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(54) **Title:** ELECTRICAL PLUG AND METHODS FOR TESTING AN ELECTRICAL MAINS SOCKET AND AN ELECTRICAL MAINS PLUG

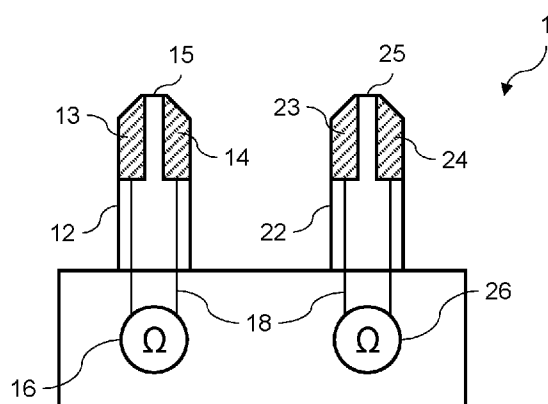


Fig. 1

(57) **Abstract:** An electrical plug (1) for testing an electrical mains socket (2) is provided. The electrical plug (1) comprises a pin (12) for engagement with a pin receptor (4) of the electrical mains socket (2). The pin (12) comprises first (13) and second (14) electrical contacts, each comprising a surface portion to engage with a different respective region of the pin receptor (4). The first (13) and second (14) electrical contacts are electrically isolated from one another at the pin (12). An electrical testing system and a method of testing an electrical mains socket (2) is provided. The electrical testing system comprises the electrical plug (1) and a first circuit (16) connected to the first (13) and second (14) electrical contacts and configured to measure an electrical resistance therebetween. The method includes providing the electrical plug (1) and measuring an electrical resistance between the first (13) and second (14) electrical contacts. A further method is provided for testing an electrical mains plug (61) comprising a pin (62), by providing an electrical socket (63) with a pin receptor (64) having first (65) and second (66) regions electrically isolated from one another.



INTERNATIONAL SEARCH REPORT

International application No  
PCT/GB2019/051689

A. CLASSIFICATION OF SUBJECT MATTER  
INV. G01R31/04  
ADD.  
  
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)  
G01R

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)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 20 2016 101839 U1 (LISA DRÄXLMAIER GMBH [DE]) 30 May 2016 (2016-05-30) paragraph [0035] - paragraph [0040]; figure 2	1-24
A	----- GB 2 499 514 A (IRISH GEOFFREY [GB]) 21 August 2013 (2013-08-21) page 3, paragraph 4	1-24
X	----- DE 20 2017 107108 U1 (LISA DRÄXLMAIER GMBH [DE]) 7 December 2017 (2017-12-07) paragraph [0040] - paragraph [0050]; figures 1,2,6	1-24
A	----- KR 101 751 710 B1 (DAWON DNS CO LTD [KR]) 11 July 2017 (2017-07-11) paragraph [0006] - paragraph [0007]	1-24

Further documents are listed in the continuation of Box C.

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 application or patent 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 such 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  29 October 2019	Date of mailing of the international search report  13/01/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  O'Callaghan, D
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2019/051689

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-24

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-24

a pin comprising first and second electrical contacts, each comprising a surface portion to engage with a different respective region of the pin receptor when the pin is engaged with the pin receptor, the electrical contacts being electrically isolated from one another at the pin

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2. claims: 25-29

a socket having a pin receptor with two electrically isolated regions and intended for use with a (conventional) pin

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2019/051689

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202016101839 U1	30-05-2016	NONE	
GB 2499514 A	21-08-2013	NONE	
DE 202017107108 U1	07-12-2017	NONE	
KR 101751710 B1	11-07-2017	NONE	