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(54) **A LOW VOLTAGE LAMP HEAD ASSEMBLY**

(57) The present invention discloses a low-voltage lamp head assembly, comprising an outer cover (100) connected to a lamp body and a DC socket (200) provided on a jack (101) of the outer cover (100), said outer cover (100) is provided with a sealing ring (300) on the inner side, said sealing ring (300) is provided with a sealing inner ring (301) mating with said DC socket (200), said sealing inner ring (301) is provided with an expanding ring (302) on the side close to said outer cover (100).

By providing a sealing ring (300) between the DC socket (200) and the outer cover (100), and an expanding ring (320) on the sealing ring (300), the DC male plug that fits with the low-voltage lamp head assembly of the present invention is provided with an outer sleeve outside the existing DC male plug in order to comply with VDE requirements, and the expanding ring (302) of the present invention can be sealed with this outer sleeve to achieve waterproofness in a simple and reliable way.

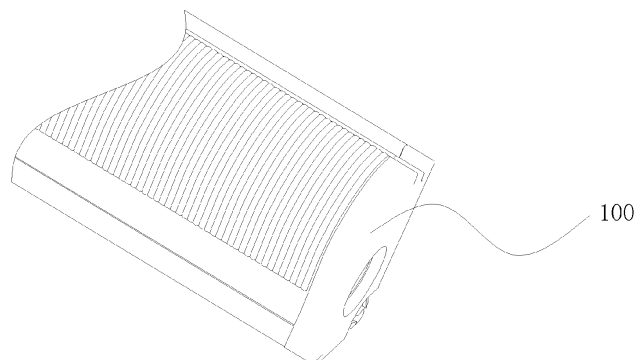


Figure 1

Description

Technical Field

[0001] The present invention relates to the technical field of lighting equipment, in particular, a low-voltage lamp head assembly.

Background Technology

[0002] In the context of energy saving and environmental protection, LED lamps and lanterns are increasingly used in home and commercial lighting because of their high light efficiency and good light gathering performance. In commercial lighting, display lighting is a very important category. DC plugs can be used for the plug connectors used for the power supply of lamps, but the male plugs of DC plugs are usually used in reality. The male plug has a very small size, and it is easy to insert it wrongly. There is a potential safety hazard in the socket hole of the mains power supply. In addition, the DC plug generally cannot meet the requirements regarding waterproofness.

Invention content

[0003] In view of this, the present invention provides a low-voltage lamp head assembly to solve the above technical problems.

[0004] A low-voltage lamp head assembly comprises an outer cover connected to the lamp body and a DC socket set on the jack of the outer cover, said outer cover is provided with a sealing ring on the inner side, said sealing ring is provided with a sealing inner ring mating with said DC socket, said sealing inner ring is provided with an expanding ring on the side close to said outer cover.

[0005] Preferably, the assembly further comprises a bracket provided on the inside of said sealing ring, said bracket being connected to said outer cover and clamping said sealing ring.

[0006] Preferably, said expanding ring is provided with a sealing rib.

[0007] Preferably, said sealing ring is provided with an annular injection groove around the outer circumference.

[0008] Preferably, said DC socket comprises.

a socket body with a mounting cavity;
a conductive reed, provided on said socket body, comprising a plurality of conductive clips arranged annularly on the inner wall of said mounting cavity; and
a conductive post, set on said socket body in the middle of said mounting cavity.

[0009] Preferably, said DC socket further comprises a fixing seat provided at the end of said socket body.

[0010] Preferably, the plurality of conductive clips are

integrally formed, and said conductive reed has a first resilient electrical contact set on the end of said fixing seat.

[0011] Preferably, said conductive post has a second resilient electrical contact set on the end of said fixing seat.

[0012] Preferably, said conductive post is formed from two inward bent sides of a metal sheet.

[0013] Preferably, said fixing seat is provided with a fixing post extending into said mounting cavity, and said plurality of conductive clips are provided around said fixing post.

[0014] The technical effects of the present invention are as follows:

In the low-voltage lamp head assembly of the present invention, by providing a sealing ring between the DC socket and the outer cover, and providing an expanding ring on the sealing ring, the DC male plug with the low-voltage lamp head assembly of the present invention will be provided with an outer sleeve outside the existing DC male plug in order to comply with VDE requirements, and the expanding ring of the present invention can be sealed with this outer sleeve to achieve waterproofness in a simple and reliable way.

Description of the drawings

[0015] Embodiments of the present invention are described below in connection with the accompanying drawings, wherein:

Fig. 1 shows a schematic diagram of the structure of the low-voltage luminaire head assembly of this embodiment when assembled;

Fig. 2 shows a cross-sectional schematic view of the low-voltage lamp head assembly of this embodiment when assembled;

Fig. 3 is an exploded schematic view of the low-voltage lamp head assembly of this embodiment;

Fig. 4 shows the exploded schematic view of the DC socket shown in Fig. 3;

Fig. 5 shows an exploded schematic view of another angle of the low-voltage lamp head assembly of this embodiment; and

Fig. 6 shows an exploded schematic view of the DC socket shown in Fig. 5.

Detailed description

[0016] The following specific embodiments of the present invention are described in further detail based on the accompanying drawings. It should be understood that the description of embodiments of the present invention herein is not intended to limit the scope of protection of the present invention.

[0017] As shown in Figs. 1 to 6, the low-voltage lamp head assembly of this embodiment includes an outer cover 100 connected to the lamp body and a DC socket 200

provided on the jack 101 of the outer cover 100, said outer cover 100 is provided with a sealing ring 300 on the inner side, said sealing ring 300 is provided with a sealing inner ring 301 mating with said DC socket 200, said sealing inner ring 301 is provided with an expanding ring 302 on the side close to said outer cover 100.

[0018] In order to comply with VDE requirements, this implementation with the DC male plug 500 comprises an outer sleeve 501 set outside the existing DC male plug to increase the diameter to prevent misinsertion. The expanding ring 302 seals the outer sleeve 501, which provides waterproofness in a simple and reliable way.

[0019] The embodiment further comprises a bracket 400 provided on the inside of said sealing ring 300, said bracket 400 being connected to the outer cover 100 and clamping said sealing ring 300. In this embodiment, said bracket 400 is fixedly connected to the outer cover 100 by screws. The above structure is more convenient for manufacturing and installation.

[0020] In this embodiment, the expanding ring 302 is provided with a sealing rib 303, which can be provided as a continuous ring or at intervals to further enhance the sealing effect.

[0021] In this embodiment, the outer circumference of said seal 300 is provided with an annular injection groove 304. The above structure can further improve the sealing effect.

[0022] In this embodiment, said DC socket 200 comprises: a socket body 201, a conductive reed 202 and a conductive post 203. The socket body 201 has a mounting cavity 2011; the conductive reed 202 is provided on said socket body 201 and includes a plurality of conductive clips 2021 arranged annularly on the inner wall of said mounting cavity 2011; the conductive post 203 is provided on said socket body 201 and is located in the middle of said mounting cavity 2011.

[0023] In this embodiment, said DC socket 200 further comprises a fixing seat 204 provided at the end of said socket body 201 to facilitate the installation of the conductive reed 202 and the conductive post 203.

[0024] In this embodiment, the plurality of conductive clips 2021 is formed integrally, and said conductive reed 201 has a first resilient electrical contact 2022 set on the end of said fixing seat 204.

[0025] In this embodiment, said conductive post 203 has a second resilient electrical contact 2031 set on the end of said fixing seat 204.

[0026] In this embodiment, said conductive post 203 is formed from two inward bent sides of a metal sheet.

[0027] In this embodiment, said fixing seat 204 is provided with a fixing post 2041 extending into said mounting cavity 2011, and said plurality of conductive clips 2021 are provided around said fixing post 2041.

[0028] The DC socket shown uses socket and reed integrated molding, which significantly improves the reliability and stability of contact. The advantages of DC socket include: 1. Reducing the number of parts and lowering the cost of the product; 2. Improving the reliability

and stability of the product and enhancing the quality of the product; 3. Ensure product consistency, improve production efficiency; 4. Standardize and generalize the design of the lamp head assembly.

5 [0029] The above is only a preferred embodiment of the present invention and is not intended to limit the scope of protection of the present invention. Any modification, equivalent replacement or improvement within the spirit of the present invention, etc., is covered by the scope of the claims of the present invention.

Claims

- 15 1. A low-voltage lamp head assembly, comprising an outer cover (100) connected to a lamp body and a DC socket (200) provided on a jack (101) of the outer cover (100),
characterized in that said outer cover (100) is provided with a sealing ring (300) on the inner side, said sealing ring (300) is provided with a sealing inner ring (301) mating with said DC socket (200), and said sealing inner ring (301) is provided with an expanding ring (302) on the side close to said outer cover (100).
- 20 2. The low-voltage lamp head assembly according to claim 1, **characterized in that** it further comprises a bracket (400) provided on the inside of said sealing ring (300), said bracket (400) being connected to said outer cover (100) and clamping said sealing ring (300).
- 25 3. The low-voltage lamp head assembly according to claim 1, **characterized in that** said expanding ring (302) is provided with a sealing rib (303).
- 30 4. The low-voltage lamp head assembly according to claim 1, **characterized in that** said sealing ring (300) is provided with an annular injection groove (304) around the outer circumference.
- 35 5. The low-voltage lamp head assembly according to any of claims 1 to 4, **characterized in that** said DC socket (200) comprises:
a socket body (201) with a mounting cavity (2011);
a conductive reed (202), provided on said socket body (201), comprising a plurality of conductive clips (2021) arranged annularly on the inner wall of said mounting cavity (2011); and
a conductive post (203), set on said socket body (201) in the middle of said mounting cavity (2011).
- 40 6. The low-voltage lamp head assembly according to claim 5, **characterized in that** said DC socket (200)
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further comprises a fixing seat (204) provided at the end of said socket body (201).

7. The low-voltage lamp head assembly according to claim 6, **characterized in that** the plurality of conductive clips (2021) are integrally formed and said conductive reed (201) has a first resilient electrical contact (2022) set on the end of said fixing seat (204). 5
8. The low-voltage lamp head assembly according to claim 6, **characterized in that** said conductive post (203) has a second resilient electrical contact (2031) set on the end of said fixing seat (204). 10
9. The low-voltage lamp head assembly according to claim 5, **characterized in that** said conductive post (203) is formed from two inward bent sides of a metal sheet. 15
10. The low-voltage lamp head assembly according to claim 6, **characterized in that** said fixing seat (204) is provided with a fixing post (2041) extending into said mounting cavity (2011), and said plurality of conductive clips (2021) are provided around said fixing post (2041). 20 25

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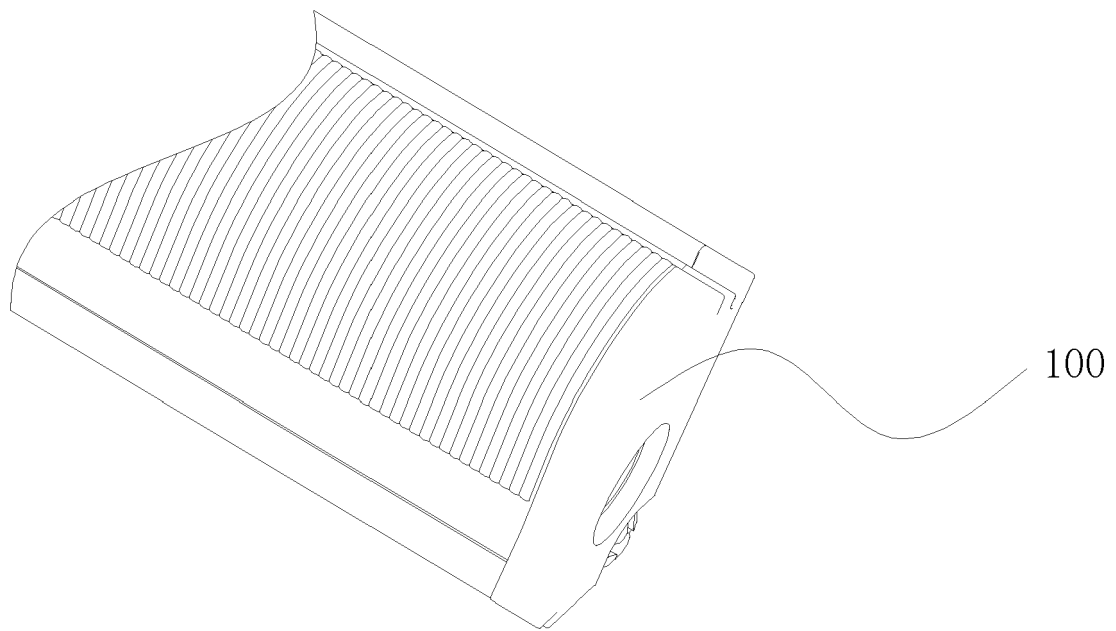


Figure 1

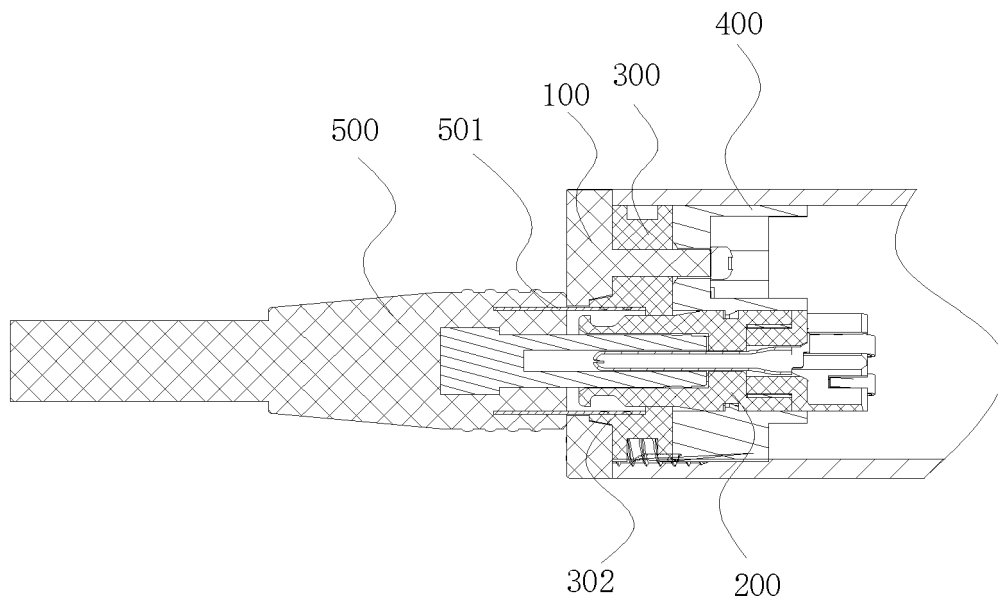


Figure 2

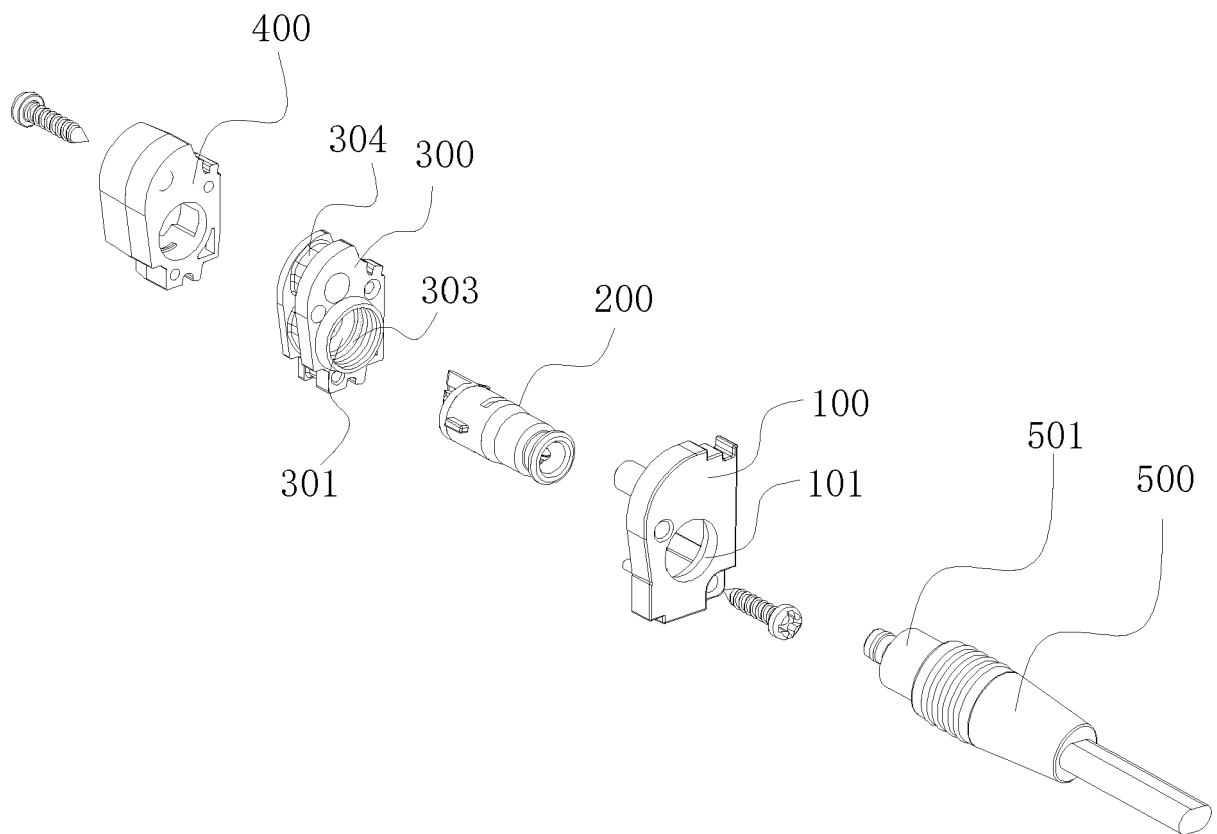


Figure 3

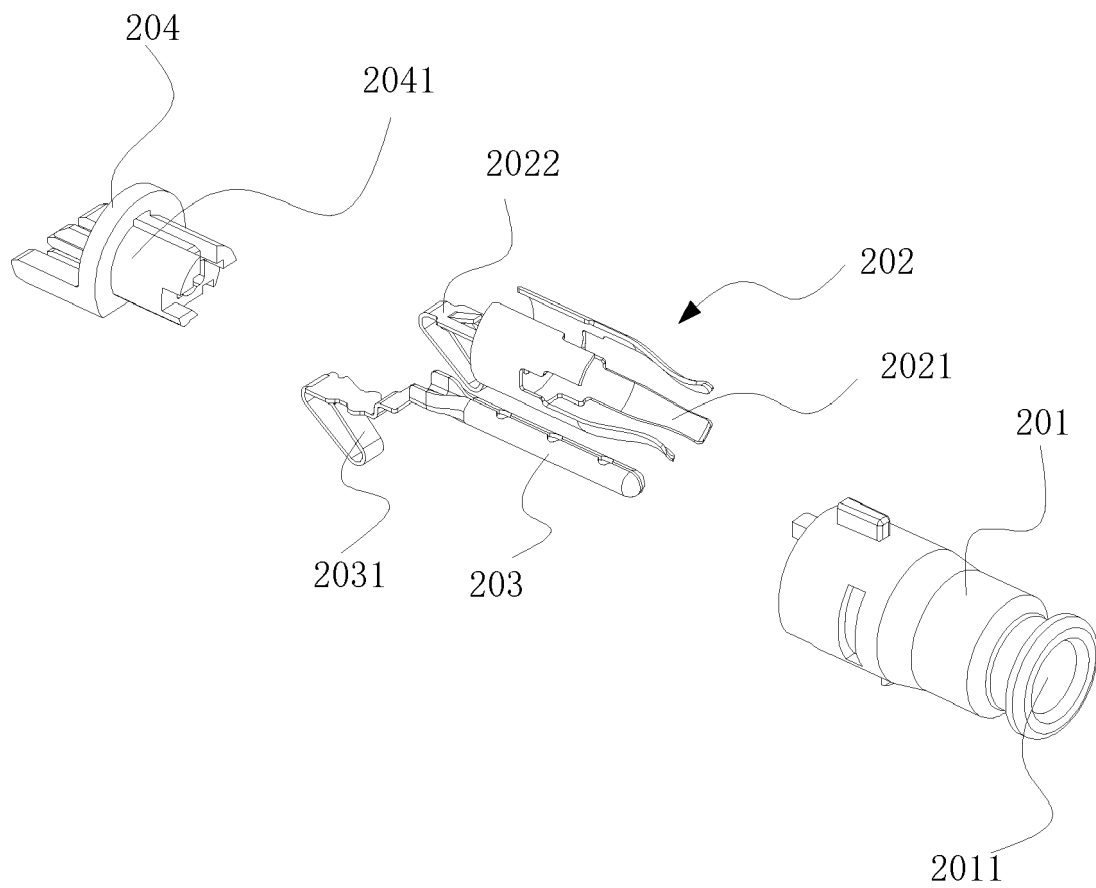


Figure 4

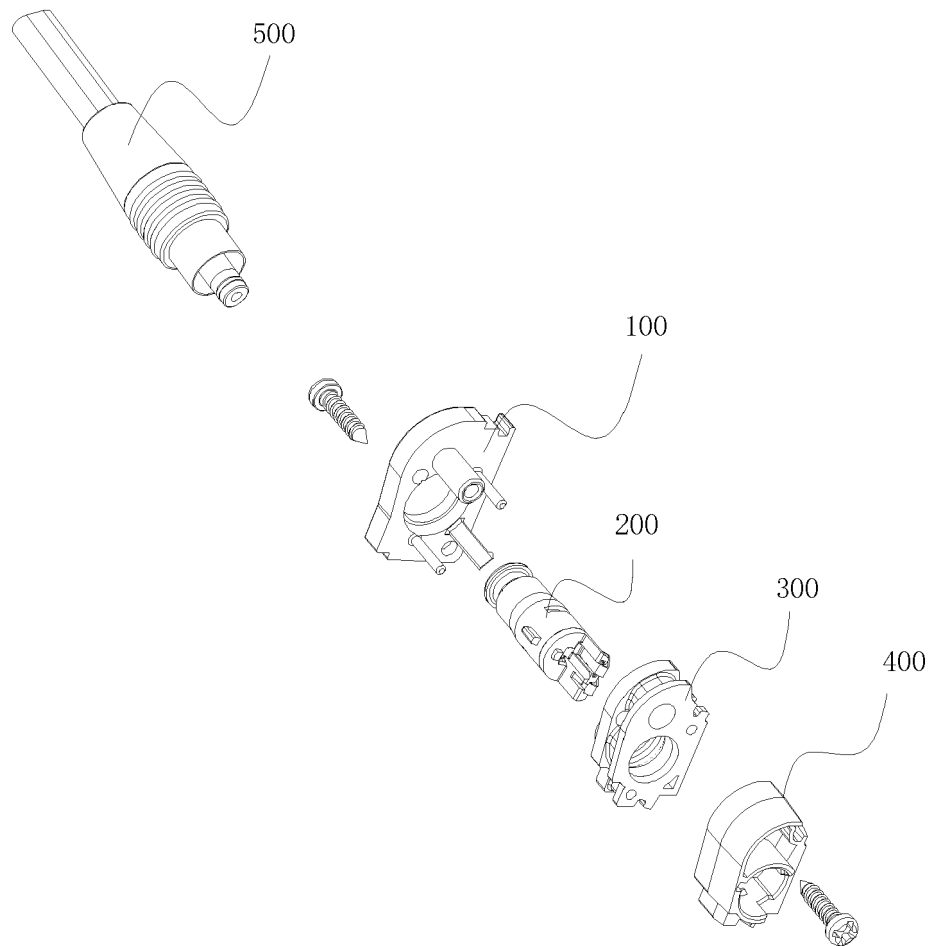


Figure 5

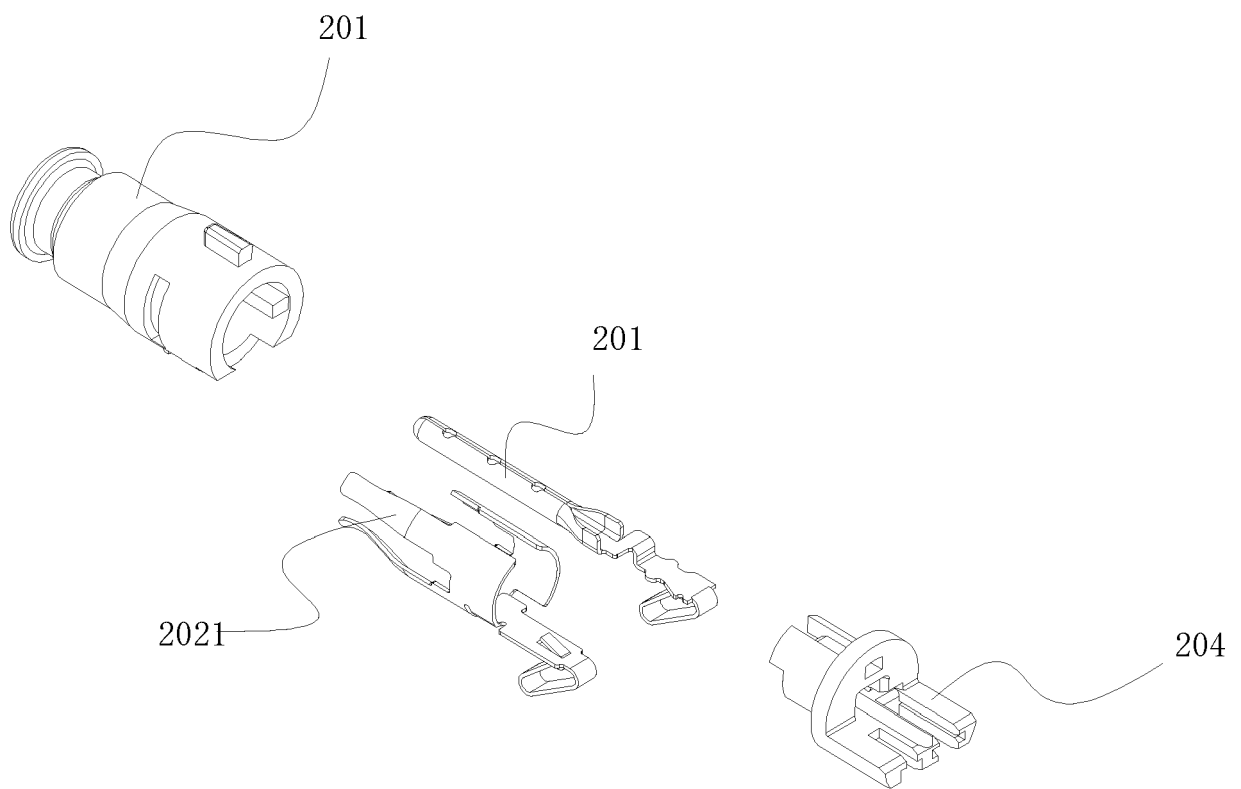


Figure 6



EUROPEAN SEARCH REPORT

Application Number

EP 23 15 0442

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 111 853 572 A (SELF ELECTRONICS CO LTD) 30 October 2020 (2020-10-30) * figures 4-11 * -----	1-10	INV. F21V23/06 F21V31/00 H01R13/52 H01R24/38 F21V15/015
A	CN 112 762 372 A (SELF ELECTRONICS CO LTD) 7 May 2021 (2021-05-07) * figures 1-7 * -----	1-10	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) F21V H01R
Place of search The Hague			Examiner Allen, Katie
Date of completion of the search 31 May 2023			
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 23 15 0442

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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31-05-2023

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