

TRACK SOCKET KIT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a socket kit, and more particularly,
5 to a track socket kit adapted for offices or industrial environments.

2. Description of Related Art

For conventional sockets, no matter for the purpose of expansion or
extension of length, the structure of a socket consists mainly of a casing and
plural sets of socket holes which are provided on the casing and which are
10 partitioned from one another. These kinds of sockets are quite inconvenient
when employed in an occasion that electrical facilities are necessary to be
moved. This is because the electrical facilities need to be first plugged out
from socket holes and then plugged in to other socket holes. Such problem
resulted from the movement of electrical facilities can be solved by a
15 proposed design relating to a track socket structure.

No matter what types of the conventional sockets are, partitioned
sockets or track sockets, all sockets have to face one problem, namely
pollution by particles. It is noted that the conventional track socket is
designed to be dust-proof, by providing an elastic rubber strip to be fixed on
20 a socket body, such that the rubber strip will normally cover a socket mouth,
while whenever a plug or a plug conversion adaptor is plugged in the socket,
the rubber strip is pushed away directly, so that the plug or the conversion
adaptor can contact electrodes inside of the socket body.

Such conventional design has a shortage, namely, the rubber strip will inevitably deteriorate after a certain time, resulting in loss of the covering and dust-proof effect.

Moreover, suppose the track socket is used in an obscure and dusky
5 occasion, users may have difficulties in plugging correctly the plug or the conversion adaptor into the socket mouth, or may even be time-consuming in searching for location of the socket.

Therefore, after continuous efforts and accumulation of experiences, improvement has been made so as to overcome the above-mentioned
10 shortages, and a creative track socket kit has been developed and accomplished.

SUMMARY OF THE INVENTION

The present invention is to provide a track socket kit, comprising an
15 elongated housing, two conductive electrodes, an electrically-illuminating strip, a transformer, and a transparent doorplate, wherein the elongated housing is provided with an internally-recessed track, and the two conductive electrodes and the electrically-illuminating strip are fixed in the internally-recessed track, respectively.

20 According to the present invention, the transformer is electrically connected with the two conductive electrodes and the electrically-illuminating strip, respectively, whereas the transparent doorplate is pivotally arranged on the elongated housing for covering a slit of the internally-recessed track.

Through the above design for the track socket kit, according to the present invention, when the socket itself has received an electrical power supply, such as from a public electrical power source, and through the transformer for converting thereof into a power supply of appropriate
5 voltage, the electrically-illuminating strip can be illuminated, making the radiance of the illumination penetrates through the transparent doorplate and observed by users. Therefore, even under obscure and dusky surroundings, there is no difficulty for one to use the track socket of the present invention. In addition, the dust-proof design, according to the
10 present invention, avoids the shortage of using a rubber doorplate, as adopted by the conventional art, which results in deterioration and losing function.

According to the present invention, the two conductive electrodes may refer to two conductive copper bars, and that the
15 electrically-illuminating strip may include a soft circuit board and a plurality of LEDs which are electrically connected with the soft circuit board.

The transparent doorplate may consist of a single doorplate element or a plurality of neighboring small transparent doorplate segments, where
20 each small transparent doorplate segment abuts against an elastic element so as to recover the doorplate to a predetermined position. The elastic element may refer to a torsion spring.

The track socket kit, according to the present invention, may further comprise a terminal casing and a power-source-connecting-plug, wherein

the terminal casing receives a pair of conductive voltage bases which are electrically connected with the power-source-connecting-plug. The two conductive electrodes are electrically connected with the conductive voltage bases, respectively, in such a manner that the conductive electrodes
5 penetrate through the terminal casing. Such a structural design not only facilitates assembly of the track socket, but also makes the track socket more convenient in use.

According to the present invention, the transformer may include a circuit board, a pair of conductive voltage bases, and a transformer casing,
10 wherein the circuit board and the conductive voltage bases are all received in the transformer casing, and the circuit board is electrically connected with the conductive voltage bases and the electrically-illuminating strip. The two conductive electrodes penetrate through the transformer casing and are electrically connected with the conductive voltage bases, respectively.
15 Such a structural design also facilitates assembly of the track socket.

Further, the track socket kit, according to the present invention, may further comprise a plug conversion adaptor including a conversion base, a pair of plugholes corresponding to an electrical appliance plug, and a pair of contacting terminals, where the plugholes and the contacting terminals are
20 correspondingly and electrically connected with each other and are arranged on surface of the conversion base, respectively. The contacting terminals are correspondingly in touch with the two conductive electrodes.

The conversion base may include an upper relatively-rotating portion, a lower relatively-rotating portion, and a relatively-fixing portion.

The upper relatively-rotating portion and the lower relatively-rotating portion are fixingly connected with each other and are located, respectively, at opposite sides of the relatively-fixing portion. The plugholes are provided at the upper relatively-rotating portion, while the contacting
5 terminals are provided at the lower relatively-rotating portion.

Further, according to the present invention, a ground may be arranged in the internally-recessed track. A protrusion extends from underneath of the relatively-fixing portion, and is provided, at its top, with a ground terminal, where the ground terminal presses on the ground. Thereby,
10 once the conversion base is inserted into the elongated housing, a grounding effect can be obtained, and this ensures safety of use.

Other objects, advantages, and novel features of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view illustrating a track socket kit according to the present invention;

FIG. 2 is a perspective view illustrating a plug conversion adaptor of
20 the track socket kit according to the present invention;

FIG. 3 is a schematic view illustrating a first state of use to the track socket kit according to the present invention;

FIG. 4 is a schematic view illustrating a second state of use to the track socket kit according to the present invention; and

FIG. 5 is a schematic view illustrating a third state of use to the track socket kit according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 Referring to FIG. 1, an exploded view illustrating a track socket kit according to the present invention, and to FIG. 2, a perspective view illustrating a plug conversion adaptor of the track socket kit, the track socket kit comprises an aluminum elongated housing 10, two conductive electrodes 20,21 acting as positive and negative electrodes, an
10 electrically-illuminating strip 22, a transparent doorplate 23, a transformer 30, a plug conversion adaptor 40, and a power-source-connecting-plug 52.

According to the present invention, the elongated housing 10 has a somewhat rectangular appearance, and is provided with an internally-recessed track 11 opening along top of the elongated housing 10
15 and formed with a slit 12. A ground 101 is formed inside the internally-recessed track 11 and right under the slit 12. According to the present invention, since the elongated housing 10 is made of metal, the ground 101 is formed integrally with the elongated housing 10.

The two conductive electrodes 20,21 are configured as conductive
20 copper bars, and are fixed in the internally-recessed track 11 such that the conductive electrodes 20,21 are separated by the slit 12 and are disposed opposite to and parallel with each other. The conductive electrodes 20,21 are not limited to be copper bars, but other equivalents will do such as conductive plates so long as meeting the specification of electricity loading

as required; also the conductive electrodes 20,21 are not limited to be so oppositely disposed as the above mention. In detail, the conductive electrodes 20,21 are each first inserted into a plastic strip 14 which then is engaged into a recess 15 on an internal wall of the elongated housing 10, so
5 that the two conductive electrodes 20,21 are electrically insulated from each other and are so from the elongated housing 10. Such design facilitates assembly of the track socket.

Further, according to present invention, the electrically-illuminating strip 22 refers to an LED lamp strip including a soft circuit board 221 and a
10 plurality of LEDs 222 which are electrically connected with the soft circuit board 221. The electrically-illuminating strip 22 is assembled to the elongated housing 10 in a manner similar to that of the conductive electrodes, only by engaging the LEDs 222-loaded soft circuit board 221 into a recess on an internal wall of the elongated housing 10.

15 The transparent doorplate 23 is pivotally arranged on the elongated housing 10 for covering the slit 12 of the internally-recessed track 11 so as to effect a dust-proof and coverage function. The transparent doorplate 23 can be a single elongated doorplate for covering the slit 12 directly; or a plurality of neighboring individual doorplate segments 231, as shown,
20 which are lined together to cover the slit 12. According to the present invention, the doorplate segments 231 are each first engaged with an engaging body 24 so as to form a doorplate module, then all the doorplate modules are assembled, in sequence, into a recess 13 on an internal wall of the elongated housing 10. Such a design facilitates the assembly work.

Further, an elastic element 25, such as a torsion spring, is applied to each of the doorplate module, where the elastic element 25 has one end biasing against the doorplate segment 231 while the other end against the engaging body 24 so as to provide the doorplate segment 231 a recovering force.

5 According to the present invention, the transformer 30 includes a circuit board 31, a pair of conductive voltage bases 32,33, and a transformer casing 34, wherein the transformer casing 34 is engaged with a front end of the elongated housing 10. The circuit board 31 and the conductive voltage bases 32,33 are all received in the transformer casing 34, where the circuit
10 board 31 is electrically connected with the conductive voltage bases 32,33 and the electrically-illuminating strip 22. Front ends of both the two conductive electrodes 20,21 penetrate through the transformer casing 34 and are pressingly-fixed on the conductive voltage bases 32,33 such that they are electrically connected with one another. To the effect, the
15 conductive voltage bases 32,33 are electrically connected with the two conductive electrodes 20,21 and the electrically-illuminating strip 22, respectively.

 The power-source-connecting-plug 52 extends into a terminal casing 51, and is in connection with a pair of conductive voltage bases
20 53,54 received in the terminal casing 51, as such, the power-source-connecting-plug 52 is electrically connected with the conductive voltage bases 53,54. The two conductive electrodes 20,21 are electrically connected with the conductive voltage bases 53,54 in such a manner that ends of the conductive electrodes 20,21 penetrate through the

terminal casing 51 and are pressed and fixed to the conductive voltage bases 53,54. The terminal casing 51 neighbors with end of the elongated housing 10.

The plug conversion adaptor 40 includes a conversion base 41, a pair of plugholes 42 corresponding to an electrical appliance plug 55, and a pair of contacting terminals 43, where the plugholes 42 and the contacting terminals 43 are correspondingly and electrically connected with each other and are arranged on surface of the conversion base 41, respectively. In detail, the conversion base 41 includes an upper relatively-rotating portion 411, a lower relatively-rotating portion 413, and a relatively-fixing portion 412. The upper relatively-rotating portion 411 and the lower relatively-rotating portion 413 are fixingly connected with each other and are located, respectively, at opposite sides of the relatively-fixing portion 412. The plugholes 42 are provided at the upper relatively-rotating portion 411, while the contacting terminals 43 are provided at the lower relatively-rotating portion 413. There are two spaced protrusions 415 extended from underneath of the relatively-fixing portion 412, where the protrusions 415 each appears, at its top, with a ground terminal 414.

Now referring to FIG. 3, a schematic view illustrating a first state of use to the track socket kit according to the present invention, and also to FIG. 1, even though the track socket has not been used yet (i.e. the conversion base 41 is not inserted into the elongated housing 10), the power-source-connecting-plug 52 has been plugged into, for instance, a socket arranged at the wall of a conference room, then electricity enters into

the transformer 30 through the two conductive electrodes 20,21, and after transformation of voltage, electrical power is supplied to the electrically-illuminating strip 22 for illumination. At this moment, radiance emits from the internally-recessed track 11 and passes through the transparent doorplate 23 so as to provide a basic radiance for one to observe where the track socket is located.

Referring to FIG. 4, a schematic view illustrating a second state of use to the track socket kit according to the present invention, when in connection with an outside electrical appliance, the lower relatively-rotating portion 413 of the conversion base 41 is first in alignment with and inserted into the transparent doorplate 23, and then the transparent doorplate 23 is pivoted such that the lower relatively-rotating portion 413 can be inserted into the internally-recessed track 11 and that the relatively-fixing portion 412 abuts on the top of the elongated housing 10. It is noted that the protrusions 415 underneath the relatively-fixing portion 412 happens to press on the ground 101 inside the internally-recessed track 11. This means that the ground terminal 414 (shown in FIG. 2) always contacts the ground 101, and this will ensure a safe grounding. Thereafter, the electrical appliance plug 55 is plugged into the plugholes 42 of the upper relatively-rotating portion 411.

Further referring to FIG. 5, a schematic view illustrating a third state of use to the track socket kit according to the present invention, turning together the electrical appliance plug 55 and the upper relatively-rotating portion 411 so as to drive the lower relatively-rotating portion 413 for

rotation. This will make the two contacting terminals 43 being in touch with the conductive electrodes 20,21, respectively, such that an electrical communication can be established and that required power supply can reach to the outside electrical appliance.

5 Given the above, it is understood that the track socket, according to the present invention, is provided with an illumination device, and accompanied with the dust-proof transparent doorplate 23, such that the location of the track socket can be observed, due to radiance of the electrically-illuminating strip 22, when the conductive electrodes 20,21 are
10 in connection with electrical power source. Therefore, the track socket is convenient to users. Another feature of the present invention resides in a simple, rather than complicated, structure, and thus, is predominant as far as the cost of manufacture is concerned.

 Of course, suppose the elongated housing 10 is not made of
15 conductive material, the ground 101 cannot be made integrally with the elongated housing 10. Under such circumstances, a conductive element can be taken as a ground to be arranged in the internally-recessed track 11 and extended outside of the elongated housing 10. Similarly, the arrangement may be in such a manner that when the plug conversion adaptor 40 is
20 inserted into the elongated housing 10, the ground terminal 414 happens to touch the conductive element so as to establish an electrical connection. Such design can also ensure a safe grounding.

 Although the present invention has been explained in relation to its preferred embodiments, it is to be understood that many other possible

modifications and variations can be made without departing from the scope of the invention as hereinafter claimed.

WHAT IS CLAIMED IS:

1. A track socket kit, for being plugged therein by an electrical appliance plug, comprising:

an elongated housing, being provided with an internally-recessed track;

two conductive electrodes, being fixed in the internally-recessed track, respectively;

an electrically-illuminating strip, being arranged in the internally-recessed track;

a transformer, being electrically connected with the two conductive electrodes and the electrically-illuminating strip; and

a transparent doorplate, being pivotally arranged on the elongated housing for covering a slit of the internally-recessed track.

2. The track socket kit as claimed in claim 1, wherein the two conductive electrodes refer to two conductive copper bars.

3. The track socket kit as claimed in claim 1 or 2, wherein the electrically-illuminating strip includes a soft circuit board and a plurality of LEDs which are electrically connected with the soft circuit board.

4. The track socket kit as claimed in any one of the preceding claims, wherein the transparent doorplate consists of a plurality of neighboring small transparent doorplate segments, where each small transparent doorplate segment abuts against an elastic element.

5. The track socket kit as claimed in claim 4, wherein the elastic element refers to a torsion spring.

6. The track socket kit as claimed in any of the preceding claims, further comprising a terminal casing and a power-source-connecting-plug, wherein the terminal casing receives a pair of conductive voltage bases which are electrically connected with the power-source-connecting-plug, and wherein the two conductive electrodes are electrically connected with the conductive voltage bases, respectively, in such a manner that the conductive electrodes penetrate through the terminal casing.

7. The track socket kit as claimed in any of the preceding claims, wherein the transformer includes a circuit board, a pair of conductive voltage bases, and a transformer casing, wherein the circuit board and the conductive voltage bases are all received in the transformer casing, and the circuit board is electrically connected with the conductive voltage bases and the electrically-illuminating strip, and the two conductive electrodes penetrate through the transformer casing and are electrically connected with the conductive voltage bases, respectively.

8. The track socket kit as claimed in any of the preceding claims, further comprising a plug conversion adaptor including a conversion base, a pair of plugholes corresponding to the electrical appliance plug, and a pair of contacting terminals, wherein the plugholes and the contacting terminals are correspondingly and electrically connected with each other and are arranged on surface of the conversion base, respectively. The contacting terminals are correspondingly in touch with the two conductive electrodes.

9. The track socket kit as claimed in claim 8, wherein the conversion base includes an upper relatively-rotating portion, a lower

relatively-rotating portion, and a relatively-fixing portion, the upper relatively-rotating portion and the lower relatively-rotating portion are fixingly connected with each other and are located, respectively, at opposite sides of the relatively-fixing portion, and the plugholes are provided at the
5 upper relatively-rotating portion, while the contacting terminals are provided at the lower relatively-rotating portion.

10. The track socket kit as claimed in claim 9, wherein a ground is arranged in the internally-recessed track, and a protrusion extends from underneath of the relatively-fixing portion, and wherein the protrusion, at
10 its top, is provided with a ground terminal, and the ground terminal presses on the ground.