

(12) **UK Patent Application** (19) **GB** (11) **2473212** (13) **A**

(43) Date of A Publication

09.03.2011

(21) Application No: **0915288.5**
(22) Date of Filing: **03.09.2009**

(51) INT CL:
H02J 3/00 (2006.01)

(56) Documents Cited:
JP 020049377 A **JP 2000232734 A**
JP 2000023363 A

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(58) Field of Search:
INT CL **H02J**
Other: **WPI, EPODOC, FT 5E021/FC25, 5G066/LA01,**
5G066/LA02

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(54) Title of the Invention: **RC²**
Abstract Title: **Secondary ring main with isolator**

(57) The concept of the invention is to enhance the traditional way of wiring buildings to include a separate secondary electrical circuit 3 alongside the primary circuit 2 which gives end users the ability to turn on/off nonessential appliances from a single source 6. This can be achieved by adding a second cable 3 alongside the primary circuit 2, or by utilising a new cable design (Figure 2 - quad and earth ring main cable) to create two separate circuits. Appliances can either be plugged into the primary sockets 4 which are permanently on, subject to available power, or into the secondary sockets 5 which can be switched on/off from a single point 6 within the building. A double socket may be provided which includes one socket 4 connected to the primary circuit 2 and another socket 5 connected to the secondary circuit 3.

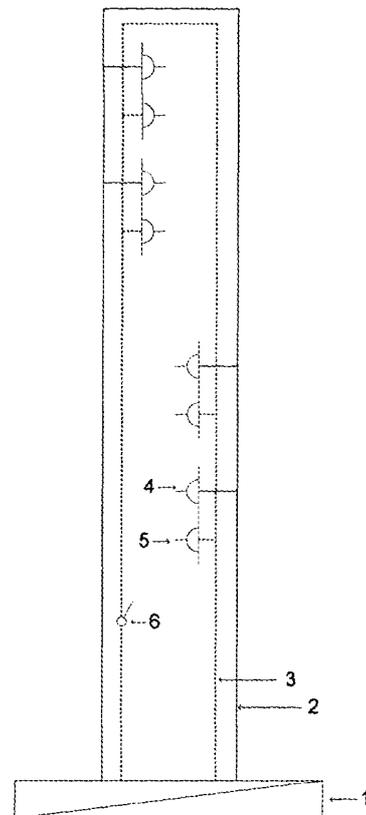


Figure 1 – Schematic

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Drawings

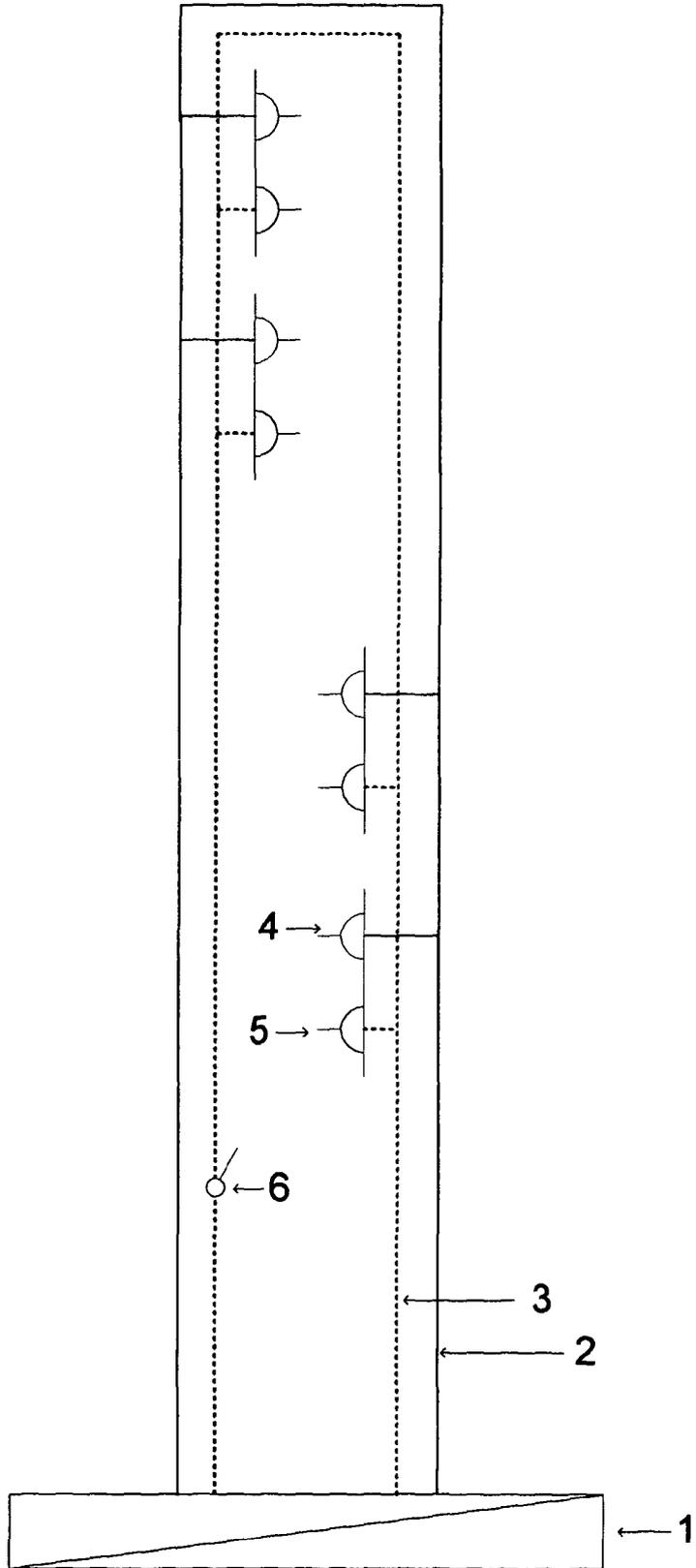


Figure 1 – Schematic

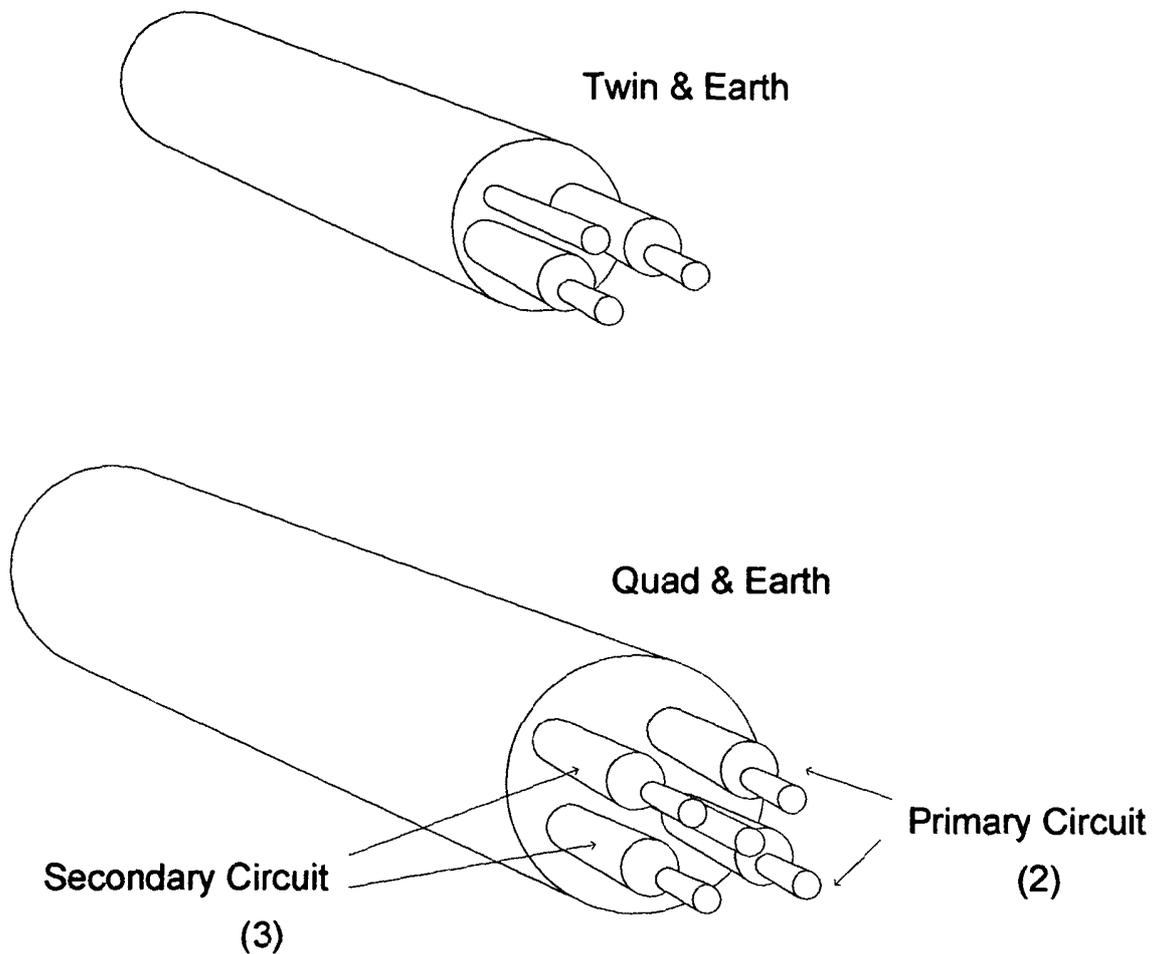
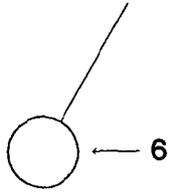
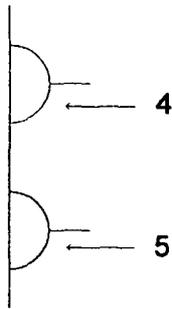


Figure 2 – Cable Design

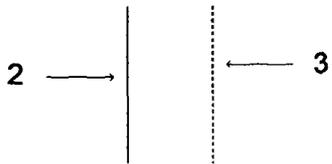
The cable design is a modification of the standard house wiring cable (twin & earth), to incorporate four cores and earth. Basically, it will be to the same design as determined by the British Standard and will be capable of handling the loads and temperatures associated with its use. The two circuits will need to be clearly distinguishable by colour coding the secondary cable accordingly, for example, orange for the live and olive green for the neutral.



Isolator (6): Any style e.g. Timer / Remote Control / Manual / Mechanical / Electrical



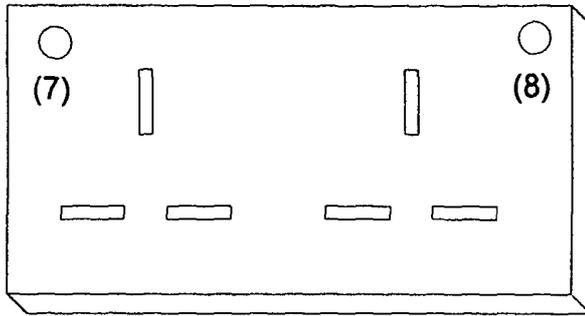
Sockets (4 & 5): Any colour or configuration e.g. Double / Single / Triple / 4 Gang



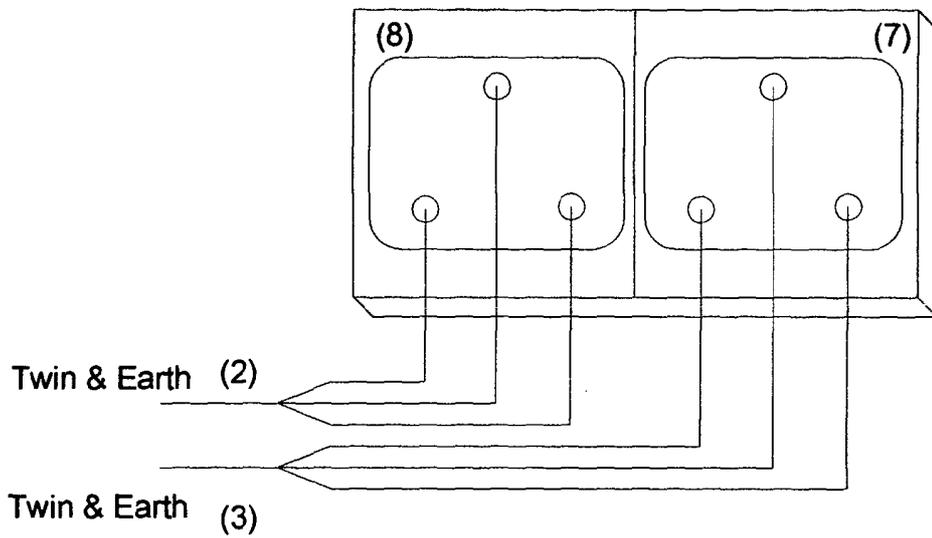
Cable (2 & 3): Any colour, type or configuration e.g. Twin & Earth / Single core / Two core / Four core

Figure 3 – Example of Component Parts

Double socket front view



Double socket rear view



Double socket rear view

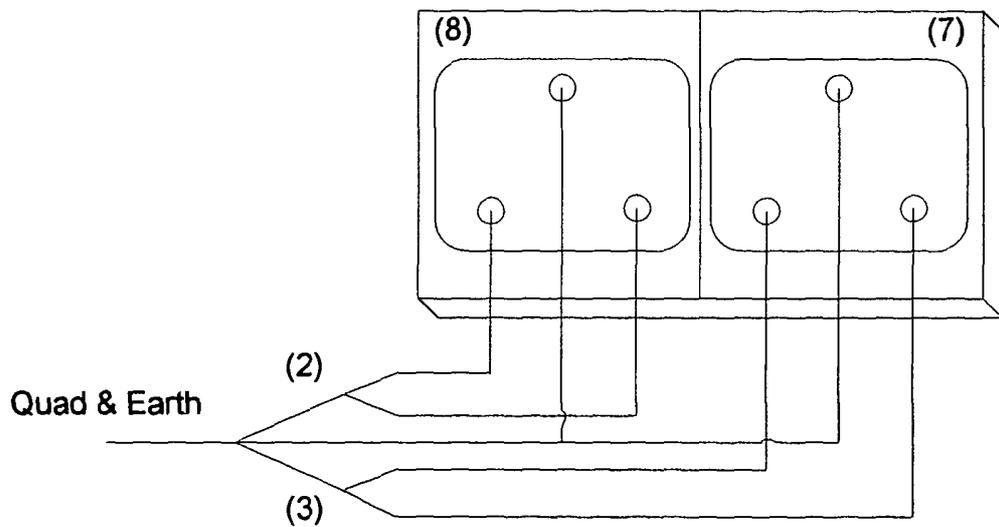


Figure 4 – Socket Design

RC²

RC² is a simple yet ingenious design aimed at reducing energy consumption within buildings by making it convenient for users to switch off all non-essential appliances from a single point. The general concept is to enhance the traditional way of wiring buildings to include a second ring main (RC²). This can be achieved by using standard twin & earth and running it alongside the existing circuit, or by utilising a new cable design quad & earth.

The traditional and existing system for wiring buildings consists of a single circuit supplying power to all sockets on that circuit. This offers the end user a single power source for all appliances connected to it. If the user wanted to turn anything off, which is connected to that circuit, they would have to individually switch the item off at the socket. If a second circuit (RC²) was installed alongside the existing circuit then the second circuit could be used to provide power to items that are deemed to be non-essential. This secondary circuit (RC²), which runs independently and is clearly distinguishable from the primary circuit, can then be controlled from a single source. This enables the end user to conveniently switch on, or off, all appliances connected to it from a single point within the home, thus saving wasted energy, such as overnight or whilst on holiday. RC² also eliminates the need to purchase additional timers or individually switch electrical items off. Furthermore, appliance manufacturers could endorse RC² by recommending which circuit their product should be plugged into.

This invention can be installed in any building in the world, for example:-

- New housing developments
- Commercial property
- Factories
- Existing properties (when rewired)
- Any building that has an electrical supply

Initial investigations show the design to be compatible, and inline, with current wiring installation costs. However, the cost saving and environmental benefits will far outweigh any difference in the long term.

Its core strength is the simplicity of the design which allows the end user the choice to help reduce carbon emissions, without changing their behaviour.

It provides benefits, such as:

- Reducing carbon emissions.
- Compatibility with all circuits globally.
- Compatibility with all products including extension leads.
- Compatible with existing appliances.
- Financial savings to household.

- Convenience – single isolation system.
- Cost savings without changing lifestyles

RC² has the potential to set the standard for buildings of the future with the possibility of being mandated by Governments and professional institutions around the world. It can be applied to all electrical systems irrespective of voltage, and could help Countries meet the growing demand for new developments whilst achieving their carbon reduction targets.

Supporting the idea are four drawings which have been produced to give the reader a clear indication of how the system works.

Figure 1 – Schematic (This shows the basic principle of the design)

Figure 2 – Cable design

Figure 3 – Legend (This offers the reader an indication into the component parts and the variety of products that can be used to enhance the design)

Figure 4 – Socket design

As depicted by Figure 1, all buildings are supplied with power which terminates at the consumers mains distribution board (1). From this distribution board (1), a ring main or power circuit (2) is installed supplying power via sockets (4) to each room. This primary ring main (2) will be used as the essential circuit where all appliances deemed to be essential will be connected to it and subject to available power, will remain on. A second circuit (3) is then installed alongside the existing primary circuit to create a completely separate circuit (3). This secondary circuit will then be used to supply power to non-essential sockets (5), where appliances deemed to be non-essential can be connected to it, subject to available power. This non-essential circuit (3) can then be controlled from a single point (6) within the building so that all non-essential items connected to it (5) can be turned off when not required, for example when away on holiday or overnight.

The two circuits (2 & 3) offer the choice of a permanent supply for essential appliances, subject to available power, or a supply which can be controlled, at the user's convenience, to switch all non-essential appliances connected to it from a single point (6). The choice between essential and non-essential is obviously subjective and therefore determined by the end user.

In order to save time and resources during installation engineers should opt for the new cable design (Figure 2: Quad & Earth). Alternatively, a second twin & earth cable can be installed alongside an existing ring main (2) to create another, but completely separate, circuit (3).

Figure 3 offers the reader an indication into the component parts and the variety of products that can be used to enhance the design. For example the main isolator (6) for the secondary circuit (3) can be a digital timer which automatically turns the whole circuit off at times set by the user.

A new socket design will also be required (Figure 4) which separates the primary (2) and secondary (3) circuits whilst still maintaining the aesthetically pleasing design of current sockets. This is achieved by providing a dual connection facility on the rear of the socket faceplate that enables the primary (2) and secondary (3) circuits to remain completely separate of each other. Alternatively, an existing socket design can be used by just doubling up the amount of sockets, providing they remain completely separate, i.e. they are installed on the primary or secondary circuits only and clearly distinguishable.

The configuration or combination of sockets (5 & 6) is dependant on the house builder's preference, for example, a four socket configuration with two essential (primary) and two non-essential (secondary) sockets or a double socket (Figure 4) with one primary (essential) and one secondary (non-essential) outlet.

Although drawn in black & white the two circuits need to be clearly distinguishable. This can be achieved by introducing a simple, or indeed elaborate, scheme which clearly identifies which circuit is which. Figure 4 indicates a simple marking system on the front and rear of the socket, which provides engineers and end users a clear marker as to which circuit is which. The primary circuit (2) can be, for example, marked with a red dot (8) whilst the secondary circuit (3) can be marked with a green dot (7).

Claims

First Claim

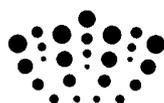
1. A second but separate electrical circuit (ring main), which allows the end user to isolate all non-essential appliances connected to it from a single point within the building.

Second Claim

2. Four core and earth ring main cable.

Third Claim

3. A ring main socket, which from the front is seamless in appearance but can provide complete separation of the primary and secondary circuits connected to it.



Application No: GB0915288.5

Examiner: Peter Keefe

Claims searched: 1

Date of search: 23 December 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1	JP 2000023363 A MITSUI, SUGIMOTO see abstract and figure 1
X	1	JP 2000232734 A NIPPON see abstract and figure 1
X	1	JP 02049377 A ASAHI see abstract and figure 1

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

Worldwide search of patent documents classified in the following areas of the IPC

H02J

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC, FT 5E021/FC25, 5G066/LA01, 5G066/LA02

International Classification:

Subclass	Subgroup	Valid From
H02J	0003/00	01/01/2006