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(54) An electric plug socket

(57) An electric plug socket strip comprising a series of sockets (10) arranged side-by-side in a common casing (11) to which an electrical power supply lead (12) is attached. An array (13) of LED's form a wattage meter to indicate progressively increasing electrical power consumption enabling a user to recognise an approaching overload condition.

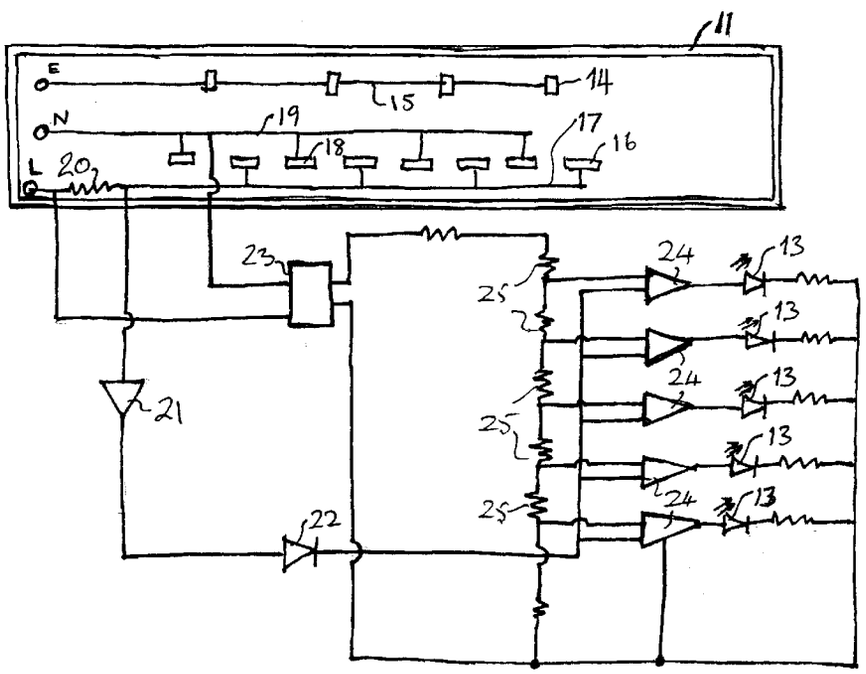

Fig. 2

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Description

[0001] THIS INVENTION relates to electric plug sockets and particularly, though not exclusively, socket strips in which several sockets are provided in a single casing for the simultaneous connection of two or more electric plugs.

[0002] According to the present invention an electric plug socket includes an integral device adapted to provide an indication of the level of electric power consumed.

[0003] Preferably, the socket is part of a socket strip having means for simultaneous connection thereto of two or more electric plugs.

[0004] Further, the power consumption indicating means is provided in the form of an array of LEDs representing, in combination, a level of wattage consumption.

[0005] An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Fig. 1 is a front view of an electric socket strip having an LED wattage indicator in accordance with the invention;

and Fig. 2 is a diagram of the circuit components of same.

[0006] Referring now to the drawings, a typical 4-way electric socket strip may contain a row of four individual electric sockets 10 arranged in a common casing 11 and having a power supply lead 12 connected thereto. Up to four electric plugs may be connected to strip for the simultaneous supply of electric power to a like number of appliances.

[0007] In accordance with the present invention such a strip includes, at one end, an array of LEDs 13, which, when the strip is in use, become illuminated progressively as the power consumption from the strip increases. For example, from the bottom of the array of LEDs the first three may be coloured green, the fourth amber, and the fifth red. In normal operation, between one and three of the green coloured LEDs are illuminated until the power consumption increases to a level approaching an overload condition whereupon the amber LED would become illuminated followed by the red LED if an overload condition occurs.

[0008] Thus, the row of LEDs provide, in effect, a stepwise or digital wattage meter indicating to the user a condition approaching overload for the rating of the strip and its power lead.

[0009] Referring now to Fig. 2, wherein the cover of the casing has been removed the earth terminals 14 are connected together by a common conductor strip 15; Similarly, the live terminals 16 are connected together by a conductor strip 17, and the neutral terminals 18 are connected together by a conductor strip 19. The conductor strips 15, 17 and 19 are themselves connected to earth, live and neutral terminals respectively within the casing 10, to which supply lead 12 is connected.

[0010] For convenience of illustration, the LED wattage meter and its components and electrical connectors to the live and neutral terminals are shown outside the casing 11. The principal component is a shunt 20 connected between the live conductor 17 and the live supply. Connected to one side of the shunt 20 is an amplifier 21 and a rectifier 22. Connected to the other side of the shunt 20 is a low voltage power supply unit 23 to which the LEDs are connected through operational amplifiers 24 and resistors 25, providing, together, a comparator ladder.

[0011] In operation, as the power consumption or load drawn from the socket strip, increases so also does the voltage drawn from the rectifier 22, which, progressively through the operational amplifiers 24, energises the LEDs 13 so that, in combination, they provide an indication of load consumption (or wattage).

[0012] Thus, a single or multiple socket with wattage meter as described enables the user to avoid an overload and thus hazardous condition whereby the socket or socket strip does not rely wholly upon a fuse.

[0013] If required, an analogue wattage meter may replace the LED ladder thus to provide an infinitely varying, rather than stepwise, indication.

[0014] It is not intended to limit the invention to the above details. For example, in the case of LEDs a lesser or greater number may be provided to give an indication of normal or excessive power consumption.

[0015] In the usual way the array of sockets in a socket strip may be arranged other than in a single row and in its simplest form the invention may comprise a single socket with wattage meter.

Claims

1. An electric plug socket including an integral device adapted to provide an indication of the level of electric power consumed from the socket.

2. An electric plug socket according to Claim 1, being a socket strip having means for simultaneous connection thereto of two or more electric plugs.

3. An electric plug socket according to Claim 1 or Claim 2, wherein the power consumption indicating means is provided in the form of an array of LED's representing, in combination, a level of wattage consumption.

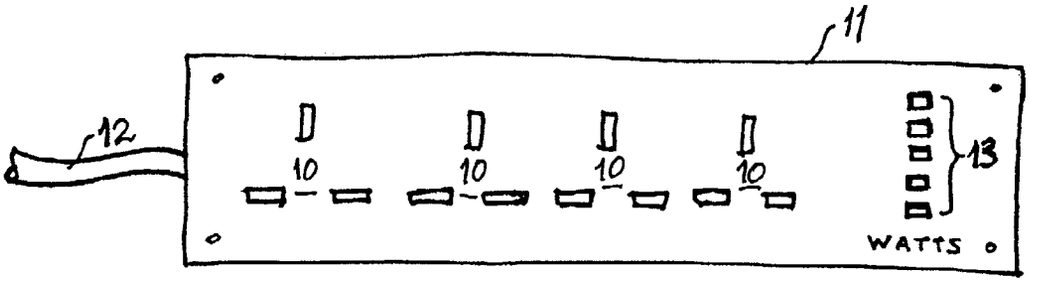
4. An electric plug socket according to Claim 3, comprising a row of individual electric sockets connected in parallel to a supply of electric power the sockets being contained within a common casing at one end of which is said array of LED's adapted to be-

come illuminated progressively as the power consumption from the sockets increases, the array comprising at least two colours thus to provide a stepwise wattage meter capable of indicating a condition approaching overload for the rating of the socket and its power lead.

5. An electric plug socket according to any preceding claim, including a shunt connected in series with the or each live terminal of the socket, one end of the shunt having connected thereto an amplifier, a rectifier and a series of operational amplifiers each serving a single LED, in the form of a comparator ladder.

6. An electric plug socket according to Claim 5, including a low voltage power supply unit to which the LED's are connected through individual operational amplifiers and resistors.

7. An electric plug socket according to Claim 1, wherein said integral device comprises an analogue wattage meter thus to provide an infinitely varying indication of the level of electric power consumed.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WATTS

Fig. 1

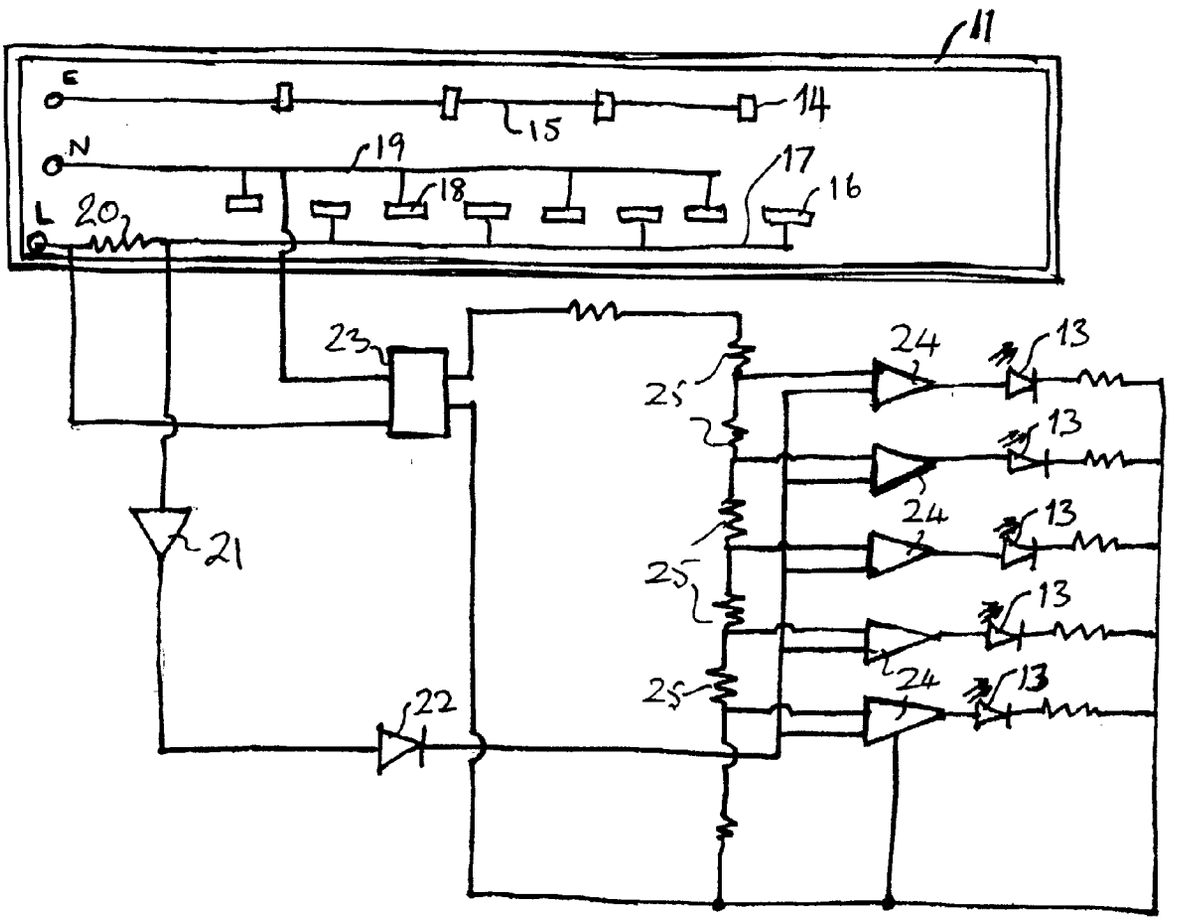
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Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 99 30 0096

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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Y	US 4 965 548 A (FAYFIELD ROBERT W) 23 October 1990 * column 2, line 3 - column 3, line 63; figure 1 *	4-6	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	13 April 1999	Criqui, J-J

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 99 30 0096

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