



(11) **EP 3 893 335 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
13.10.2021 Bulletin 2021/41

(51) Int Cl.:
H01R 13/62 (2006.01)

(21) Application number: **19894272.4**

(86) International application number:
PCT/ES2019/070831

(22) Date of filing: **05.12.2019**

(87) International publication number:
WO 2020/115350 (11.06.2020 Gazette 2020/24)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

• **Suarez Pernil, Manuel**
41920 Sevilla (ES)

(72) Inventors:
• **Tejada Gomez, Dionisio**
41920 Sevilla (ES)
• **Suarez Pernil, Manuel**
41920 Sevilla (ES)

(30) Priority: **07.12.2018 ES 201831190**

(74) Representative: **ABG Intellectual Property Law, S.L.**
Avenida de Burgos, 16D
Edificio Euromor
28036 Madrid (ES)

(71) Applicants:
• **Tejada Gomez, Dionisio**
41920 Sevilla (ES)

(54) **POWER OUTLET WITH GUIDED CONNECTION**

(57) The invention relates to a power outlet with oriented connection, the bottom of said power outlet having a circular concave surface towards the connection holes,

which allows quick and easy positioning of the connectors of a plug in order to connect same.

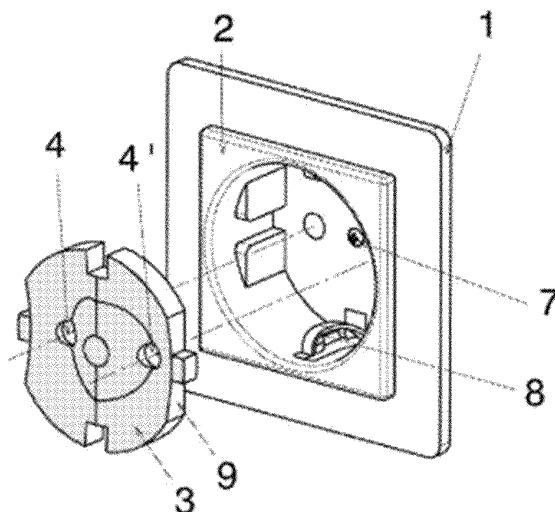


FIGURE 6

EP 3 893 335 A1

Description**TECHNICAL FIELD**

[0001] The invention is comprised in the sector of technologies for electrical connection devices, namely, electrical components such as plugs, power outlets, and coupling devices.

STATE OF THE ART AND PROBLEMS TO BE SOLVED

[0002] According to the state of the art, a number of devices are known for making connections between the plug of an electrical appliance (such as a lamp, a fan, an electric cooker, a television set, a grinder, a drill, for example) and the corresponding power line connection point or power outlet.

[0003] In that regard, as for the types of electric outlets existing worldwide, (both plugs and sockets), these have been standardized in order to favor safety, guarantees, and the capacity to replace devices. In fact, in Europe, there are mainly two types of electric outlets: Type C, with a thin pin and ungrounded, and Type F, also referred to as "schuko", with two pins which can be thin (3.2 mm in diameter) or thick (4.8 mm in diameter) and grounded on the side by contact and at the top by reception.

[0004] There are also standardization differences with respect to the size of recess-mounted boxes and their devices, for example, the conventional rectangular box, originally from the United States, has been replaced with a standard European square box.

[0005] Some electric outlets have side indentations in the body of the plug in which there are inserted guides protruding on the inner side face of the power outlet and having the same shape as the indentations of the plug to achieve a proper fitting and fixing.

[0006] Regardless of all that, all electric outlets present an enormous functional drawback that any user has ever experienced: the difficulty in connecting the plug in the power outlet. It is often necessary to try to connect the plug several times until getting the right position and inserting the male connectors of the plug into the holes of the female connectors of the power outlet.

[0007] This difficulty can be augmented for a number of reasons, such as a lack of light in the area where the power outlet is located or the fact that it is located behind a piece of furniture or in some position that makes it hard to see. In particular, people with impaired vision or the blind experience this problem.

[0008] All this generates the risk of, while concentrating on trying to make the connection, the user accidentally touch the connector just when the connection is taking place and he or she receives an electrical shock. To reduce this risk, in some plugs the gripping area is well isolated from the metal pins, but this does not eliminate the risk or the time and effort wasted in trying to make the mentioned connection.

[0009] In other words, the plug and power outlet connection process, basically, presents the following difficulties:

- 5 • Factors that are external to the user; sometimes, power outlets are situated in hard-to-access or low-visibility areas.
- 10 • If the user who normally makes the connection has impaired motor skills or vision loss, the connection process presents an added difficulty.

[0010] In fact, with a conventional electric outlet the probability of making a successfully connection on the first try is very low, so the user is forced to previously orient the plug to make its pins coincide with the holes of the power outlet, or to turn and push the plug against the body of the power outlet in an attempt to make the pins coincide with the holes.

[0011] However, in relation to the described drawbacks, the power outlet with oriented connection of the present invention incorporates a particular surface on the bottom of its body which the user being able to connect the plug with the power outlet, eliminating the previous need to orient the pins of the plug with the holes of the power outlet and providing the following advantages:

- 20 • It simplifies the user's actions, because once contact is made between the pins of the plug and the bottom of the power outlet, the user simply has to "push" the plug against the power outlet instead of having to "push and turn" the plug simultaneously in an attempt to make the pins coincide with the holes. The plug will turn by itself when it is pushed as a result of the configuration of the bottom of the power outlet.
- 25 • It facilitates making the connection in hard-to-reach power outlets, power outlets with lack or absence of illumination, and in general, when the connection process scenario is complicated.
- 30 • It likewise facilitates making the connection in power outlets for users with impaired motor or psychomotor skills, with impaired visual faculties or who are blind, and generally when the user's intrinsic conditions hinder the connection process.
- 35 • The manufacture and installation of the power outlet with oriented connection is simple and inexpensive.
- 40 • It is adaptable and compatible with all general-purpose electrical mechanisms. The plugs of electrical appliances do not need to be changed. It is even compatible with conventional power outlets that are already installed.
- 45
- 50
- 55

[0012] Continuing with the state of the art, utility model CN201766233U discloses a power outlet with a shape

that is intended to solve the plugging-in problem when power outlets are at a certain depth. The disclosed outlet has a shape such that the connection holes are located in an annular channel that serves as a guide for the pins of the plug. The annular channel is at the intersection of a frustoconical area and the bottom of the socket, so if the pins touch the frustoconical surface they slide over it to the annular channel. Nevertheless, it is still necessary to turn the male plug to find those mentioned holes.

[0013] In contrast, the power outlet of the present invention presents concave surfaces, generating in the bottom "valleys" towards the holes, instead of the frustoconical shape of the mentioned model. This shape is advantageous because while in the mentioned model only the pins of the plug are positioned on the channel of the holes, in the present invention without the need to previously orient the pins of the plug towards the holes, with just a manual pushing movement perpendicular to the plane of the holes, an automatic rotation is caused due to the relief of the concave surfaces arranged in the bottom of the power outlet, such that said movement brings the pins of the plug to the right position within the 360° of possibilities, without having to perform the rotational movement "attempting to find the holes".

[0014] Furthermore, the mentioned utility model does not disclose a power outlet with a geometry such that it allows for having a part that can be removed, inserted, and interchanged in any conventional power outlet, as is the case of the present invention. This provides evident and essential advantages, such as if changes in the furniture of a room make an electric outlet be hidden, the insert can be taken to another electric outlet.

[0015] Furthermore, another essential advantage of the power outlet of the present invention compared to the mentioned utility model is how easy it is to install. In the case of the mentioned utility model, in order to install it, the entire power outlet mechanism must be changed and technical knowledge in electricity and specific tools are required. In contrast, with the removable insert, according to the present invention, the conventional power outlet that most buildings already have installed does not need to be changed given that the assembly simply consist of removing an adhesive and adhering the insert on the bottom of an existing conventional power outlet. This furthermore, results in lower cost and better functionality.

[0016] The geometry of the insert, and, therefore, of the power outlet of the present invention, without circular groove and with concave surfaces towards the holes of the female connector, provides a better functional solution to the problem of making the two pins coincide with the two holes.

[0017] Lastly, it can be deduced from the figures that the mentioned utility model is conceived for a power outlet with a cable, a power strip, whereas in case of the present invention, the power outlet is readily applicable to both power strips and to power outlets recess-mounted in a wall.

OBJECT OF THE INVENTION

[0018] The object of the present invention consists of a power outlet with oriented connection which solves the drawbacks set forth above in a satisfactory manner.

[0019] The expression "power outlet" in this specification refers to the base of a socket in which the female connectors are located.

[0020] The present invention relates to a power outlet with oriented connection made up of the following elements (see the figures): a cover surrounding and a central main body in the bottom of which there are holes of the female connectors for the connection of male connectors (6) of the plug, and characterized by it allows to house an insert detachably in its main body, being the insert the bottom of the power outlet.

[0021] The insert (see Figure 6) contains the holes (which coincide with the holes of the main body) and has a surface having a relief with central symmetry created by a circular concave surface, V-shaped circular valley or channel, the bottom (circle in Figure 3) of which passes through the connection holes, and such that the depth of said valley is minimum at the points of the circle farthest away from the holes and maximum in the holes, i.e., the depth increases towards each hole.

[0022] In the internal side walls of the main body of the power outlet there are indentations which will coincide with the protruding sections that the plug has on its outer side face such that they fit therein, guiding and fixing the plug in its last connection path segment. The length of said indentations is such that it allows the ends of the male connectors to first be positioned in the holes of the female connections.

[0023] With regard to fixing the insert so as to make it detachable in the main body of the power outlet, the insert has two protruding areas opposite one another which fit into the side indentations of the main body of the power outlet, similarly to how the plug fits into said indentations. Furthermore, the insert can be fixed to the main body with a system which allows it to subsequently be taken out, either by means of screws or with an adhesive on the contact surfaces of the body of the power outlet and the insert, making it possible to remove it and interchange it.

[0024] The advantages of the present invention are multiple, because with the part being one that can be removed and interchanged, it can be taken out and used in several power outlets, facilitating the connection process therein, so that, without the need to previously orient the pins of the plug towards the holes, with just a manual pushing movement on the plug against the bottom of the main body of the power outlet, the plug is caused to rotate by the action of the pressure of the end of its pins on the particular relief of the bottom, the circular concave surface, the function of which is just generate a force vector oriented towards the connection holes, causing said ends to readily slide directly towards same and bringing the pins to the right position within the 360° of initial contact

possibilities, and all that without having to make rotational or turning movements "in an attempt to find the holes".

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] In order to better explain the object of the invention, the preferred embodiment of the power outlet with oriented connection has been illustrated with several schematic figures, which embodiment is a non-limiting illustrative example of the scope of the invention, wherein:

Figure 1 shows a front perspective view of the power outlet with oriented connection.

Figure 2 shows a top front perspective view of the power outlet with oriented connection.

Figure 3 shows a front view of the power outlet with oriented connection.

Figure 4 shows a top front perspective view of a longitudinal section of the power outlet with oriented connection.

Figure 5 shows a top view of a longitudinal section of the power outlet with oriented connection.

Figure 6 shows a front perspective view of the power outlet with oriented connection adaptable to conventional power outlets in which the insert has been separated from the bottom so that it can be seen better.

DETAILED DESCRIPTION OF THE INVENTION

[0026] So that the present invention, a power outlet with oriented connection, can be clearly understood and readily carried out to practice according to the fundamental idea thereof, a description will be provided below making reference therein to the attached schematic drawings that are part of said invention, taking into account that in all the figures identical reference numbers indicate identical or corresponding elements; where they are all purely illustrative and by no means limiting examples of the invention, wherein:

[0027] Figure 1, a front perspective view of the power outlet, shows the cover of the power outlet (1), the main body (2) of the power outlet, the concave surface of the bottom (3), the connection holes (4 and 4'), the plug (5), the male connectors (6 and 6'), fixing screw (7), and grounding connection (8).

[0028] Figure 2, a top front perspective view of the power outlet, shows the main body (2) of the power outlet and the concave surface of the bottom (3).

[0029] Figure 3, a front view of the power outlet, shows the concave surface of the bottom (3) and the connection holes (4 and 4') and the circle which, passing through the two connection holes (4 and 4'), is the projection of

the bottom of the circular concave surface, circular valley, or channel.

[0030] Figure 4, a top front perspective view of a longitudinal section of the power outlet, shows the concave surface of the bottom (3), the connection holes (4 and 4'), and the steep inclination of the concave surface towards the holes can be observed as a result of the section plane.

[0031] Figure 5, a top view of a longitudinal section of the power outlet, shows the concave surface of the bottom (3), the connection holes (4 and 4'), and the shape of the valley can be observed as a result of the section plane through the holes.

[0032] Figure 6, a front perspective view of the power outlet with oriented connection adaptable to conventional power outlets, shows how the insert has been separated from the bottom in order to see it better, and it shows the cover of the power outlet (1), the body (2) of the power outlet, the concave surface of the bottom (3), the connection holes (4 and 4'), fixing screw (7), and grounding connection (8).

[0033] It can logically be assumed that when this invention is carried out to practice, modifications referring to the construction, materials, and shape thereof can be introduced, provided that they do not depart from the fundamental principles that are clearly specified in the claims below.

Claims

1. A power outlet with oriented connection made up of a cover surrounding and a central main body, in the bottom of which there are holes of the female connectors, and **characterized in that** it allows to house an insert detachably, with a conical circular area having a diameter smaller than the diameter of the bottom and such that said insert detachably fitted in the main body contains the holes for connecting male connectors with female connectors, this insert having a relief with central symmetry created by a circular concave surface, circular valley or channel the bottom of which passes through the holes of the female connectors and the depth of which increases towards each hole, such that the centers of the connection holes are slightly separated away from the circle form by the attachment of the central circular area and the concave bottom.
2. The power outlet with oriented connection according to claim 1, **characterized in that** the side fitting guides have a length smaller than the length of the male connectors present in the plug.

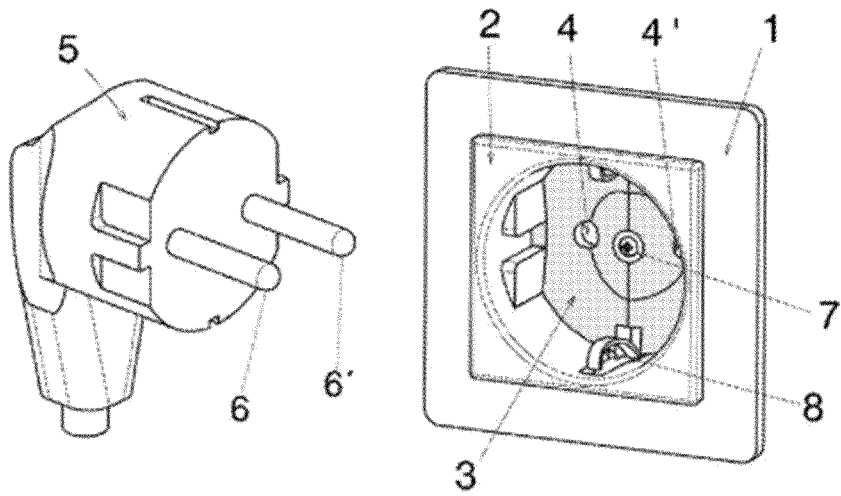


FIGURE 1

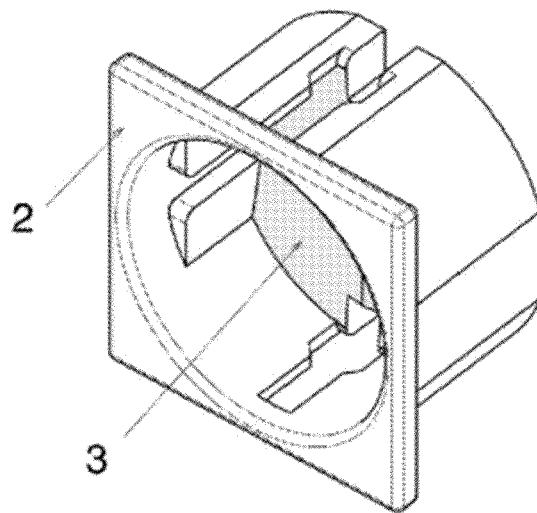


FIGURE 2

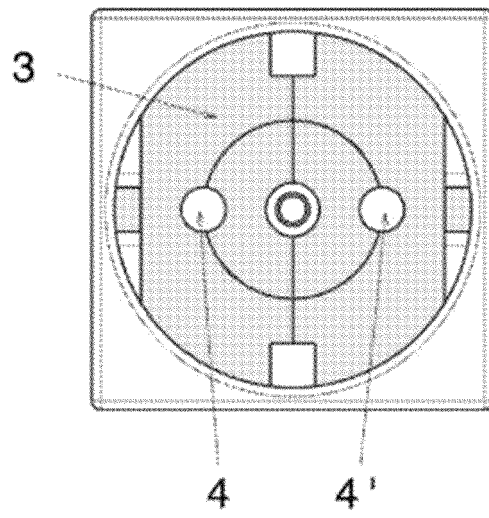


FIGURE 3

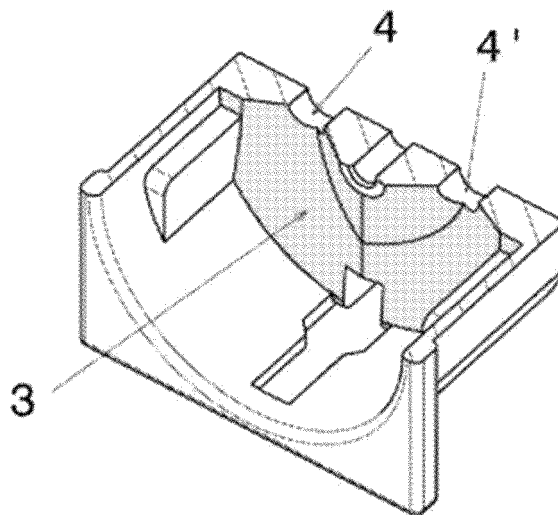


FIGURE 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2019/0708315
10
15
20
25
30
35
40
45
50
55

A. CLASSIFICATION OF SUBJECT MATTER		
H01R13/62 (2006.01)		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) H01R		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPODOC, INVENES, Internet		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HANYANG UNIVERSITY; GIYOON HAN. "Plug Guide Outlet". K-DESIGN-AWARD , 2015 [on line][retrieved the 18/03/2020].	1
Y	Retrieved from Internet <URL: http://kdesignaward.com/index.php?mid=exhibition&category=6113&document_srl=37803 >	2
Y	WIKIPEDIA. "Schuko" . Wikipedia in Webarchive, 28/01/2016 [on line][retrieved on 17/03/2020].	2
A	Retrieved from Internet <URL: http://web.archive.org/web/20160128203310/https://in.wikipedia.org/wiki/Schuko >	1
X	"Easy Put Concent". hisastro.com, 24/02/2015 [on line][retrieved on 18/03/2020]. Retrieved of Internet <URL: https://web.archive.org/web/20150224062557/https://hisastro.com/1296 >	1
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents:		
"A"	document defining the general state of the art which is not considered to be of particular relevance.	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure use, exhibition, or other means.	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 19/03/2020		Date of mailing of the international search report (20/03/2020)
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04		Authorized officer M. P.I López Sabater Telephone No. 91 3495385

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No. PCT/ES2019/070831
--

5

C (continuation).		DOCUMENTS CONSIDERED TO BE RELEVANT
Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 108736207 A (HANGZHOU HONYAR ELECTRICAL CO LTD) 02/11/2018, Abstract, Figures 5 and 6.	1
X	CN 201766233U U (GUOQIANG WANG ET AL.) 16/03/2011, DataBase WPI in EPOQUE, figures.	1
X	BAEK KIL HYUN. Yankodesign.com in Webarchive, 19/05/2011 [on line][retrieved on 17/03/2020]. Retrieved from Internet <URL: ">http://web.archive.org/web/20110519221048/https://www.yankodesign.com/2011/05/16/woprons->	1
A	US 2895119 A (MONTGOMERY JR MALCOLM B) 14/07/1959, description; figures.	1, 2
A	US 5955701 A (SCHOCKNER PHYLLIS L ET AL.) 21/09/1999, description; figures.	1, 2

10

15

20

25

30

35

40

45

50

55

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2019/070831

Information on patent family members

5
10
15
20
25
30
35
40
45
50
55

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US2895119 A	14.07.1959	NONE	
----- US5955701 A	----- 21.09.1999	----- NONE	-----
----- CN201766233U U	----- 16.03.2011	----- NONE	-----
----- CN108736207 A	----- 02.11.2018	CN108736207B B	20.08.2019
		CN105048143 A	11.11.2015
-----	-----	CN105048143B B	28.09.2018
-----	-----	-----	-----

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 201766233 U [0012]