 which are circular and arranged coaxially, the third cylinder 45 radially protrudes out of the fourth cylinder 46 to form a second abutting step 47, the fourth cylinder 46 is provided with a mounting receiving cavity 49 at the end away from the third cylinder 45, the mounting receiving cavity 49 is configured to

be electrically connected to the input cable in a plug-in manner, and the above second abutting step 47 facilitates the positioning and mounting of the second electric terminal 40 on the second housing 20. To facilitate fixing of the second electric terminal 40 that is positioned and mounted on the second housing 20, the fourth cylinder 46 is provided with a circular groove 48 at the end close to the third cylinder 45, and the circular groove 48 facilitates fixing of the second electric terminal 40 into the second housing 20 by means of an external first fixing member 15. In order to further improve the reliability of electrical plug-in connection between the input cable and the second electric terminal 40, an electric ring 90 of a hollow structure is sleeved in the mounting receiving cavity 49 mentioned above, the hollow structure forms a plug-in connection hole 91, the electric ring 90 protrudes towards the inside of the plug-in connection hole 91 to form a flexible annular clamping portion 92, the electric ring 90 is provided with several spacing through-slots 93 disposed in rows in the direction in which the second clamping sheet 41 extends, the two adjacent spacing through-slots 93 define one flexible annular clamping strip 92a from the electric ring 90, the annular clamping strip 92a is curved towards the inside of the plug-in connection hole 91, the annular clamping strip 92a is preferably curved in an arc shape towards the inside of the plug-in connection hole 91, and the annular clamping strips 92a curved in an arc shape form the annular clamping portion 92 to facilitate formation and processing of the annular clamping portion 92. The number of spacing through-slots 93, and the number of annular clamping strips 92a formed by dividing the annular clamping portion 92 by means of the spacing through-slots 93 are both well known to those skilled in the art according to actual needs.

[0037] Referring to FIGS. 1 to 6, the sleeving member 60 mentioned above is provided with a first engagement slot 61 at the right end, the sleeving member 60 is provided with a second

engagement slot 62 at the left end, the first housing 10 correspondingly extends to form a first engagement block 11 that extends into the first engagement slot 61, the second housing 20 correspondingly extends to form a second engagement block 21 that extends into the second engagement slot 62, and by means of the fitting between the first engagement block 11 and the first engagement slot 61 and the fitting between the second engagement block 21 and the second engagement slot 62, the connection between the first housing 10 and the sleeving member 60 and the connection between the second housing 20 and the sleeving member 60 are simpler. To achieve more convenient assembly and disassembly between the first housing 10 and the sleeving member 60 and between the second housing 20 and the sleeving member 60, the hollow structure of the sleeving member 60 forms an engagement and sleeving cavity 64 that has openings 63 at left and right ends, inner walls at the left and right sides of the engagement and sleeving cavity 64 are inclined in directions in which the openings 63 expand, the first engagement slot 61 and the second engagement slot 62 penetrate the parts of the sleeving member 60 located at the inclined inner walls of the engagement and sleeving cavity 64, the first engagement block 11 is disposed away from the sleeving member 60 and obliquely in such a way to enlarge the protruding distance of the first engagement block 11, and the second engagement block 21 is disposed away from the sleeving member 60 and obliquely in such a way to enlarge the protruding distance of the second engagement block 21.

[0038] Moreover, the fuse holder 100 for a solar photovoltaic power generation system according to the present invention is further provided with a first sealing ring 70. The first sealing ring 70 is sleeved on the first housing 10 and the second housing 20, the first sealing ring 70 sleeved on the first housing 10 abuts between the first housing 10 and the sleeving member 60 in a sealing manner, and the first sealing ring 70 sleeved on the second housing 20 abuts between the second housing 20 and the

sleeving member 60 in a sealing manner. Specifically, to achieve more reliable mounting of the first sealing ring 70 to the first housing 10 and the second housing 20, the first housing 10 and the second housing are provided with sealing ring mounting grooves 12, 22 for mounting of the first sealing ring 70, the sealing ring mounting groove 12 on the first housing 10 is disposed away from the first engagement block 11 and close to the second housing 20, and the sealing ring mounting groove 22 on the second housing 20 is disposed away from the second engagement block 21 and close to the first housing 10. By means of the above first sealing ring 70, the sealing between the sleeving member 60 and the first housing 10 and the second housing 20 is simple and practical, and the above first sealing ring 70 is preferably an O-type sealing ring.

[0039] Furthermore, to achieve more convenient and easier assembly and disassembly between the fuse holder 100 for a solar photovoltaic power generation system according to the present invention and the input cable and the output cable, the input cable and the output cable are each provided with a plug-in connection component (not shown), the plug-in connection component on the output cable is in plug-fit with the first housing 10 in a sealing manner, and the plug-in connection component on the input cable is in plug-fit with the second housing 20 in a sealing manner. Specifically, the plug-in connection component on the input cable is a plug, and the plug-in connection component on the output cable is a socket. The first housing 10 is provided with a first plug-in connection portion 13 connected to the socket in a plug-in manner and a first engagement sheet 14 engaged with the socket, the first engagement sheet 14 is disposed in a suspended and flexible manner and protrudes outwards to form an engagement bump 14a, and the first engagement sheet 14 is located outside the first plug-in connection portion 13. Specifically, the first engagement sheet 14 is symmetrically located on two sides of the

first plug-in connection portion 13, and the right end of the first electric terminal 30 extends into the first plug-in connection portion 13. Moreover, the second housing 20 is provided with a second plug-in connection cavity 23 connected to the plug in a plug-in manner and a second engagement cavity 24 engaged with the plug, and the second engagement cavity 24 is located outside the second plug-in connection cavity 23. Specifically, the second engagement cavity 24 is symmetrically located on two sides of the second plug-in connection cavity 23, and the left end of the second electric terminal 40 extends into the second plug-in connection cavity 23. By means of the first engagement sheet 14 and the first plug-in connection portion 13 mentioned above, the first housing 10 is in plug-fit with the socket on the output cable more simply and practically. By means of the above first engagement sheet 14 that is disposed in a suspended and flexible manner, the first housing 10 and the socket on the output cable which are in plug-fit with each other can be disengaged to facilitate the disassembly of the first housing 10 from the socket on the output cable. By means of the second engagement cavity 24 and the second plug-in connection cavity 23 mentioned above, the second housing 20 is in plug-fit with the plug on the input cable more simply and practically. Moreover, the above first plug-in connection portion 13 is in a flattened cylindrical shape, in order to prevent the reverse insertion of the first electric terminal 30 to the socket, a second sealing ring 80 is mounted on the first plug-in connection portion 13, and the second sealing ring 80 is preferably an O-type sealing ring and located at the leftmost end of the first plug-in connection portion 13 for better waterproofing.

[0040] In conjunction with FIGS. 1 and 2, the principle of assembly and disassembly of the fuse holder for a solar photovoltaic power generation system according to the present invention is described as follows. During assembly, the first electric terminal 30 is firstly inserted into the first housing

10 in the direction indicated by the arrow near the fuse 50 in FIG. 2, and the second electric terminal 40 is inserted into the second housing 20 in the opposite direction to that indicated by the arrow near the fuse 50 in FIG. 2; the first sealing ring 70 is then mounted to the first housing 10 and the second housing 20; next, the right end of the fuse 50 is inserted into the first clamping region 32 in the direction indicated by the arrow near the fuse 50 in FIG. 2; then, the right end of the sleeving member 60 is sleeved on the first housing 10 in the direction indicated by the arrow near the fuse 50 in FIG. 2, and the first engagement block 11 is engaged and fixed to the first engagement slot 61; and finally, the second housing 20 in which the second electric terminal 40 is inserted is sleeved in the left end of the sleeving member 60 in the direction indicated by the arrow near the fuse 50 in FIG. 2, and the left end of the fuse 50 is clamped in the second clamping region 42, while the second engagement block 21 is engaged with the second engagement slot 62, so as to complete the assembly of the fuse holder 100 for a solar photovoltaic power generation system according to the present invention. During disassembly of the fuse holder 100 for a solar photovoltaic power generation system according to the present invention, the sleeving member 60 is held with one hand, while the first housing 10 or the second housing 20 is held with the other hand; the first housing 10 or the second housing 20 rotates an angle in a direction indicated by the arrow on the sleeving member 60 in FIG. 1, so that the first engagement block 11 is disengaged from the first engagement slot 61, or the second engagement block 21 is disengaged from the second engagement slot 62; and then the first housing 10 is removed in the direction indicated by the arrow near the fuse 50 in FIG. 2, or the second housing 20 is removed in the opposite direction to that indicated by the arrow near the fuse 50 in FIG. 2, so as to complete the disassembly of the fuse holder 100 for a solar photovoltaic power generation system according to the present

invention. It can be seen from the above that the fuse holder 100 for a solar photovoltaic power generation system according to the present invention can be assembled and disassembled simply and conveniently.

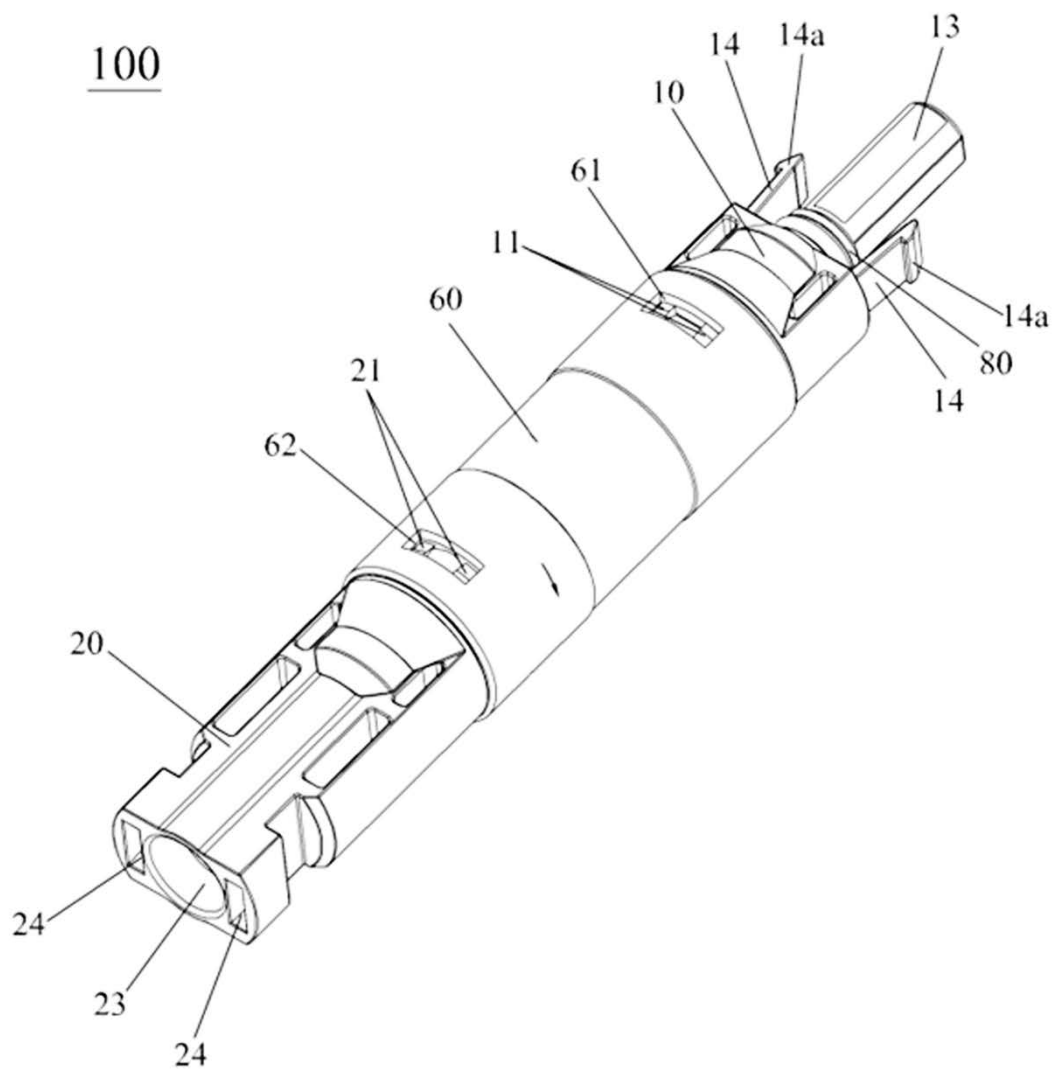
[0041] According to the present invention, the first electric terminal 30 extends in the direction in which the first housing 10 is connected to the second housing 20 in a butted manner to form the first clamping sheet 31, the first clamping sheet 31 is configured in a tubular shape to form the first clamping region 32, and the first clamping sheet 31 also protrudes towards the inside of the first clamping region 32 to form the flexible first abutting and clamping portion 33, so that the size of the first clamping region 32 can be automatically adjusted, and thus when the fuse 50 pushes away the first abutting and clamping portion 33 of the first clamping region 32 and is inserted into the first clamping region 32, the first abutting and clamping portion 33 tightly holds around the fuse 50 inserted into the first clamping region 32, which achieves better shock resistance of the fuse 50 on the one hand, and achieves firmer contact of the fuse 50 on the other hand. Moreover, the first housing 10, the second housing 20, the first electric terminal 30, the second electric terminal 40 and the fuse 50 mentioned above form the fuse holder 100 for a solar photovoltaic power generation system according to the present invention, so that the fuse holder 100 for a solar photovoltaic power generation system according to the present invention has a simpler structure and lower cost than the existing fuse protector, and the number of fuse holders 100 for a solar photovoltaic power generation system according to the present invention can be flexibly selected according to the needs of the solar photovoltaic power generation system, thereby further reducing the investment cost of investors. Furthermore, the first housing 10 is connected to the second housing 20 in a sealing and butted manner as described above, so that the fuse holder 100 for a solar photovoltaic power generation system

according to the present invention can be adapted to work in an outdoor environment so as to expand the range of application of the fuse holder 100 for a solar photovoltaic power generation system according to the present invention.

[0042] It should be noted that the left end and the right end mentioned above are defined on the basis of FIG. 2. Moreover, the shape of the sleeving member 60, the shape of the part of the first housing 10 connected to the sleeving member 60 in a butted manner, and the shape of the part of the second housing 20 connected to the sleeving member 60 in a butted manner mentioned above are preferably cylindrical. Furthermore, the shapes of the first clamping region 32 and the second clamping region 42 mentioned above are preferably configured to be adapted to the shape of the fuse 50.

[0043] The present invention has been described above in conjunction with the best embodiments, but the present invention is not limited to the embodiments disclosed above, but should encompass various modifications and equivalent combinations made according to the essence of the present invention.

Drawings of the description



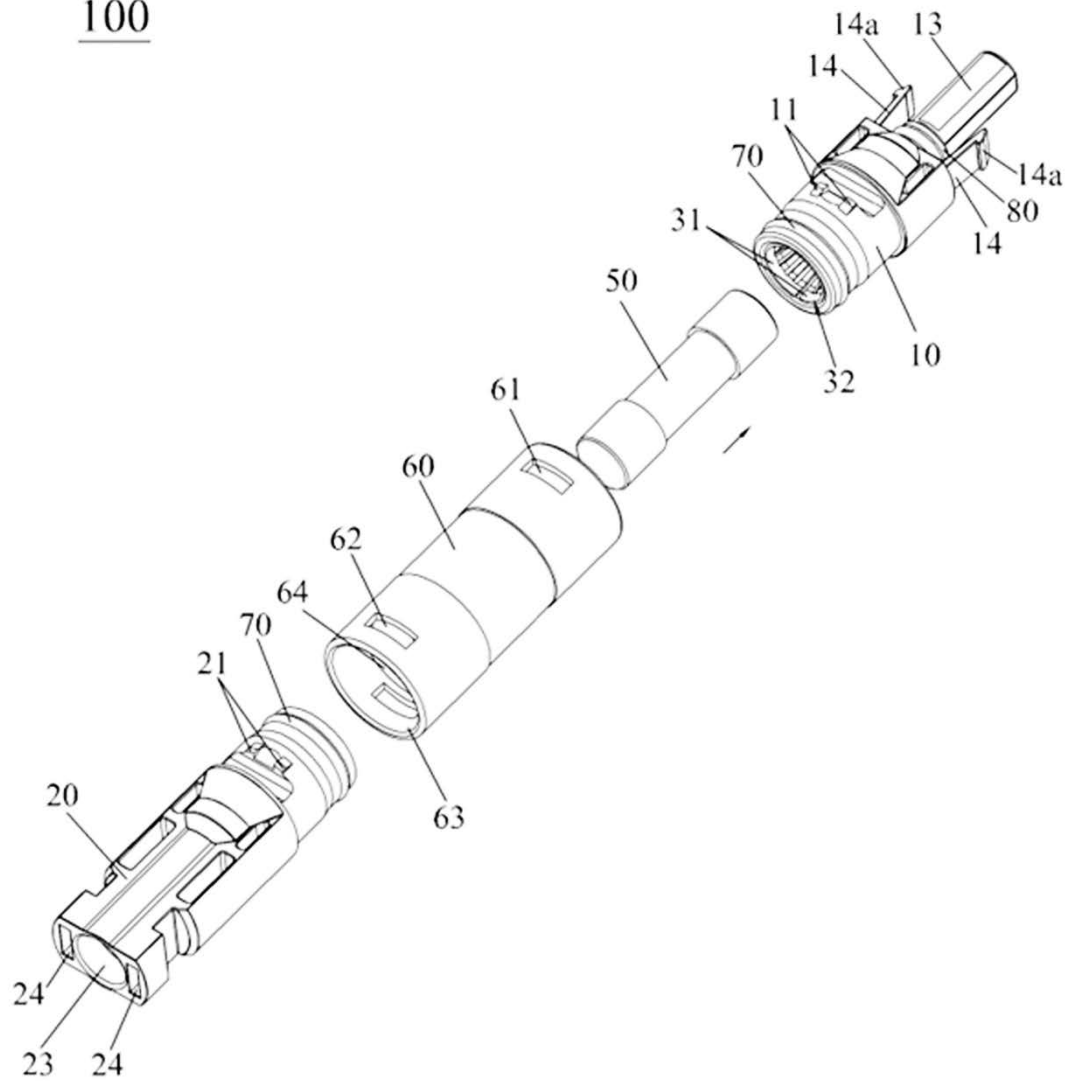
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FIG. 2

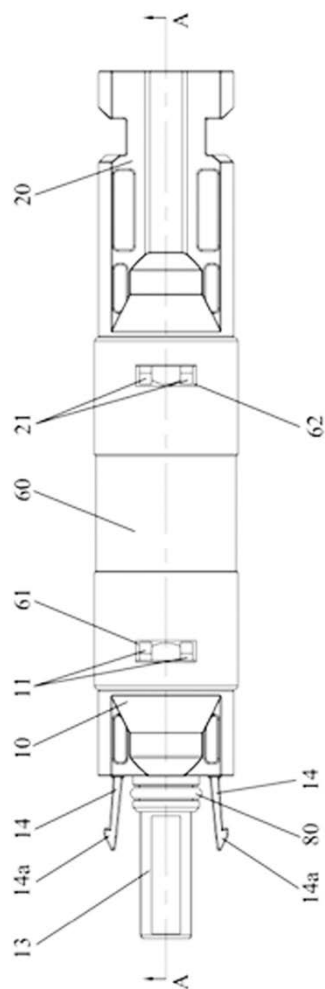


FIG. 3

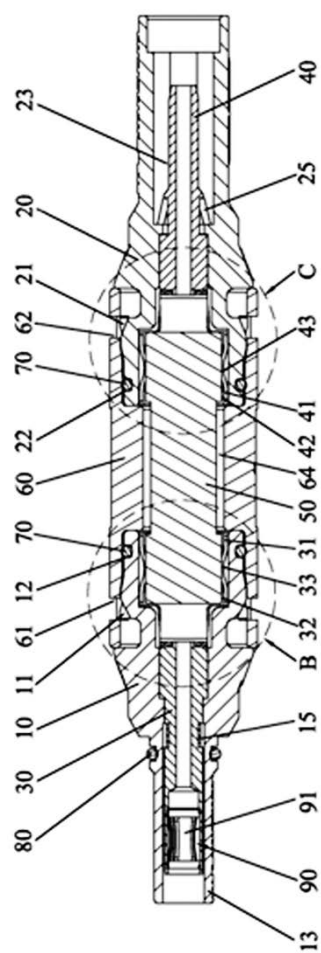


FIG. 4

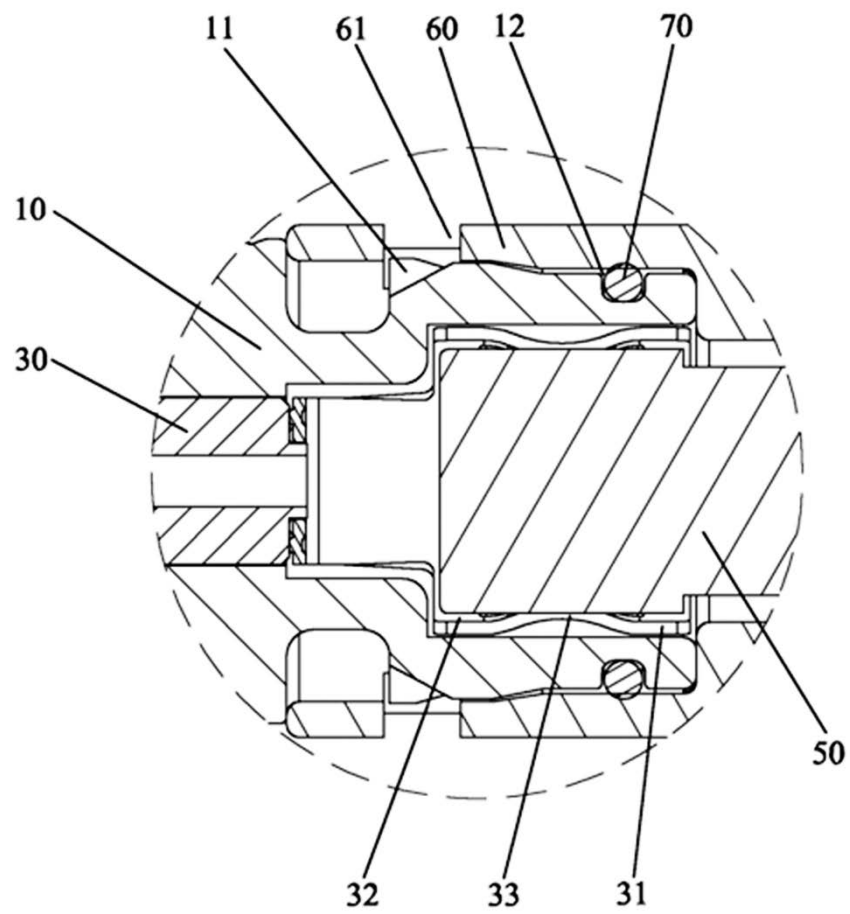


FIG. 5

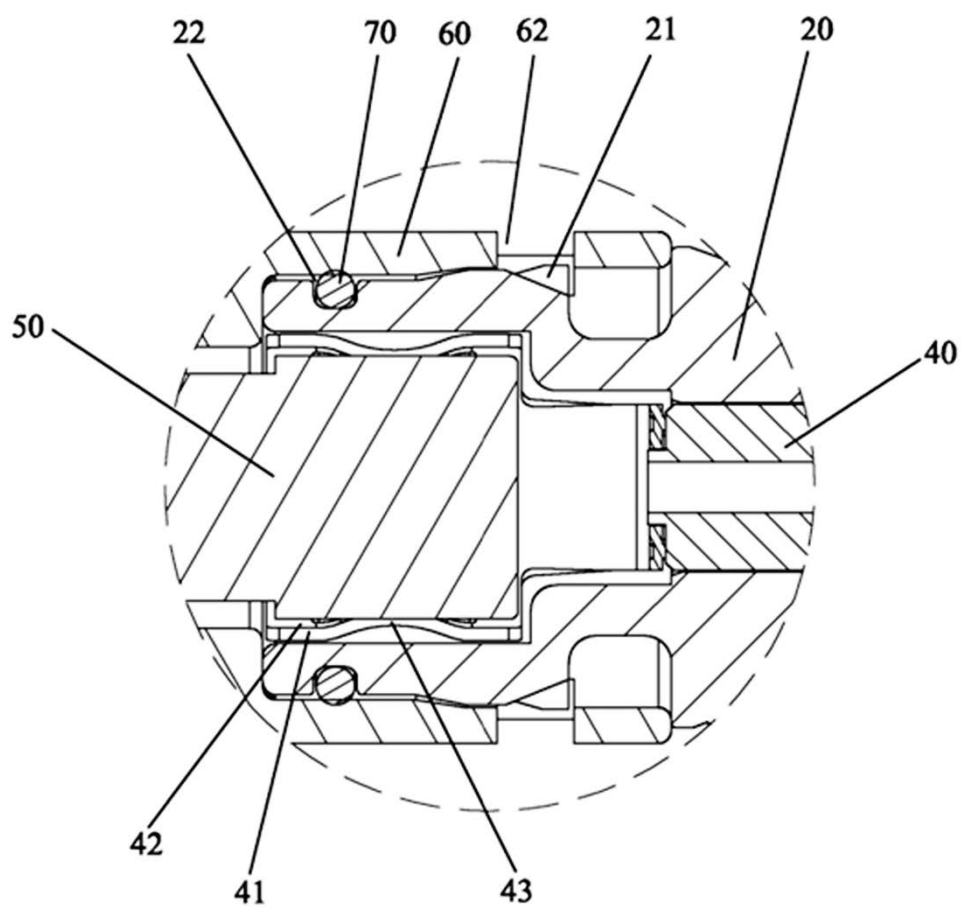


FIG. 6

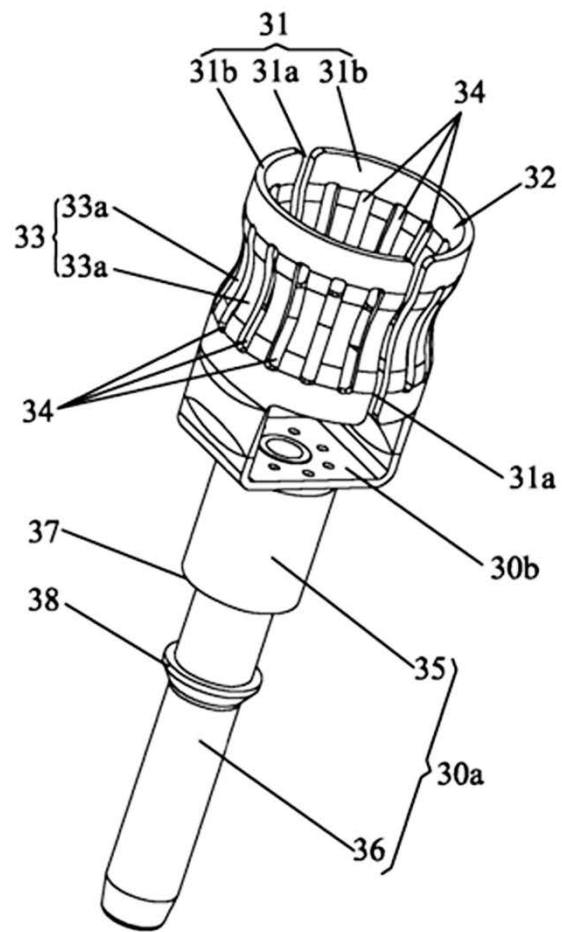
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FIG. 7

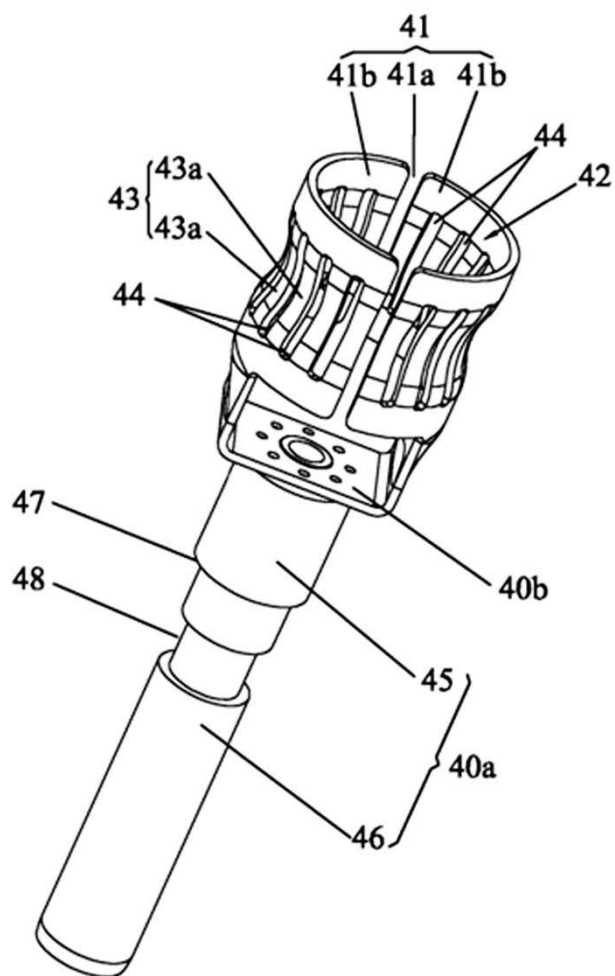
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FIG. 8

I, Ellie SUN MA,
translator to RWS Group Ltd, of Europa House, Chiltern Park, Chiltern Hill, Chalfont St Peter,
Buckinghamshire, United Kingdom, hereby declare that I am conversant with the English and
Chinese languages and am a competent translator thereof. I declare further that to the best of
my knowledge and belief the following is a true and correct translation of the accompanying
document in the Chinese language.

Signed this 29th day of August 2023

E. SUN 孙.小.晓

E. SUN

For and on behalf of RWS Group Ltd