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(54) **SOCKET SAFETY SYSTEM**

(57) *Abstract:* Socket safety system consists mainly of a system with two nitinol springs (4) and (4'), respectively (4″), (4‴), tensioned and rigidly attached to the socket support, whose response to the increase in temperature leads to a compression of them, ensuring a firm contact with the terminals of the plug.

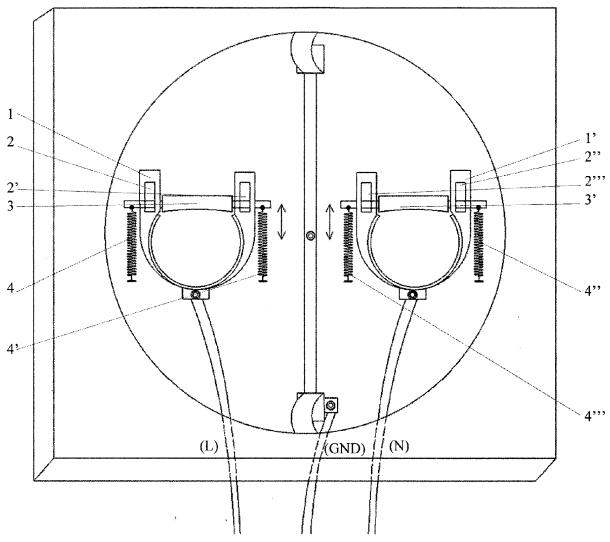

Fig. 1

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Description

[0001] The invention relates to a socket safety system, intended for the overheating protection of the terminals of the plug in case of its weak contact in the terminals of the socket.

[0002] In order to achieve socket safety systems, a solution is known (POPESCU, L. Electrical installations and equipment. Ed. Alma Mater, 2004, ISBN 973-632-093-6), which consists mainly of the use of a system with two blades that ensure firm contact between the terminals of the power plug and socket.

[0003] The disadvantages of the solution are that with the time of use and / or with the increase of the temperature due to the high current intensity at the contact, the firmness of the contact between the blade system and the terminals of the power supply decreases, leading to increased contact resistance.

[0004] The technical problem solved by the invention consists in the realization of a socket safety system, , which uses a system consisting of two springs, destined to the protection to overheating of the terminals of the plug and to the increase of the force at the contact level.

[0005] The socket safety system, according to the invention, eliminates the disadvantages presented by the fact that it consists mainly of a system of Nitinol springs whose response to the increase in temperature leads to a compression of them, ensuring an increase in force and therefore a contact firmly with the coupling terminals.

[0006] The invention has the following advantages:

- Operational safety, reducing the contact resistance between the consumer and the supply voltage;
- Low cost price;
- Reduction of the heating of the equipment due to the improvement of the contact when the current intensity at the level of the coupling increases.

[0007] The following is an embodiment of the invention in connection with Figure 1 and Figure 2, which are as follows:

- fig. 1 - top view of the socket safety system;
- fig. 2 - constructive detail of the fixing part.

[0008] The socket safety system, according to the invention, consists mainly of two identical, elastic parts, identical, in shape of horseshoe arch 1 and 1 ′, each piece being provided with two channels 2 and 2′ respectively 2 ″, 2 ″ ', by which moves in the longitudinal direction a guide piece 3 and 3′, provided at the ends with two nitinol springs 4 and 4′ and, respectively, 4 ″, 4 ‴, tensioned and rigidly attached to the socket support.

[0009] When the terminals of a plug are inserted into the socket, the guide pieces 3 and 3′ will move by tensioning the springs with nitinol 4 and 4′ respectively 4 ″, 4 ‴. When the current through the socket, at the level of the electrical coupling, increases, the guide pieces 3 and 3′, will heat up and the temperature will be taken over by the springs with nitinol 4 and 4′ respectively 4 ″, 4 ‴, which under its action will be compressed by changing the elastic constant of the spring, achieving an increase in pressure force and thus a firm tightening of the terminals of the plug, thus avoiding imperfect contact and heating of the plug and the elastic parts in shape of horseshoe arch 1 and 1′, respectively the reduction of the contact resistance between the consumer and the supply voltage. The tightening is directly proportional to the temperature released.

[0010] The socket safety system according to the invention can be reproduced with the same performance and characteristics whenever necessary, which is an argument in favor of compliance with the criterion of industrial applicability.

References

[0011]

[1]. POPESCU, L. Electrical installations and equipment. Publisher Alma Mater, 2004, ISBN 973-632-093-6.

Claims

1. Socket safety system, **characterized in that** it consists mainly of two identical, elastic parts, identical, in shape of horseshoe arch (1) and (1′), each piece being provided with two channels (2) and (2′) respectively (2″), (2 ‴), by which moves in the longitudinal direction a guide piece (3) and (3′), provided at the ends with two nitinol springs (4) and (4′) and, respectively, (4″), (4‴), tensioned and rigidly attached to the socket support and which when the terminals of a plug are inserted into the socket, the guide pieces (3) and (3′) will move by tensioning nitinol springs (4) and (4 ′), respectively (4″), (4′ ″).

2. Socket safety system according to claim 1, **characterized in that** when current through the socket, at the level of the electrical coupling, increases, the guide pieces (3) and (3'), will heat up and the temperature will be taken over by the springs with nitinol (4) and (4') respectively (4″), (4‴), which under its action will be compressed by changing the elastic constant of the spring, achieving an increase in pressure force and thus a firm tightening of the terminals of the plug, thus avoiding imperfect contact and heating of the plug and the elastic parts in shape of horseshoe arch (1) and (1'), respectively the reduction of the contact resistance between the consumer and the supply voltage. The tightening is directly proportional to the temperature released.

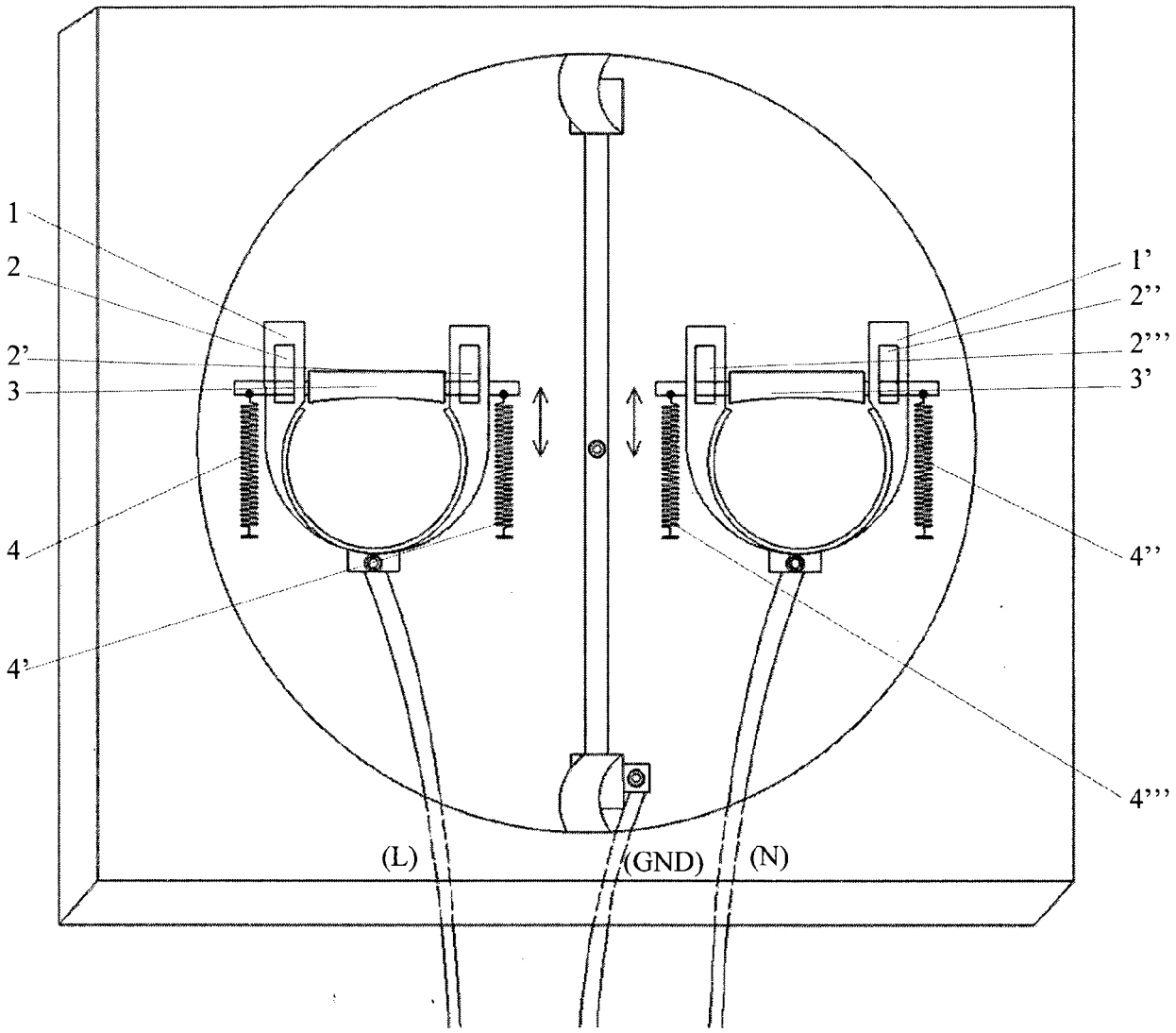

Fig. 1

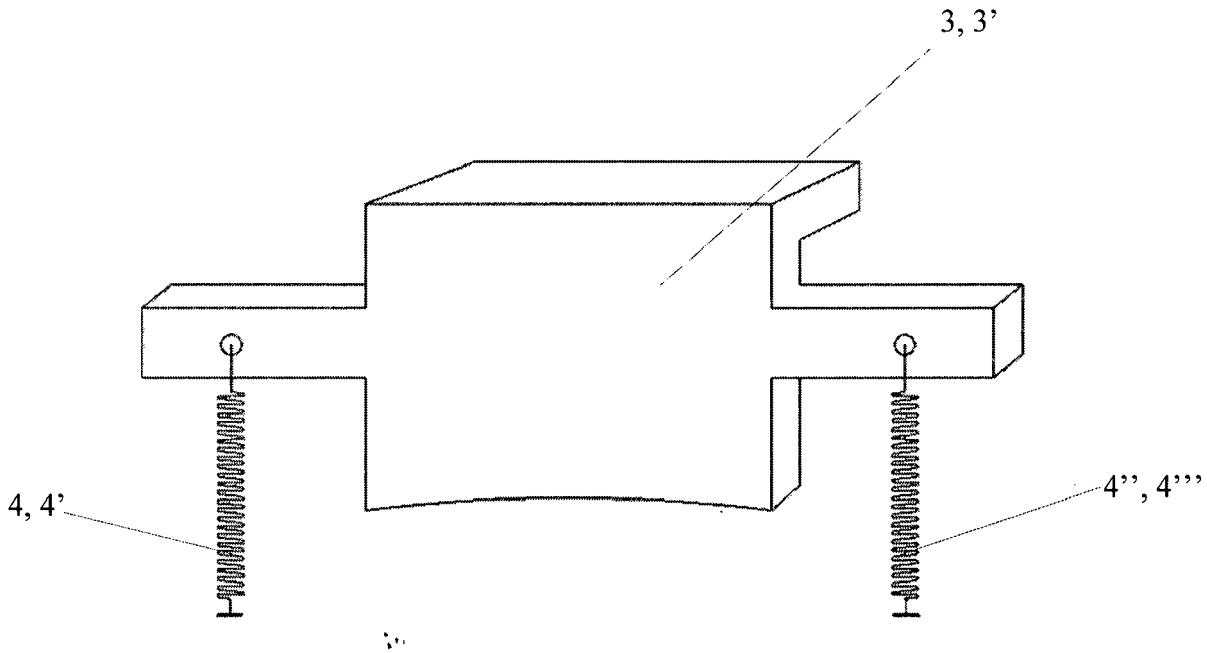

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 21 46 4004

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2013/316589 A1 (LEE CHIU-SAN [TW]) 28 November 2013 (2013-11-28) * abstract; figure 1 *	1,2	INV. H01R13/10 H01R13/15 H01R4/01
A	US 2016/043496 A1 (SHEN SU-CHEN [TW]) 11 February 2016 (2016-02-11) * claim 1; figures 2-5 *	1,2	ADD. H01R24/78 H01R13/03
A	EP 3 536 880 A1 (STEFAN CEL MARE UNIV OF SUCEAVA [RO]) 11 September 2019 (2019-09-11) * page 1; figures 1,2 *	1,2	
A	WO 2007/006601 A1 (BOSCH GMBH ROBERT [DE]; SIMMEL ANDREAS [DE]; PHILIPP ECKHARDT [DE]) 18 January 2007 (2007-01-18) * abstract; figures 1-4C *	1,2	
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A	DE 10 2020 003938 A1 (DAIMLER AG [DE]) 8 October 2020 (2020-10-08) * paragraph [0013]; figures 1-2 *	1	H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 May 2022	Jiménez, Jesús

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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E : earlier patent document, but published on, or after the filing date
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L : document cited for other reasons

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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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18-05-2022

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Non-patent literature cited in the description

- **POPESCU, L.** Electrical installations and equipment. 2004 **[0002]**
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