



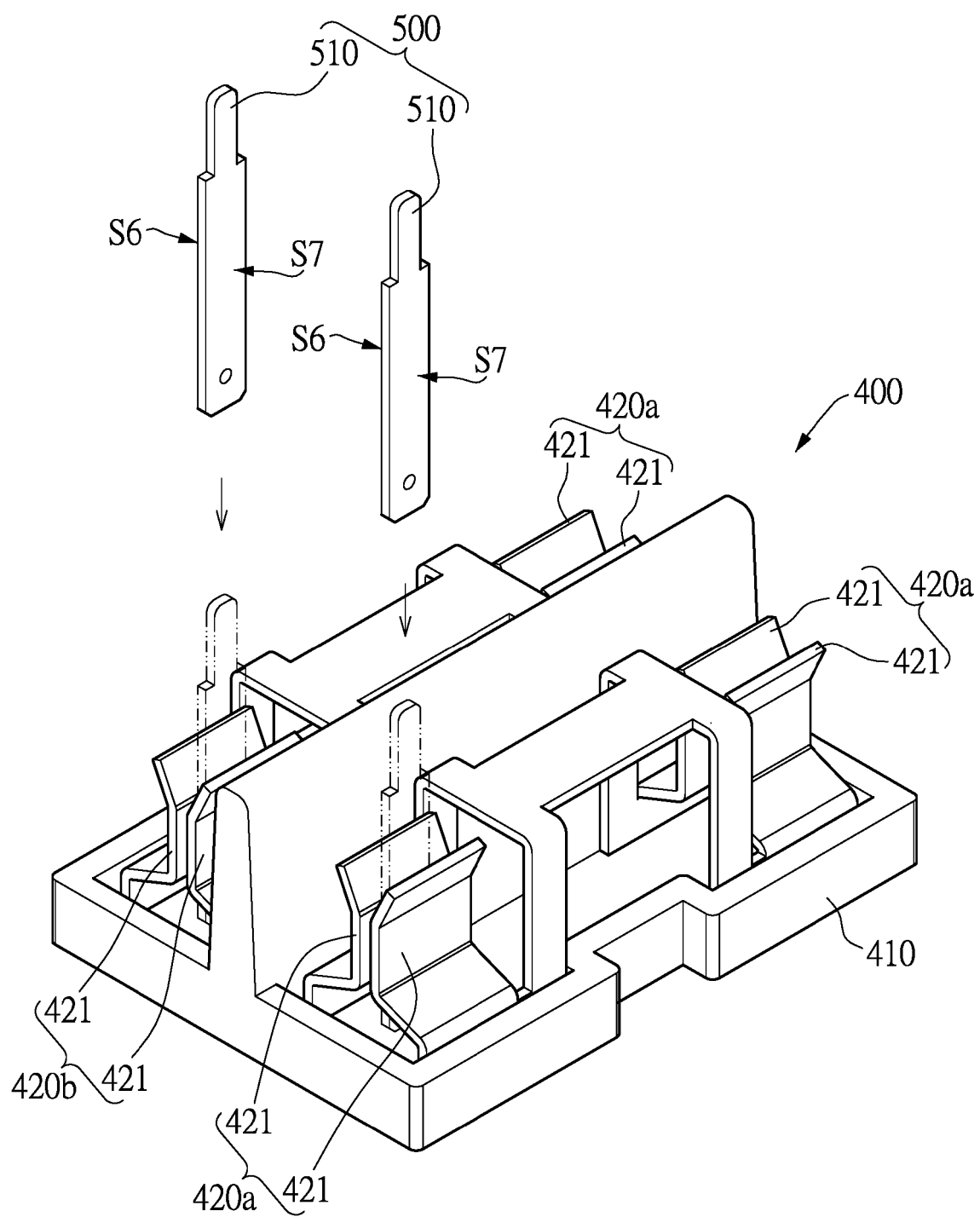
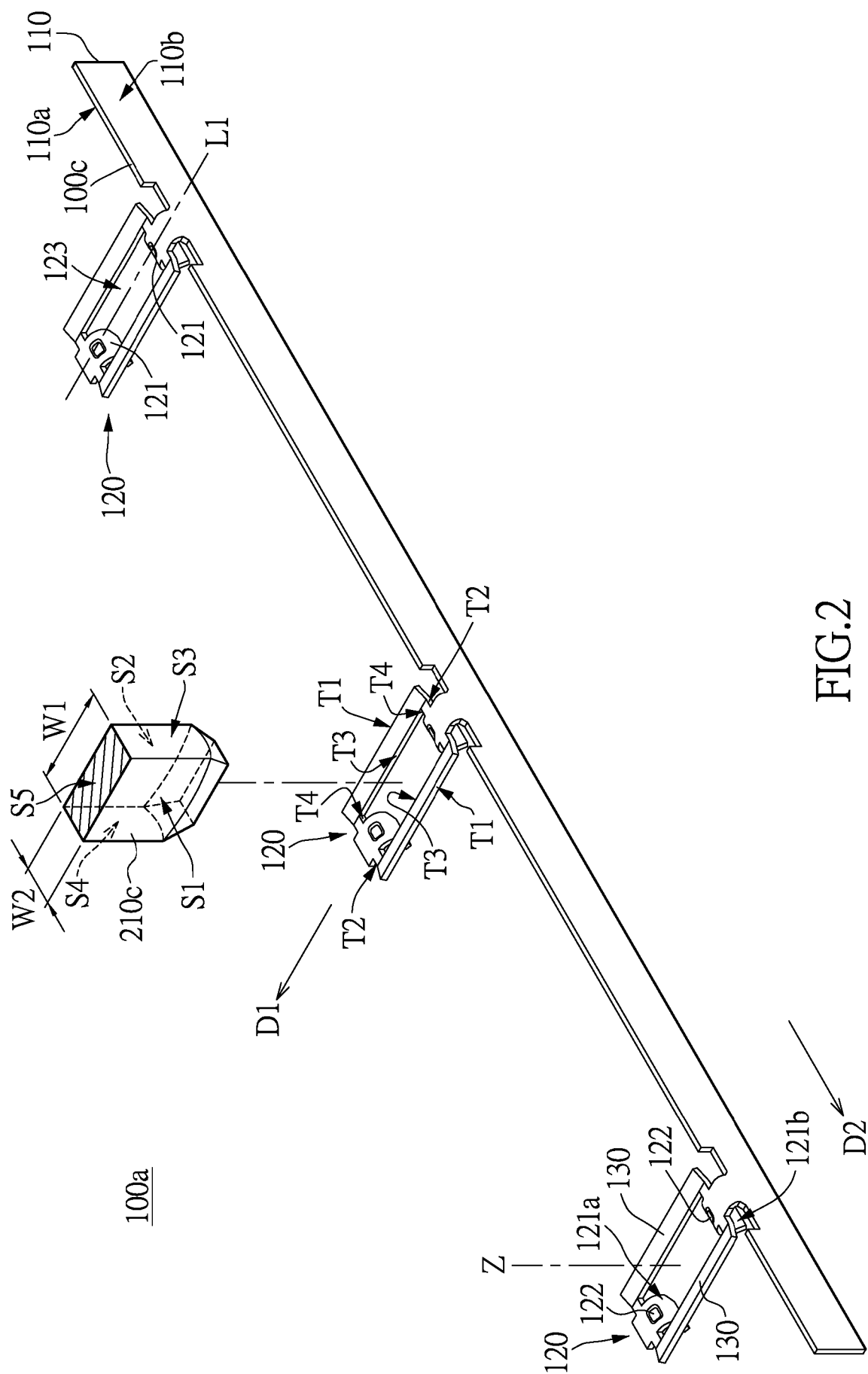


FIG.1  
PRIOR ART



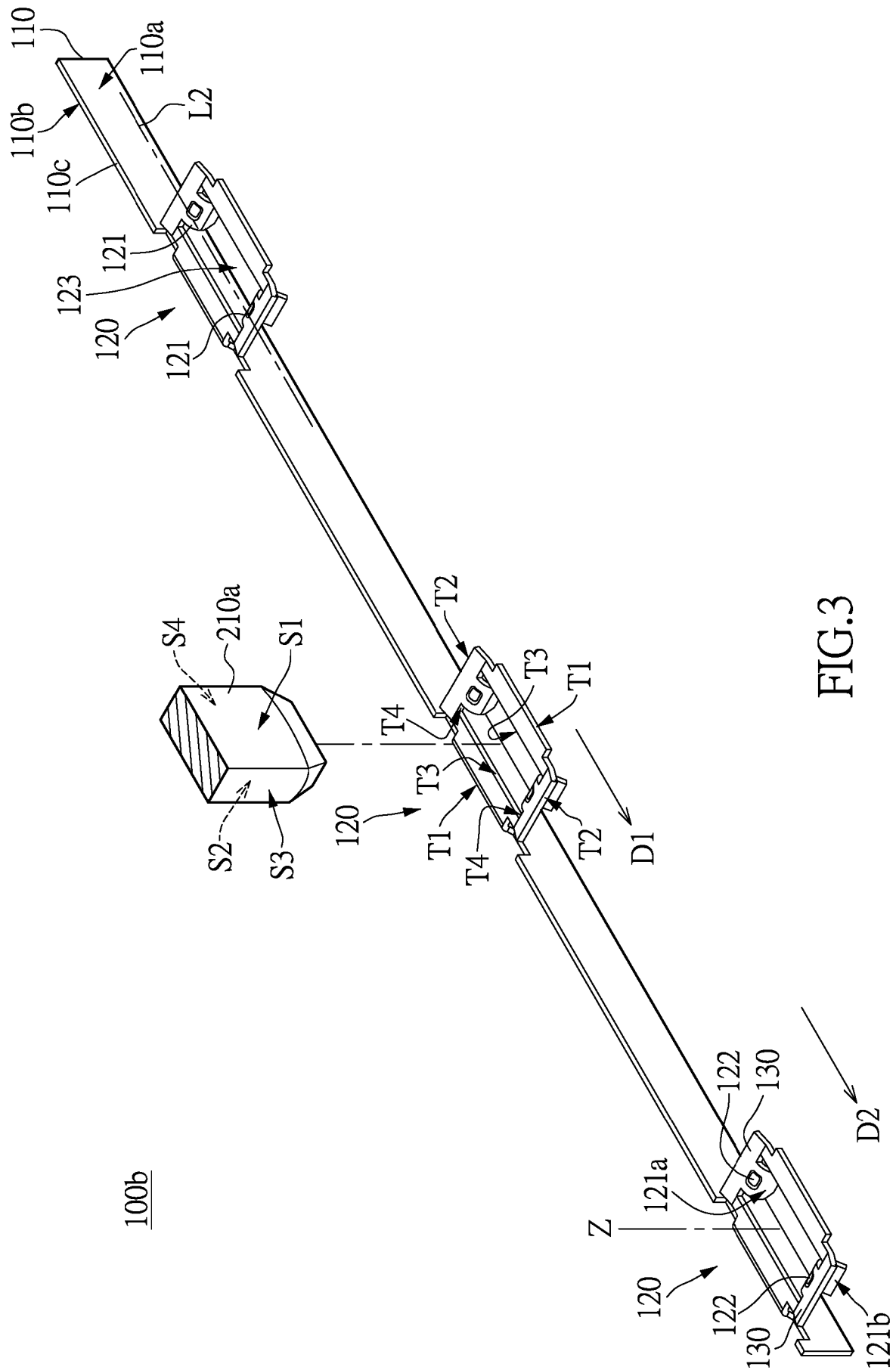


FIG.3

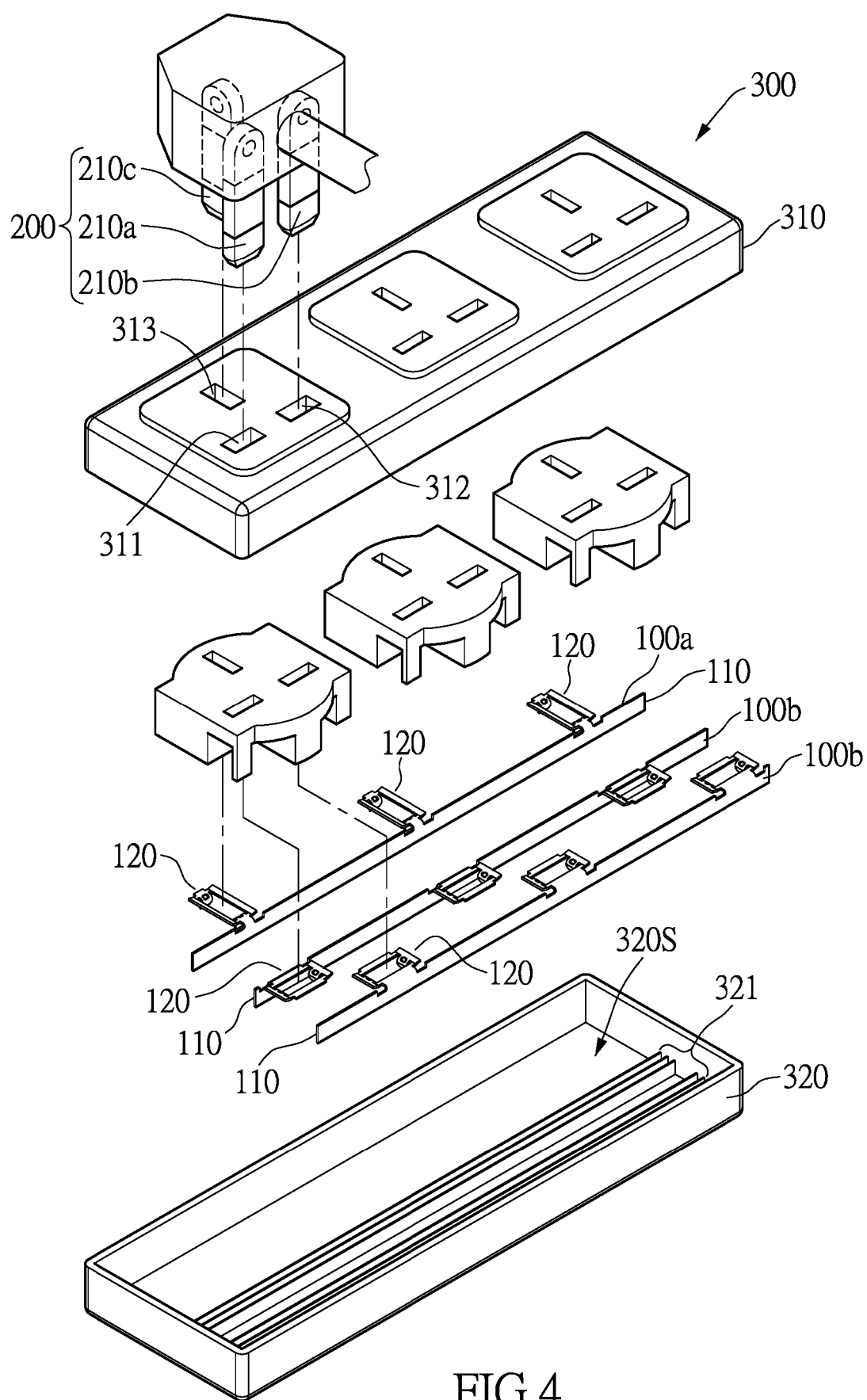


FIG.4

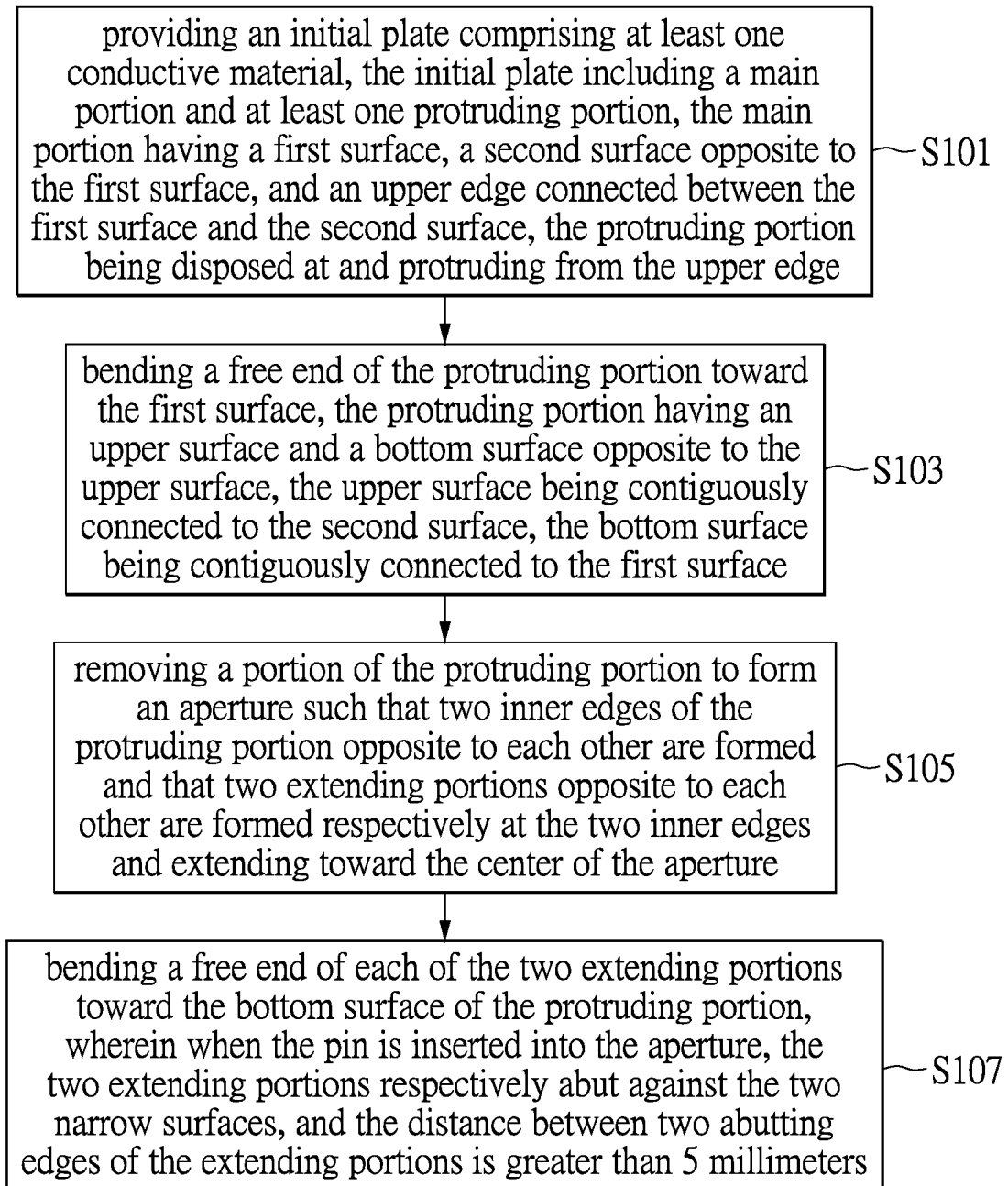


FIG.5

# ONE-PIECE CONDUCTOR AND METHOD OF MANUFACTURING THE SAME

## BACKGROUND

### 1. Field of the Invention

[0001] The instant disclosure relates to structural arrangement of conductive element applied in a socket and manufacturing method thereof, and pertains particularly to a one-piece conductor for coupling with a pin of a plug of a British standard and method of manufacturing the same.

### 2. Description of Related Art

[0002] A socket is for providing electrical power to an electronic apparatus when the electronic apparatus is electrically connected to the socket selectively. As shown in Fig.1, which shows a perspective view of conductors of prior art applied in a socket, a bottom casing 410 of a socket 400 has a plurality of conductors (such as conductors 420a and conductors 420b), which are respectively corresponding to a plurality of apertures of an upper casing (not shown in Fig.1) of the socket 400 in position. The conductors 420a, 420b are electrically connected to a power source (not shown in Fig.1), and a plurality of pins 510 of a plug 500 of the electronic apparatus can be inserted into the apertures of the upper casing and in contact with the conductors 420a, 420b, whereby the electronic apparatus can be electrically connected to the power source through the conductors 420a, 420b.

[0003] Each of the conductors 420a, 420b is structurally made of at least two copper plates 421 for respectively abutting two wide surfaces S6, S7 of each pin 510 of the plug 500. As shown in Fig. 1, the socket 400 is for a

plurality of plugs 500 and includes a plurality of pairs of the conductors 420a, 420b, wherein pairs of the conductors 420a, 420b are structurally spaced out and respectively corresponding to pairs of the apertures of the upper casing (not shown in Fig.1) of the socket 400 in position, whereby the pins 510 of the plugs 500 can be inserted into the apertures and electrically connected to the socket through the conductors 420a, 420b.

#### SUMMARY OF THE INVENTION

**[0004]** The embodiment of the instant disclosure provides a one-piece conductor, which is for coupling with a pin of a plug of British standard. The pin has two wide surfaces opposite to each other and two narrow surfaces opposite to each other. The width of at least one of the two narrow surfaces is greater than 5 millimeters, and the width of at least one of the two wide surfaces is not smaller than the width of at least one of the two narrow surfaces.

**[0005]** The one-piece conductor in accordance with the instant disclosure comprises a main plate and at least one clipping element. The main plate has a first surface and a second surface opposite to the first surface. The clipping element is protruding from the first surface of the main plate. The clipping element has an aperture such that the clipping element has two inner edges opposite to each other and two clipping arms opposite to each other, which are respectively disposed at the two inner edges and extending toward the center of the aperture. When the pin is inserted into the aperture of the clipping element, the two clipping arms respectively abut against the two narrow surfaces of the pin, and the distance between two abutting edges of the two clipping arms is greater than 5 millimeters.

[0006] Another aspect of the instant disclosure provides a method of manufacturing one-piece conductor, which is for manufacturing a one-piece conductor. In summary, because of the one-piece design, the process of manufacturing the one-piece conductor is simplified, and the yield rate is promoted. Furthermore, the one-piece conductor can have a design which is highly applicable to various applications.

[0007] These and other features and advantages of the present invention will be described in, or will become apparent to those of ordinary skill in the art in view of, the following detailed description of the exemplary embodiments of the present invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The novel features believed characteristic of the invention are set forth in the appended claims. the invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

[0009] FIG. 1 shows a perspective view of conductors of prior art applied in a socket;

[0010] FIG. 2 shows a perspective view of a one-piece conductor according to an embodiment of the present disclosure;

[0011] FIG. 3 shows a perspective view of the one-piece conductor according to another embodiment of the present disclosure;

[0012] FIG. 4 shows a perspective view of the one-piece conductors applied in a socket according to another embodiment of the present disclosure;

[0013] FIG. 5 shows a flowchart of a method of manufacturing a one-piece conductor according to an embodiment of the present disclosure.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] The instant disclosure will be described more specifically with reference to the following embodiments. It is to be noted that the following descriptions of preferred embodiments are provided herein for purpose of illustration and description. It is not intended to be exhaustive or limiting to the precise form disclosed.

[0015] Please refer concurrently to Fig. 2 and Fig. 4. Fig. 2 shows a perspective view of a one-piece conductor according to an embodiment of the present disclosure. Fig. 4 shows a perspective view of the one-piece conductors applied in a socket according to another embodiment of the present disclosure.

[0016] As shown in Fig. 2 and Fig. 4, the embodiment of the instant disclosure provides a one-piece conductor 100a, which is for coupling with a pin 210a, 210b, 210c of a plug 200 of a British standard. The cross-sectional shape of the pin 210a, 210b, 210c resembles a rectangle, and the pin 210a, 210b, 210c has two wide surfaces S1, S2 opposite to each other and two narrow surfaces S3, S4 opposite to each other. The width W2 of at least one of the two narrow surfaces S3, S4 is greater than 5 millimeters, and the width W1 of at least one of the two wide surfaces S1, S2 is not smaller than the width W2 of at least one of the two narrow surfaces S3, S4. The one-piece conductor 100a includes a main plate 110 and at least one clipping element 120 protruding

from the main plate 110. The clipping element 120 has an aperture 123 such that the clipping element 120 has two clipping arms 121 opposite to each other and extending inwardly toward the center of the aperture 123. When the pin 210a, 210b, 210c of the plug 200 is inserted into the aperture 123, the two clipping arms 121 respectively abut against the two narrow surfaces S3, S4 and the distance between two abutting edges of the two clipping arms 121 is greater than 5 millimeters.

[0017] Generally, the plug 200 of the British standard includes three rectangular pins such as a first pin 210a, a second pin 210b, and a third pin 210c in the instant embodiment. The shape of the main body of each of the pins resembles a cuboid, and each of the pins 210a, 210b, 210c has a lateral cross-section S5 that resembles a rectangle. The normal of the lateral cross-section S5 is parallel with the extension direction of the pin 210a, 210b, 210c.

[0018] It is worth mentioning that, the width of each of the pins 210a, 210b, 210c of the plug 200 (i.e. the length of each of the short sides of the lateral cross-section S5 of the pin 210a, 210b, 210c) is greater than that of a plug of other standards, such as a plug of a Chinese standard, a plug of an American standard, or a plug of an Australian standard.

[0019] In an exemplary embodiment as shown in Fig. 4, the one-piece conductor 100a is used as a conductive plate applied in a socket 300. The socket 300 includes an upper casing 310 and a bottom casing 320. The main plate 110 has a first surface 110a, a second surface 110b opposite to the first surface 110a, and an upper edge 110c connected between the first surface 110a and the second surface 110b. The main plate 110 can be disposed between two

fixing ribs 321 of the bottom casing 320 so as to be disposed vertically on an inner base wall 320 of the bottom casing 320. The main plate 110 can be an elongated conductive plate and extending along a direction D2. For example, the main plate 110 can be a copper plate, and the instant disclosure is not limited thereto.

**[0020]** The clipping element 120 can be a rectangular conductive plate and have an upper surface and a bottom surface opposite to the upper surface. Furthermore, the clipping element 120 has two long periphery edges T1 opposite to each other and two short periphery edges T2 opposite to each other. One of the short periphery edges T2 of the clipping element 120 is disposed at the upper edge 110c of the main plate 110 such that the clipping element 120 is connected to the main plate 110. The clipping element 120 is extending outwardly from the upper edge 110c such that the clipping element 120 is protruding from the first surface 110a. In the instant disclosure, the upper surface of the clipping element 120 is contiguously connected to the first surface 110a. Namely, the upper surface of the clipping element 120 is a contiguous extension of the first surface 110a. The bottom surface of the clipping element 120 is contiguously connected to the second surface 110b.

**[0021]** The aperture 123 is formed at the center of the clipping element 120 such that the clipping element 120 has two long inner edges T3 opposite to each other and two short inner edges T4 opposite to each other. As shown in Fig. 2, the shape of the aperture 123 resembles a rectangle, and the aperture 123 is extending along a direction D1, wherein the direction D1 and the direction D2 intersect at an angle of substantially ninety degrees.

**[0022]** The two clipping arms 121 are respectively disposed at the two short inner edges T4 and extending toward the center of the aperture 123. The clipping arms 121 can be a portion of the conductive plate of the clipping element 120 which defines the aperture 123. In other words, a portion of the conductive plate of the clipping element 120 is extending toward the center of the aperture 123 to form one of the clipping arms 121. Each of the clipping arms 121 has a connecting end and an abutting end opposite to the connecting end. In the instant disclosure, the abutting ends are free ends of the clipping arms 121, and the clipping arms 121 are respectively connected to the short inner edges T4 at the connecting ends. Each of the clipping arms 121, for example, is a conductive plate and has an inner surface 121a and an outer surface 121b opposite to the inner surface 121a. In the instant disclosure, the inner surface 121a is contiguously connected to the upper surface of the clipping element 120, and the outer surface 121b is contiguously connected to the bottom surface of the clipping element 120.

**[0023]** The clipping arms 121, which are respectively disposed at the short inner edges T4, are bent and extending towards the bottom surface of the clipping element 120. Moreover, the clipping arms 121 are protruding from the bottom surface. As shown in Fig. 2, the abutting ends of the clipping arms 121 lie on a reference line L1, which extends along the direction D1 and along the extension directions of the long inner edges T3. The shape of the aperture 123 can resemble the shape of the lateral cross-section S5 of the pin 210a, 210b, 210c. Thereby the pin 210a, 210b, 210c can be inserted into the aperture 123. When the pin 210a, 210b, 210c is inserted into the aperture 123, the reference

line L1 and the long sides of the lateral cross-section S5 of the pin 210a, 210b, 210c lie on a same plane and are parallel. In addition, when the pin 210a, 210b, 210c is inserted into the aperture 123, the inner surfaces 121a of the clipping arms 121 respectively abut against the two narrow surfaces S3, S4 of the pin 210a, 210b, 210c and the distance between two abutting edges (i.e. the inner surfaces 121a in the instant disclosure) of the two clipping arms 121 is greater than 5 millimeters.

**[0024]** The clipping element 120 of the instant embodiment can be made of an initial plate comprising conductive materials by single-stage or multi-stage stamping process. For example, in the stamping process, a planner initial plate provided is cut and deformed by bending, punching, piercing or blanking, whereby a three-dimensional shape is formed.

**[0025]** Specifically, the initial plate provided may include a main portion and at least one protruding portion, which is disposed at and protruding from an upper edge 110c of the main portion. The clipping element 120 can be formed by bending a free end of the protruding portion. The aperture 123 of the clipping element 120 can be formed by removing a portion of the protruding portion in piercing process such that the two long inner edges T3 and the two short inner edges T4 of the clipping element 120 are formed. Meanwhile, two extending portions opposite to each other and extending toward the center of the aperture 123 can be formed respectively at the two inner edges. In other words, the aperture 123 formed by piercing process has a shape resembling an “H”, and the shapes of the extending portions are corresponding to the shape of

the aperture 123. The clipping arms 121 can further be formed by bending a free end of each of the extending portions.

[0026] It is worth mentioning that, the minimum distance of the two clipping arms 121 is only slightly smaller than the width W1 of each of the wide surfaces S1, S2 of the pin 210a, 210b, 210c. Therefore, the clipping arms 121 can be made of a portion of the conductive plate of the clipping element 120 which defines the aperture 123.

[0027] In addition, the clipping arms 121 each have a reinforcement structure 122 which is a recess or a bulge formed at the clipping arm 121. The reinforcement structures 122 are respectively disposed at the connecting ends and can be formed by punching each of the clipping arms 121.

[0028] The clipping element 120 further has two stabilizing structures 130 opposite to each other, which are elongated conductive plates respectively and disposed at the periphery of the clipping element 120 and along the long periphery edges T1. The stabilizing structures 130 are respectively corresponding to the long inner edges T3 in arrangement.

[0029] The stabilizing structures 130 are protruding from the upper surface of the clipping element 120. For example, the stabilizing structures 130 can be bent and extending towards the upper surface of the clipping element 120. The stabilizing structures 130 can be formed by bending a periphery portion of the conductive plate of the clipping element 120. The stabilizing structures 130 are for enhancing the overall structural stability of the clipping element 120 in the Z axis and for increasing the mechanism strength of the clipping element 120.

[0030] The one-piece conductor 100a shown in Fig. 2, for example, includes three of the clipping elements 120. The two clipping arms 121 of each of the clipping elements 120 lie on a reference line L1, and the reference lines L1 are arranged side by side.

[0031] Please refer concurrently to Fig. 3 and Fig. 4. Fig. 3 shows a perspective view of the one-piece conductor according to another embodiment of the present disclosure. The one-piece conductor 100b is similar to the aforementioned one-piece conductor 100a, and the description hereinafter further explains the difference there-between.

[0032] As shown in Fig. 3, one of the long periphery edges T1 of each of the clipping elements 120 is disposed at the upper edge 110c of the main plate 110 such that the clipping elements 120 are connected to the main plate 110. Therefore, the apertures 123 each are extending along the direction D1, wherein the direction D1 and the direction D2, along which the main plate 110 is extending, are substantially the same. The stabilizing structures 130 of each of the clipping elements 120 are respectively disposed at the short periphery edges T2 and along the short periphery edges T2. The stabilizing structures 130 are respectively corresponding to the short inner edges T4 in arrangement. The abutting ends and the stabilizing structures 130 of each of the clipping arms 121 lie on a reference line L2, which extends along the direction D2. The one-piece conductor 100b shown in Fig. 3, for example, includes three of the clipping elements 120, and the clipping arms 121 of the three clipping elements 120 lie on the reference line L2.

**[0033]** In the disclosure shown in Fig. 4, two of the one-piece conductors 100b and one of the one-piece conductors 100a are disposed in the socket 300. The one-piece conductors 100b are for coupling with the first pin 210a and the second pin 210b respectively, and the one-piece conductor 100a is for coupling with the third pin 210c. The apertures 123 of one of the one-piece conductors 100b are respectively corresponding to a plurality of first apertures 311 of the upper casing 310 in arrangement. The apertures 123 of the other of the one-piece conductors 100b are respectively corresponding to a plurality of second apertures 312 of the upper casing 310 in arrangement. The apertures 123 of the one-piece conductor 100a are respectively corresponding to a plurality of third apertures 313 of the upper casing 310 in arrangement.

**[0034]** Another aspect of the instant disclosure provides a method of manufacturing one-piece conductor. The method of manufacturing one-piece conductor is for manufacturing a one-piece conductor 100a, 100b which is for coupling with a pin 210a, 210b, 210c of a plug 200 of a British standard. The pin 210a, 210b, 210c has two wide surfaces S1, S2 opposite to each other and two narrow surfaces S3, S4 opposite to each other. The width W2 of at least one of the two narrow surfaces S3, S4 is greater than 5 millimeters, and the width W1 of at least one of the two wide surfaces S1, S2 is not smaller than the width W2 of at least one of the two narrow surfaces S3, S4.

**[0035]** Please referring to Figs. 5, Fig. 5 shows a flowchart of a method of manufacturing one-piece conductor according to an embodiment of the present disclosure. The method of manufacturing one-piece conductor includes the steps of: firstly, providing an initial plate comprising at least one conductive

material, the initial plate including a main portion and at least one protruding portion, the main portion having a first surface, a second surface opposite to the first surface, and an upper edge connected between the first surface and the second surface, the protruding portion being disposed at and protruding from the upper edge (Step S101); then, bending a free end of the protruding portion toward the first surface, the protruding portion having an upper surface and a bottom surface opposite to the upper surface, the upper surface being contiguously connected to the second surface, the bottom surface being contiguously connected to the first surface (Step S103); furthermore, removing a portion of the protruding portion to form an aperture such that two inner edges of the protruding portion opposite to each other are formed and that two extending portions opposite to each other are formed respectively at the two inner edges and extending toward the center of the aperture (Step S105); bending a free end of each of the two extending portions toward the bottom surface of the protruding portion; wherein when the pin is inserted into the aperture, the two extending portions respectively abut against the two narrow surfaces, and the distance between two abutting edges of the extending portions is greater than 5 millimeters (Step S107).

**[0036]** For different applications, the method of manufacturing one-piece conductor may further includes the step of punching each of the two extending portions to form two reinforcement structures which are recesses respectively formed at the two extending portions. It is worth mentioning that, in an exemplary embodiment, the step of removing a portion of the protruding portion, the step of bending the free end of each of the two extending portions,

and the step of punching each of the two extending portions are carried out in a single-stage stamping process. Namely, these steps can be carried out at the same time.

**[0037]** In accordance with the instant embodiment, the present disclosure provides a one-piece conductor 100a, 100b and a method of manufacturing the same. The one-piece conductor 100a, 100b can hold the pin 210a, 210b, 210c of the plug 200 of the British standard more firmly by clipping upon the narrow surfaces S3, S4 of the pin 210a, 210b, 210c instead of the wide surfaces S1, S2. Because of the one-piece design, wherein the bottom surface of the clipping element 120 is contiguously connected to the first surface 110a of the main plate 110, the upper surface of the clipping element 120 is contiguously connected to the second surface 110b of the main plate 110, the inner surfaces 121a of the clipping arms 121 each are contiguously connected to the upper surface of the clipping element 120, and the outer surfaces 121b of the clipping arms 121 each are contiguously connected to the bottom surface of the clipping element 120, the process of manufacturing the one-piece conductor 100a, 100b is simplified, and the yield rate is promoted at the same time. The manufacturing cost can be reduced, and the wastage of materials for forming the one-piece conductor 100a, 100b can be avoided.

**[0038]** In an exemplary embodiment, the clipping element 120 can be formed by bending the protruding portion of the initial plate, meanwhile the clipping arms 121 can be formed by bending the extending portions of the initial plate which defines the aperture 123. Therefore, the usage rate of the

initial plate can be increased, and the one-piece conductor 100a, 100b can have a design which is flexible and highly applicable to various applications.

**[0039]** While the invention has been disclosed with respect to a limited number of embodiments, numerous modifications and variations will be appreciated by those skilled in the art. It is intended, therefore, that the following claims cover all such modifications and variations that may fall within the true spirit and scope of the invention.

WHAT IS CLAIMED IS:

1. A one-piece conductor (100a, 100b), for coupling with a pin (210a, 210b, 210c) of a plug (200) of a British standard, the pin (210a, 210b, 210c) having two wide surfaces (S1, S2) opposite to each other and two narrow surfaces (S3, S4) opposite to each other, the width (W2) of at least one of the two narrow surfaces (S3, S4) being greater than 5 millimeters, the width (W1) of at least one of the two wide surfaces (S1, S2) being not smaller than the width (W2) of at least one of the two narrow surfaces (S3, S4), the one-piece conductor (100a, 100b) comprising:

a main plate (110) having a first surface (110a) and a second surface (110b) opposite to the first surface (110a); and

at least one clipping element (120) protruding from the first surface (110a) of the main plate (110) and having an aperture (123),

wherein the clipping element (120) has two inner edges opposite to each other and two clipping arms (121) opposite to each other,

wherein the two clipping arms (121) are respectively disposed at the two inner edges and extending toward the center of the aperture (123);

wherein, when the pin (210a, 210b, 210c) is inserted into the aperture (123) of the clipping element (120), the two clipping arms (121) respectively abut against the two narrow surfaces (S3, S4), and the distance between two abutting edges of the two clipping arms (121) is greater than 5 millimeters.

2. The one-piece conductor of Claim 1, wherein the clipping element

(120) is plate-shaped and has an upper surface and a bottom surface opposite to the upper surface, the upper surface is contiguously connected to the first surface (110a) of the main plate (110), and the bottom surface is contiguously connected to the second surface (110b) of the main plate (110).

3. The one-piece conductor of Claim 2, wherein the two clipping arms (121) each have an inner surface (121a) and an outer surface (121b) opposite to the inner surface (121a), each of the inner surfaces (121a) is contiguously connected to the upper surface of the clipping element (120), each of the outer surfaces (121b) is contiguously connected to the bottom surface of the clipping element (120), and the inner surfaces (121a) respectively abut against the two narrow surfaces (S3, S4) when the pin (210a, 210b, 210c) is inserted into the aperture (123) of the clipping element (120).

4. The one-piece conductor of Claim 1, wherein the two clipping arms (121) each have a reinforcement structure (122) which is a recess formed at the clipping arm (121).

5. The one-piece conductor of Claim 1, wherein the clipping element (120) has two long inner edges (T3) opposite to each other and two short inner edges (T4) opposite to each other, the length of any of the two long inner edges (T3) is greater than the length of any of the two short inner edges (T4), the two long inner edges (T3) and the two short inner edges (T4) define a portion of the aperture (123), and the two clipping arms (121) are disposed at the two short inner edges (T4) respectively.

6. The one-piece conductor of Claim 1, wherein the one-piece conductor comprises at least two of the clipping elements (120), the two clipping arms (121) of each of the clipping elements (120) lie on a reference line (L1), and the reference lines (L1) of the clipping elements (120) are arranged side by side.
7. The one-piece conductor of Claim 1, wherein the one-piece conductor comprises at least two of the clipping elements (120), the clipping arms (121) of the clipping elements (120) lie on a reference line (L2).
8. A method of manufacturing a one-piece conductor for coupling with a pin of a plug of a British standard, the pin having two wide surfaces opposite to each other and two narrow surfaces opposite to each other, the width of at least one of the two narrow surfaces being greater than 5 millimeters, and the width of at least one of the two wide surfaces being not smaller than the width of at least one of the two narrow surfaces, the method of manufacturing one-piece conductor comprising:  
providing an initial plate including at least one conductive material, wherein the initial plate comprises a main portion and at least one protruding portion, the main portion has a first surface, a second surface opposite to the first surface, and an upper edge connected between the first surface and the second surface, and the protruding portion is disposed at and protruding from the upper edge (S101);  
bending a free end of the protruding portion toward the first surface, wherein the protruding portion has an upper surface and a bottom surface opposite to the upper surface, the upper surface is contiguously

connected to the second surface, and the bottom surface is contiguously connected to the first surface (S103);

removing a portion of the protruding portion to form an aperture such that two inner edges of the protruding portion opposite to each other are formed and that two extending portions opposite to each other are formed respectively at the two inner edges and extending toward the center of the aperture (S105); and

bending a free end of each of the two extending portions toward the bottom surface of the protruding portion; wherein, when the pin is inserted into the aperture of the clipping element, the two extending portions respectively abut against the two narrow surfaces, and the distance between two abutting edges of the two extending portions is greater than 5 millimeters (S107).

9. The method of manufacturing a one-piece conductor of Claim 8, further comprising the step of:

punching each of the two extending portions to form two reinforcement structures which are recesses respectively formed at the two extending portions.

10. The method of manufacturing a one-piece conductor of Claim 9, wherein the steps of removing a portion of the protruding portion, bending the free end of each of the two extending portions, and punching each of the two extending portions are carried out in a single-stage stamping process.

Amendment to Claims have been filed as follows

WHAT IS CLAIMED IS:

1. A one-piece conductor (100a, 100b), for coupling with a pin (210a, 210b, 210c) of a plug (200) of a British standard, the pin (210a, 210b, 210c) having two wide surfaces (S1, S2) opposite to each other and two narrow surfaces (S3, S4) opposite to each other, the width (W2) of at least one of the two narrow surfaces (S3, S4) being greater than 5 millimeters, the width (W1) of at least one of the two wide surfaces (S1, S2) being not smaller than the width (W2) of at least one of the two narrow surfaces (S3, S4), the one-piece conductor (100a, 100b) comprising:

a main plate (110) having a first surface (110a) and a second surface (110b) opposite to the first surface (110a); and

at least one clipping element (120) protruding from the first surface (110a) of the main plate (110) and having an aperture (123),

wherein the clipping element (120) has two inner edges opposite to each other and two clipping arms (121) opposite to each other,

wherein the two clipping arms (121) are respectively disposed at the two inner edges and extending toward the center of the aperture (123);

wherein, when the pin (210a, 210b, 210c) is inserted into the aperture (123) of the clipping element (120), the two clipping arms (121) respectively abut against the two narrow surfaces (S3, S4), and the distance between two abutting edges of the two clipping arms (121) is greater than 5 millimeters.

2. The one-piece conductor of Claim 1, wherein the clipping element

(120) is plate-shaped and has an upper surface and a bottom surface opposite to the upper surface, the upper surface is contiguously connected to the first surface (110a) of the main plate (110), and the bottom surface is contiguously connected to the second surface (110b) of the main plate (110).

3. The one-piece conductor of Claim 2, wherein the two clipping arms (121) each have an inner surface (121a) and an outer surface (121b) opposite to the inner surface (121a), each of the inner surfaces (121a) is contiguously connected to the upper surface of the clipping element (120), each of the outer surfaces (121b) is contiguously connected to the bottom surface of the clipping element (120), and the inner surfaces (121a) respectively abut against the two narrow surfaces (S3, S4) when the pin (210a, 210b, 210c) is inserted into the aperture (123) of the clipping element (120).
4. The one-piece conductor of Claim 1, wherein the two clipping arms (121) each have a reinforcement structure (122) which is a recess formed at the clipping arm (121).
5. The one-piece conductor of Claim 1, wherein the clipping element (120) has two long inner edges (T3) opposite to each other and two short inner edges (T4) opposite to each other, the length of any of the two long inner edges (T3) is greater than the length of any of the two short inner edges (T4), the two long inner edges (T3) and the two short inner edges (T4) define a portion of the aperture (123), and the two clipping arms (121) are disposed at the two short inner edges (T4) respectively.

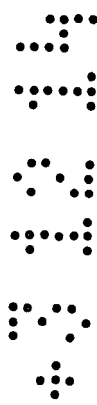
6. The one-piece conductor of Claim 1, wherein the one-piece conductor comprises at least two of the clipping elements (120), the two clipping arms (121) of each of the clipping elements (120) lie on a reference line (L1), and the reference lines (L1) of the clipping elements (120) are arranged side by side.

7. The one-piece conductor of Claim 1, wherein the one-piece conductor comprises at least two of the clipping elements (120), the clipping arms (121) of the clipping elements (120) lie on a reference line (L2).

8. A method of manufacturing a one-piece conductor for coupling with a pin of a plug of a British standard, the pin having two wide surfaces opposite to each other and two narrow surfaces opposite to each other, the width of at least one of the two narrow surfaces being greater than 5 millimeters, and the width of at least one of the two wide surfaces being not smaller than the width of at least one of the two narrow surfaces, the method of manufacturing one-piece conductor comprising:

providing an initial plate including at least one conductive material, wherein the initial plate comprises a main portion and at least one protruding portion, the main portion has a first surface, a second surface opposite to the first surface, and an upper edge connected between the first surface and the second surface, and the protruding portion is disposed at and protruding from the upper edge (S101);

bending a free end of the protruding portion toward the first surface, wherein the protruding portion has an upper surface and a bottom surface opposite to the upper surface, the upper surface is contiguously



connected to the second surface, and the bottom surface is contiguously connected to the first surface (S103);

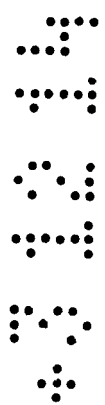
removing a portion of the protruding portion to form an aperture such that two inner edges of the protruding portion opposite to each other are formed and that two extending portions opposite to each other are formed respectively at the two inner edges and extending toward the center of the aperture (S105); and

bending a free end of each of the two extending portions toward the bottom surface of the protruding portion; wherein, when the pin is inserted into the aperture of the protruding portion, the two extending portions respectively abut against the two narrow surfaces, and the distance between two abutting edges of the two extending portions is greater than 5 millimeters (S107).

9. The method of manufacturing a one-piece conductor of Claim 8, further comprising the step of:

punching each of the two extending portions to form two reinforcement structures which are recesses respectively formed at the two extending portions.

10. The method of manufacturing a one-piece conductor of Claim 9, wherein the steps of removing a portion of the protruding portion, bending the free end of each of the two extending portions, and punching each of the two extending portions are carried out in a single-stage stamping process.





**Application No:** GB1404227.9

**Examiner:** Mr Gareth John

**Claims searched:** 1-10

**Date of search:** 27 August 2014

## 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              |
|----------|--------------------|---------------------------------------------------------------------------------|
| A        | -                  | US 2008/0090453 A1 (HSU) Figures 1-4.                                           |
| A        | -                  | CN 203277725 U (WENZHOU FUKUN ELECTRONIC CO LTD) Figures 1-8.                   |
| A        | -                  | CN 203260786 U (NINGBO HEWANG ELECTRICAL APPLIANCES CO LTD) Figure 2.           |
| A        | -                  | CN 203250888 U (NINGBO BULL ELECTRICAL APPLIANCES CO LTD) Figure 1.             |
| A        | -                  | CN 202872009 U (NEXUS ELECTRICAL JIAXING CO LTD) Figure 1.                      |
| A        | -                  | CN 202759055 U (SHENZHEN HUNTKEY CHIYUAN ELECTRICS CO LTD) Figures 1, 3, 5 & 7. |

### Categories:

|   |                                                                                                           |   |                                                                                                                  |
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### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

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

H01R

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

WPI, EPODOC, TXTE



**International Classification:**

| <b>Subclass</b> | <b>Subgroup</b> | <b>Valid From</b> |
|-----------------|-----------------|-------------------|
| H01R            | 0013/11         | 01/01/2006        |