A socket with switches 111 and at least one USB slot 130 includes a base, a cover 12 attached to the base and a voltage transforming circuit 13 fixed in the socket. The voltage transforming circuit board transforms the voltage of a power source for use at the USB slot. The board has an input terminal connected to the power supply and an output terminal connected to the USB slot. The voltage is transformed and rectified by the circuit such that what is supplied is the same as that of a USB slot of a common computer host. The cover has an aperture corresponding to the USB slot of the voltage transforming circuit. An electric appliance, such as a cell phone, can be charged by connecting one end of a USB power line/lead to the electronic appliance with the other plug end passing through the aperture and into the USB slot. There is therefore no need to use a conventional power line/lead with a large and heavy transformer.
Published: without international search report and to be republished upon receipt of that report (Rule 48(2)(g))
This invention relates to an electrical socket, and particularly to a socket of the type that may be fixed on a wall or a transfer-type socket or an extension socket. The socket is provided with at least one USB charge slot making it convenient for an electronic appliance to use a USB power line/lead to connect to the USB charge slot for charging and without needing a power line with a large and heavy transformer.

If an electronic appliance such as a cellphone requires charging, it is common to use a charge power line/lead with transformer with one end connected to the electronic appliance and the other end to a conventional plug socket with switch.

However, the conventional charge power line/lead with transformer is quite inconvenient to carry around because of its large dimensions and the heavy weight of the transformer.

According to a first aspect, the invention comprises a socket with switches and at least one USB charge slot, said socket comprising: a base; a cover for attachment on the base, an interior space being defined between the base and the cover, the cover being provided with plural holes; a voltage transforming circuit provided with voltage transforming means for a power source, the circuit being fixed in the interior space and having a terminal for connection to a power source connected to said socket and to a terminal in the form of a USB slot, said cover having a hole corresponding to said USB slot so that a USB power line/lead for an electronic appliance may be inserted through the hole and in the USB slot for charging the electronic appliance.

According to a second aspect, there is provided an electrical socket arrangement of the fixed type comprising a faceplate having an aperture for receiving at least one USB-type plug, the arrangement further comprising a USB socket located behind the aperture and transforming means connected to said USB socket for transforming an incoming first voltage to a USB voltage.

The arrangement may comprise one or more other socket types, for example a mains socket for receiving a mains multi-pin plug, a telephone socket for receiving a telephone plug and/or a data communications socket for receiving a data communications plug. The arrangement may alternatively simply comprise one or more switches arranged on the faceplate alongside the USB socket. The transforming means/transformer may be arranged to convert a.c. mains voltage to d.c. USB voltage, currently in the region of 5v.
The aim is to provide a socket with at least one USB charge slot which is convenient for charging an electronic appliance by enabling use of a USB power line/lead to connect an appliance to be charged to the USB charge slot(s) in the socket.

A feature of the invention includes a transforming circuit board installed in the socket for transforming the voltage of the power source. The power input of the transforming circuit board is connected to the power source so that the voltage of the power source is transformed and then rectified, and output to a USB slot aligned to a hole provided in a cover of the socket. This is useful for enabling the USB power line/lead of an electronic appliance to be inserted in the slot for charging.

The invention will now be described, by way of example, with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of a preferred embodiment comprising a socket with switches and a USB charge slot;
Figure 2 is a first exploded perspective view of the socket;
Figure 3 is a second exploded perspective view of the socket;
Figure 4 is a third exploded perspective view of the socket;
Figure 5 is an upper view of the socket; and
Figure 6 is a perspective view of the socket when used with an electronic appliance.

Referring to Figures 1 to 4, a socket with switches and USB charge slot(s) includes a base 11 and a cover 12.

The base 11 is provided with a plurality of compartments 110, a press switch 111 fixed in each of the compartments 110 and an insert slot 112 in each of the compartments 110.

The cover 12 is tightly fixed onto the base 11 which is provided with plural holes 120 corresponding to the press switches 111 extending upwards therethrough and insert slots 112 for receiving the pins of plugs when passing therethrough.

What is improved in this embodiment is a transforming circuit board 13 which is fixed in the base 11. This board 13 is provided with a power input terminal for connection to a power source connected to the socket 10. It is arranged to transform the power source voltage and to rectify the signal for an output terminal in the form of a USB slot 130. The output voltage provided by the board 13 to the USB slot 130 is substantially the same output voltage provided by a USB slot.
of a computer host.

The cover 12 also has a hole 120 corresponding with the USB slot 130.

As indicated in Figure 6, when a common electronic appliance such as a cellphone is to be charged, one end of the USB power source line/lead is connected to the cellphone and the other USB plug-end is inserted into the hole 120 aligned to the USB slot 130. Accordingly, the embodiment is more convenient to use than a conventional power line with transformer that is both heavy and large to carry around.

Moreover, the embodiment can be applied to wall sockets with switches, transfer-type sockets with switches and/or extension sockets with switches. It can also be applied to telephone sockets and data communication sockets.

While the preferred embodiment of the invention has been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.
Claims

1. A socket with switches and at least one USB charge slot, said socket comprising:
   a base;
   a cover for attachment on the base, an interior space being defined between the base
   and the cover, the cover being provided with at least one hole;
   a voltage transforming circuit provided with voltage transforming means for a power
   source, the circuit being fixed in the interior space and having a terminal for connection to
   a power source connected to said socket and to a terminal in the form of a USB slot,
   said cover having a hole corresponding to said USB slot so that a USB power line/lead
   for an electronic appliance may be inserted through the hole and in the USB slot for
   charging the electronic appliance.

2. The socket as claimed in claim 1, wherein the output voltage of the at least one USB slot
   is the same as that of a USB slot of a common computer host.

3. The socket as claimed in claim 1 or claim 2, wherein the socket is arranged to be fixed on a
   wall.

4. The socket as claimed in claim 1 or claim 2, wherein the socket is a transfer-style socket.

5. The socket as claimed in claim 1 or claim 2, wherein the socket is an extension socket.

6. An electrical socket arrangement of the fixed type comprising a faceplate having an
   aperture for receiving at least one USB-type plug, the arrangement further comprising a USB
   socket located behind the aperture and transforming means connected to said USB socket for
   transforming a first voltage to a USB voltage.

7. A socket arrangement according to any preceding claim, wherein the arrangement comprises
   one or more other socket types located behind corresponding aperture(s) in the faceplate, for
   example a mains socket for receiving a mains multi-pin plug, a telephone socket for receiving a
   telephone plug and/or a data communications socket for receiving a data communications plug.

8. A socket arrangement according to any one of claims 1 to 6, wherein the arrangement
   comprises a switch assembly comprising one or more switches on the faceplate and the USB
   socket.
9. A socket according to any preceding claim, wherein the transforming means/transformer is arranged to convert a.c. mains voltage to d.c. USB voltage in the region of 5v.