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(54) **Power plug**

Stecker

Fiche d'alimentation

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(56) References cited:
GB-A- 2 282 494 **US-A- 4 174 874**
US-A- 4 402 565 **US-A- 4 634 211**
US-B1- 6 287 131

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to power plugs, and more particularly, to a power plug for preventing quality deterioration of power supplied through the power plug.

BACKGROUND OF THE INVENTION

[0002] Recently, in the realm of audio equipment, much attention and concern are directed toward influence of power supply on audio quality, or timbre deterioration caused by instability of current passing through the audio equipment.

[0003] In response to the above problems, a power plug having stronger mechanical strength and stability is applied to the audio equipment, wherein joints or terminals of the power plug are preferably made for reducing electrical resistance of current flow; this desirably improves timbre, resolution and other critical properties of the audio equipment.

[0004] However, in order to enhance mechanical strength and stability, the foregoing power plug is internally provided with a plurality of metallic screws. When current from a power supply flows inside the power plug, a magnetic field produced by the current flow induces variation in internal electron energy levels of metal atoms of the metallic screws that are located nearby the current flow, whereby part of electrons in the metal atoms are ionized, and generates an electron flow inside the metallic screws. This electron flow accordingly produces a magnetic field, which interferes with stability of the current flow from the power supply, thereby leading to timbre deterioration of the audio equipment in operation of the power plug, so that satisfactory audio quality still cannot be achieved.

SUMMARY OF THE INVENTION

[0005] An objective of the present invention is to provide a power plug, in which a ground mechanism can prevent the occurrence of electron ionization in the power plug, allowing stability of the current flowing through the power plug to be effectively assured.

[0006] United States Patent No. 4,402,565 discloses a power plug having internal screws which secure the phase, neutral and grounding wires to their respective terminal prongs.

[0007] According to the present invention there is provided a power plug, having the features of claim 1.

[0008] Preferably, the first conductive member is a copper plate, which copper plate has two ends thereof respectively extending to two first screw holes, allowing the two first screws to be respectively screwed into the first screw holes and come into contact with the copper plate.

[0009] Preferably, the second conductive member is a copper plate, which copper plate has one end thereof being connected to the ground terminal, and the other end thereof extending to second screw holes, allowing the second screws to be respectively screwed into the second screw holes and come into contact with the copper plate.

[0010] Conveniently, two first screws are provided in the power plug, and the first conductive member is a M-shaped copper plate, which copper plate has a central portion thereof being connected to the ground terminal, and two ends thereof respectively extending to two first screw holes, allowing the two first screws to be respectively screwed into the first screw holes and come into contact with the copper plate.

[0011] Preferably, the second conductive member has a central portion thereof being exposed to one of the first screw holes, and the third conductive member is a metallic spring installed in this first screw hole, and is pressed when one of the first screws is screwed into the first screw hole, in a manner that one end of the metallic spring abuts against the first screw, and the other end of the metallic spring adjoins the central position of the second conductive member.

[0012] In preferred embodiments, the cover includes two covers integrally connected to the terminal base by first screws, and the covers are coupled to each other for enclosing the conductive terminal and the ground terminal therein.

[0013] The ground mechanism includes a conductive member for connecting the first and second screws to the ground mechanism.

[0014] Conveniently, the conductive member is a copper plate provided on an inner wall of one of the covers, which copper plate has one end thereof extending toward the ground terminal, and pressed to abut against the ground terminal when the two covers are coupled to each other, whereas the other end of the copper plate extends to screw holes, allowing the screws to be respectively screwed into the screw holes and come into contact with the copper plate.

[0015] In a preferred embodiment, two screws are adopted in the power plug, and the conductive member is a T-shaped copper plate provided on an inner wall of one of the covers, which copper plate has a vertical end thereof extending toward the ground terminal, and pressed to abut against the ground terminal when the two covers are coupled to each other, whereas the other two ends of the copper plate respectively extend to two screw holes, allowing the two screws to be respectively screwed into the screw holes and come into contact with the copper plate.

[0016] Further, the conductive terminal and ground terminal of the terminal base can be in the form of a male or female power plug.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The present invention can be readily understood by the following detailed description of the preferred embodiment, with reference made to the accompanying drawings, wherein:

FIG. 1 is a perspective schematic diagram of a power plug of a preferred embodiment of the invention;
 FIG. 2 is a perspective dissection diagram showing a terminal base with a ground mechanism in a power plug of a preferred embodiment of the invention;
 FIG. 3 is a cross-sectional view of a terminal base with a ground mechanism in a power plug of a first preferred embodiment of the invention;
 FIG. 4 is a cross-sectional view of an upper part of a cover in a power plug of a preferred embodiment of the invention;
 FIG. 5 is a perspective dissection diagram showing another example of a terminal base with a ground mechanism in a power plug of a preferred embodiment of the invention;
 FIG. 6 is a top view of another kind of power plug;
 FIG. 7 is a side view of another kind of power plug;
 FIG. 8 is a front view of another kind of power plug and
 FIG. 9 is a back view of another kind of power plug;
 FIG. 10 is a perspective structural diagram showing another kind of an unassembled power plug;
 FIG. 11 is a top view of a third kind of a power plug; and
 FIG. 12 is a cross-sectional view of a third kind of a power plug.

DETAILED DESCRIPTION

[0018] Illustrated in FIG. 1 is a perspective schematic diagram of a power plug of a preferred embodiment of the present invention. As shown in the drawing, the power plug 1 comprises a terminal base 10 having two conductive terminals 100 and a ground terminal 101; an electric wire 11 having core wires connected to the conductive terminals 100 and the ground terminal 101, respectively; a cover 12 integrally connected to the terminal base 10 by a plurality of first screws 102; and a ground mechanism 13 for connecting the first screws 102 to the ground terminal 101, allowing the first screws 102 to be grounded.

[0019] FIG. 2 illustrates a perspective dissection diagram of a terminal base with a ground mechanism in the power plug of the preferred embodiment of the invention; FIG. 3 illustrates a cross-sectional view of a terminal base with a ground mechanism in the power plug of the preferred embodiment of the invention. Referring to FIGs. 1, 2 and 3, the ground mechanism 13 includes a first conductive member 130 such as a copper plate for connecting the first screws 102 to the ground terminal 101. One end of the copper plate 130 is associated with the ground terminal 101, and the other end thereof extends

to screw holes 1020 for allowing the first screws 102 to penetrate therethrough. This makes the first screws 102 come into contact with the copper plate 130 when being screwed into the screw holes 1020.

[0020] Furthermore, two of the first screws 102 are provided in the power plug 1. The first conductive member 130 is an approximately M-shaped copper plate, wherein a central portion of the copper plate 130 is connected to the ground terminal 101, and two ends thereof respectively extend to two screw holes 1020 where the first screws 102 can penetrate therethrough, so as to allow the first screws 102 to respectively be screwed into the screw holes 1020 and come into contact with the copper plate 130.

[0021] Moreover, the conductive terminals 100 and the ground terminal 101 of the terminal base 10 are in the form of a female power plug.

[0022] FIG. 4 illustrates a cross-sectional view of an upper part of a cover in the power plug of the preferred embodiment of the invention. Referring to FIGs. 2, 3 and 4, the power plug 1 further comprises: a wire fixing mechanism 14 installed in the cover 12, and two second screws 15. The wire fixing mechanism 14 includes a press board 140 positioned at where the electric wire 11 passes thereby, and a clamping member 141 underneath the press board 140. The two second screws 15 penetrate through the cover 12 and are screwed at two ends of the press board 140, respectively. By screwing tight the second screws 15, the press board 140 can be moved toward an inner wall of the cover 12, allowing the electric wire 11 to be fixed and abut against the inner wall of the cover 12, and to be firmly clamped by the clamping member 141.

[0023] Besides the above first conductive member 130 for allowing the first screws 102 to be grounded, the ground mechanism 13 further includes a second conductive member 131 for interconnecting the two second screws 15; and a third conductive member 132 for connecting the first screws 102 to the second conductive member 131, allowing the second screws 15 to be grounded via the second conductive member 131 and the first screws 102.

[0024] The second conductive member 131 is a copper plate, two ends of which copper plate 131 respectively extend to second screw holes 150 for allowing the two second screws 15 to penetrate therethrough. This makes the second screws 15 come into contact with the copper plate 131 when being screwed into the second screw holes 150.

[0025] A central portion of the second conductive member 131 is exposed to one of the first screw holes 1020 used for screwing the first screws 102 therein. The third conductive member 132 is a metallic spring installed in the first screw hole 1020. When one of the first screws 102 is screwed into the first screw hole 1020, the metallic spring 132 is pressed, making one end thereof abut against the first screw 102, and the other end of the metallic spring 132 adjoin the central portion of the second

conductive member 131.

[0026] FIG. 5 is a perspective dissection diagram showing another example of a terminal base with a ground mechanism in the power plug of the preferred embodiment of the invention. As shown in the drawing, besides the above-mentioned female power plug, the conductive terminals 100 and the ground terminal 101 of the terminal base 10 can also be in the form of a male power plug.

[0027] FIGs. 6, 7, 8 and 9 are respectively a top view, a side view, a front view and a back view of a power plug of another kind; FIG. 10 is a perspective structural diagram showing an unassembled power plug of another kind. Referring to FIGs. 6 to 10, the power plug 2 of this kind comprises: a terminal base 20 having two conductive terminals 200 and a ground terminal 201; an electric wire 21 having core wires connected to the conductive terminals 200 and the ground terminal 201, respectively; two covers 22 integrally connected to the terminal base 20, which two covers 22 are capable of being coupled to each other by means of screws 24, so as to enclose the conductive terminals 200 and the ground terminal 201 therein; and a ground mechanism 23 for connecting the screws 24 to the ground terminal 201, so as to ground the screws 24.

[0028] Furthermore, the ground mechanism 23 includes a conductive member 230 for interconnecting the first screws 24 and the ground terminal 201. This conductive member 230 is a copper plate attached to an inner wall of one of the covers 22, wherein one end of the copper plate 230 extends toward the ground terminal 201, and is pressed to abut against the ground terminal 201 when the two covers 32 are engaged with each other, and the other end of the copper plate 230 extends to screw holes 240 for allowing the screws 24 to penetrate therethrough, whereby the screws 24 are made to come into contact with the copper plate 230 when being screwed into the screw holes 240.

[0029] In particular, two of the screws 24 are adopted in this embodiment, and alternatively, the conductive member 230 can be an approximately T-shaped copper plate provided on the inner wall of one of the covers 22. The vertical end of the T-shaped copper plate 230 extends toward the ground terminal 201, and is pressed to abut against the ground terminal 201 when the two covers 32 are engaged with each other; the other two ends of the copper plate 230 extend to the screw holes 240, allowing the two screws 24 to come into contact with the copper plate 230 when being respectively screwed into the screw holes 240.

[0030] Illustrated in FIGs. 11 and 12 are respectively a top view and a cross-sectional view of a power plug of a third kind. Referring to FIGs. 11 and 12, the power plug 3 comprises: a terminal base 30 having a conductive terminal 300; an electric wire 31 having core wires connected to the conductive terminal 300 and a ground terminal 330, respectively; a cover 32 integrally connected to the terminal base 30 by means of screws 320; a ground wire

33 having one end thereof connected to the ground terminal 330 inside the terminal base 30 and the cover 32; and a ground mechanism 34 for connecting the screws 320 to the ground terminal 330 of the ground wire 33, so as to ground the screws 320.

[0031] The power plug of the invention is characterized in the provision of a ground mechanism, which can solve a problem of electron ionization occurring in a conventional power plug as previously described, and further allow timbre quality of audio equipment to be effectively improved, whereby sounds generated from the audio equipment are clarified, especially for low bands to be more stable and sound. Moreover, in the use of the power plug of the invention, metal-induced interference with power or current passing through inside of the power plug and electric wires can be eliminated, allowing high quality of the clear original sounds to reappear.

[0032] In conclusion, the invention evidently provides positive and affirmative improvements in elevating and raising sound quality generated by the audio equipment.

[0033] The invention has been described using exemplary preferred embodiment. However, it is to be understood that the scope of the invention is not limited to the disclosed embodiments. The scope of the claims, therefore, should be accorded the broadest interpretation.

Claims

1. A power plug (1), comprising:

a terminal base (10) having at least one conductive terminal (100) and a ground terminal (101); an electric wire (11) having core wires connected to the conductive terminal (100) and the ground terminal (101), respectively; a cover (12) integrally connected to the terminal base (10) by a plurality of first screws (102); and a wire fixing mechanism (14) installed in the cover (12), wherein the wire fixing mechanism (14) includes a press board (140) positioned at where the electric wire (11) passes thereby, and a clamping member (141) underneath the press board (140);

characterized in that the power plug (1) further comprises:

two second screws (15) respectively penetrating through the cover (12) and being screwed at two ends of the press board (140); and a ground mechanism (13) having a first conductive member (130) for connecting the first screws (102) to the ground terminal (101), so as to ground the first screws (102); a second conductive member (131) for interconnecting the two second screws (15); and a third conductive member (132) for connecting the first screws

(102) to the second conductive member (131), so as to ground the second screws (15) via the second conductive member (131) and the first screws (102).

2. A power plug according to claim 1, wherein the first conductive member (130) is a copper plate, which copper plate has one end thereof being connected to the ground terminal (101), and the other end thereof extending to first screw holes (1020), allowing the first screws (102) to be respectively screwed into the first screw holes (1020) and come into contact with the copper plate.
3. A power plug according to claim 1, wherein two of the first screws (102) are provided in the power plug (1), and the first conductive member (130) is an M-shaped copper plate, which copper plate has a central portion thereof being connected to the ground terminal (101), and two ends thereof respectively extending to two first screw holes (1020), allowing the two first screws (102) to be respectively screwed into the first screw holes (1020) and come into contact with the copper plate.
4. A power plug according to any preceding claim, wherein the two second screws (15) are adapted to be screwed for making the, press board (140) move toward an inner wall of the cover (12), so as to press the electric wire (11) to abut against the inner wall of the cover (12), and to be clamped by the clamping member (141).
5. A power plug according to any preceding claim, wherein the second conductive member (131) is a copper plate, which copper plate has two ends thereof respectively extending to two second screw holes (150), allowing the two second screws (15) to be respectively screwed into the second screw holes (150) and come into contact with the copper plate.
6. A power plug according to any one of claims 2 to 5, wherein the second conductive member (131) has a central portion thereof being exposed to one of the first screw holes (1020), and the third conductive member (132) is a metallic spring installed in the first screw hole (1020), and is pressed when one of the first screws (102) is screwed into said one of the first screw holes (1020), in a manner that one end of the metallic spring abuts against the first screw (102), and the other end of the metallic spring adjoins the central portion of the second conductive member (131).

Patentansprüche

1. Stecker (1), welcher folgendes aufweist:

eine Anschlussbasis (10), welche wenigstens einen Leiteranschluss (100) und einen Masseanschluss (101) hat;
einen elektrischen Leitungsdraht (11), welcher Kerndrähte hat, die mit dem Leiteranschluss (100) und dem Masseanschluss (101) jeweils verbunden sind;
eine Abdeckung (12), welche integral mit der Anschlussbasis (10) mittels einer Mehrzahl von ersten Schrauben (102) verbunden ist; und
eine Drahtfixiereinrichtung (14), welche in der Abdeckung (12) eingebaut ist, wobei die Drahtfixiereinrichtung (14) eine Anpressplatte (140), welche an der Stelle angeordnet ist, an der der elektrische Leitungsdraht (11) durchgeht, und ein Klemmteil (141) umfasst, welches unterhalb der Anpressplatte (140) angeordnet ist;

dadurch gekennzeichnet, dass der Stecker (1) ferner folgendes aufweist:

zwei zweite Schrauben (15), welche jeweils durch die Abdeckung (12) gehen und an den beiden Enden der Anpressplatte (140) eingeschraubt sind; und
eine Masseeinrichtung (13), welche ein erstes leitendes Element (130) zum Verbinden der ersten Schrauben (102) mit dem Masseanschluss (101) in der Weise, dass die ersten Schrauben (102) geerdet werden, und ein zweites leitendes Element (131) hat, welches als Zwischenverbindung zwischen den beiden zweiten Schrauben (15) dient, sowie ein drittes leitendes Element (132) zum Verbinden der ersten Schrauben (102) mit dem zweiten leitenden Element (133) hat, so dass die zweiten Schrauben (15) über das zweite leitende Element (131) und die ersten Schrauben (102) geerdet sind.

2. Stecker nach Anspruch 1, bei dem das erste leitende Element (130) eine Kupferplatte ist, wobei die Kupferplatte ein Ende hat, welches mit dem Masseanschluss (101) verbunden ist, und ein anderes Ende hat, welches sich in die ersten Schrauböffnungen (1020) erstreckt, wodurch ermöglicht wird, dass die ersten Schrauben (102) jeweils in die ersten Schrauböffnungen (1020) eingeschraubt werden und in Kontakt mit der Kupferplatte kommen.
3. Stecker nach Anspruch 1, bei dem zwei der ersten Schrauben (102) in dem Stecker vorgesehen sind, und das erste leitende Element (130) eine M-förmige Kupferplatte ist, wobei die Kupferplatte einen Mittelabschnitt hat, welcher mit dem Masseanschluss (101) verbunden ist, und zwei Enden hat, welche jeweils sich zu den beiden ersten Schrauböffnungen (1020) erstrecken, wodurch ermöglicht wird, dass die zweiten ersten Schrauben (102) jeweils in die

ersten Schrauböffnungen (1020) eingeschraubt werden, und in Kontakt mit der Kupferplatte kommen.

4. Stecker nach einem der vorangehenden Ansprüche, bei dem die zwei zweiten Schrauben (15) derart beschaffen und ausgelegt sind, dass sie mittels einer Schraubverbindung die Anpressplatte (140) in Richtung auf eine innere Wand der Abdeckung (12) derart bewegen, dass der elektrische Leitungsdraht (11) zur Anlage gegen die innere Wand der Abdeckung (12) unter Andrücken kommt, und mittels des Klemnteils (141) festgeklemmt wird.
5. Stecker nach einem der vorangehenden Ansprüche, bei dem das zweite leitende Element (131) eine Kupferplatte ist, wobei die Kupferplatte zwei Enden hat, welche sich jeweils zu den zwei zweiten Schrauböffnungen (150) erstrecken, wodurch ermöglicht wird, dass die zwei zweiten Schrauben (15) jeweils in die zweiten Schrauböffnungen (150) geschraubt werden können und in Kontakt mit der Kupferplatte kommen.
6. Stecker nach einem der vorangehenden Ansprüche 2 bis 5, bei dem das zweite leitende Element (131) einen Mittelabschnitt hat, welcher zu einer der ersten Schrauböffnungen (1020) frei liegt, und das dritte leitende Element (132) eine metallische Feder ist, welche in die erste Schrauböffnung (1020) eingesetzt ist und zusammengedrückt wird, wenn eine der ersten Schrauben (102) in eine der ersten Schrauböffnungen (1020) geschraubt wird, und zwar auf eine solche Weise, dass ein Ende der metallischen Feder gegen die erste Schraube (102) anliegt und das andere Ende der metallischen Feder auf den Mittelabschnitt des zweiten leitenden Elements (131) trifft.

Revendications

1. - Fiche d'alimentation électrique (1), comprenant:
 - une base de borne (10) ayant au moins une borne conductrice (100) et une borne de mise à la terre (101);
 - un fil conducteur électrique (11) ayant des fils conducteurs d'âme connectés respectivement à la borne conductrice (100) et à la borne de mise à la terre (101);
 - un couvercle (12) connecté d'un seul tenant à la base de borne (10) par une pluralité de premières vis (102); et
 - un mécanisme de fixation de fil conducteur (14) installé dans le couvercle (12), le mécanisme de fixation de fil conducteur (14) comprenant une plaque de pression (140) positionnée là où le fil

conducteur électrique (11) passe par celui-ci, et un élément de serrage (141) sous la plaque de pression (140);

caractérisée par le fait que la fiche d'alimentation électrique (1) comprend en outre :

- deux secondes vis (15) pénétrant respectivement à travers le couvercle (12) et qui sont vissées à deux extrémités de la plaque de pression (140); et
- un mécanisme de mise à la terre (13) ayant un premier élément conducteur (130) pour connecter les premières vis (102) à la borne de mise à la terre (101), de façon à mettre à la terre les premières vis (102); un second élément conducteur (131) pour interconnecter les deux secondes vis (15); et un troisième élément conducteur (132) pour connecter les premières vis (102) au second élément conducteur (131), de façon à mettre à la terre les secondes vis (15) par l'intermédiaire du second élément conducteur (131) et des premières vis (102).

2. - Fiche d'alimentation électrique selon la revendication 1, dans laquelle le premier élément conducteur (130) est une plaque de cuivre, laquelle plaque de cuivre a une extrémité de celle-ci qui est connectée à la borne de mise à la terre (101) et l'autre extrémité de celle-ci s'étendant vers des premiers trous de vis (1020), permettant aux premières vis (102) d'être respectivement vissées dans les premiers trous de vis (1020) et de venir en contact avec la plaque de cuivre.
3. - Fiche d'alimentation électrique selon la revendication 1, dans laquelle deux des premières vis (102) sont disposées dans la fiche d'alimentation électrique (1), et le premier élément conducteur (130) est une plaque de cuivre en forme de M, laquelle plaque de cuivre a une partie centrale de celle-ci qui est connectée à la borne de mise à la terre (101), et deux extrémités de celle-ci s'étendant respectivement vers deux premiers trous de vis (1020), permettant aux deux premières vis (102) d'être vissées respectivement dans les premiers trous de vis (1020) et de venir en contact avec la plaque de cuivre.
4. - Fiche d'alimentation électrique selon l'une quelconque des revendications précédentes, dans laquelle les deux secondes vis (15) sont aptes à être vissées pour amener la plaque de pression (140) à se déplacer vers une paroi interne du couvercle (12), de façon à presser le fil conducteur électrique (11) pour venir en butée contre la paroi interne du couvercle (12), et à être serré par l'élément de serrage (141).
5. - Fiche d'alimentation électrique selon l'une quelcon-

que des revendications précédentes, dans laquelle le second élément conducteur (131) est une plaque de cuivre, laquelle plaque de cuivre a deux extrémités de celle-ci s'étendant respectivement vers deux seconds trous de vis (150), permettant aux deux secondes vis (15) d'être vissées respectivement dans les seconds trous de vis (150) et de venir en contact avec la plaque de cuivre.

6. - Fiche d'alimentation électrique selon l'une quelconque des revendications 2 à 5, dans laquelle le second élément conducteur (131) a une partie centrale de celui-ci qui est exposée à l'un des premiers trous de vis (1020) et le troisième élément conducteur (132) est un ressort métallique installé dans le premier trou de vis (1020) et est pressé lorsque l'une des premières vis (102) est vissée dans ledit trou des premiers trous de vis (1020), d'une manière telle qu'une extrémité du ressort métallique vient en butée contre la première vis (102), et l'autre extrémité du ressort métallique touche la partie centrale du second élément conducteur (131).

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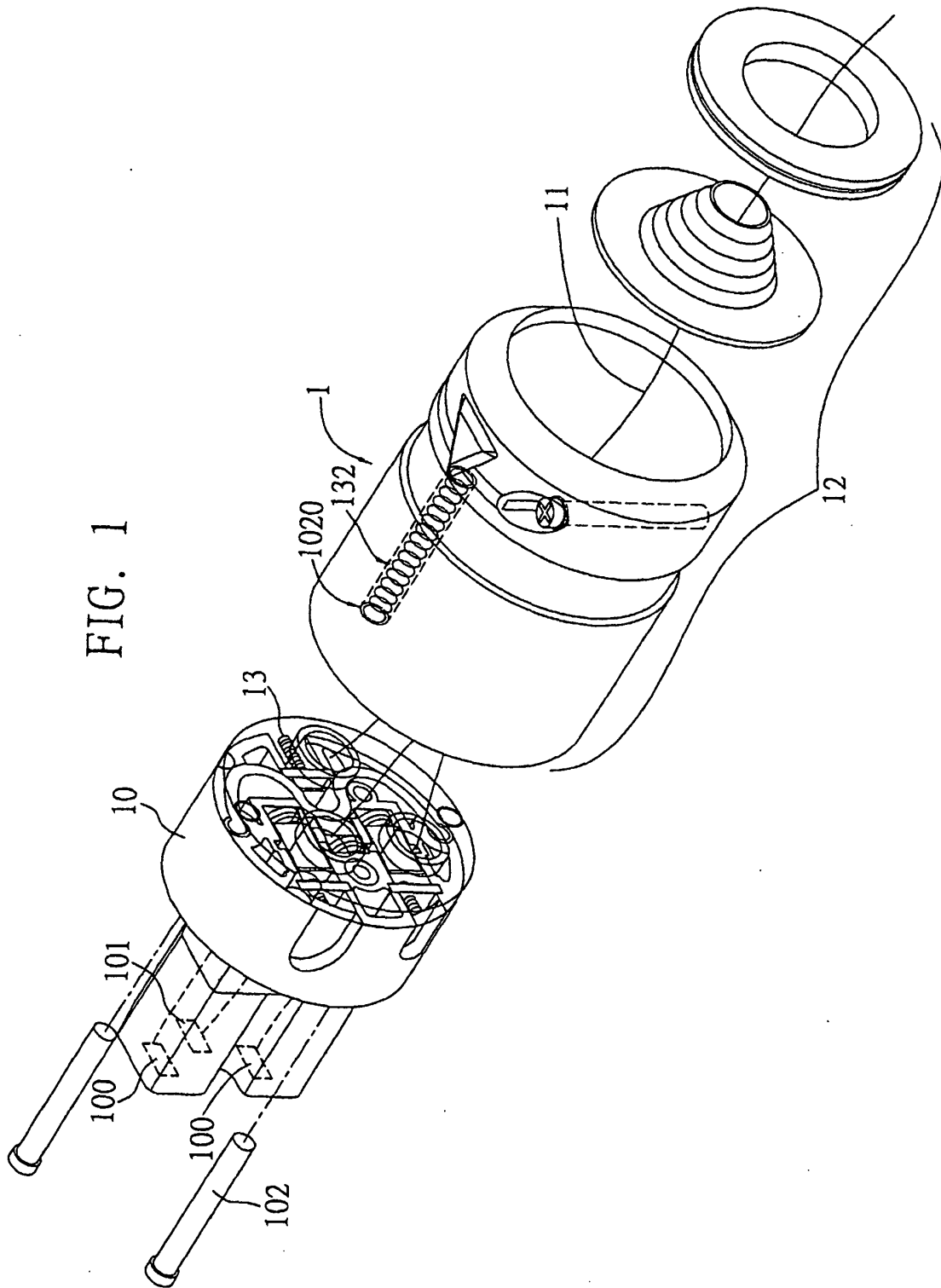
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FIG. 1



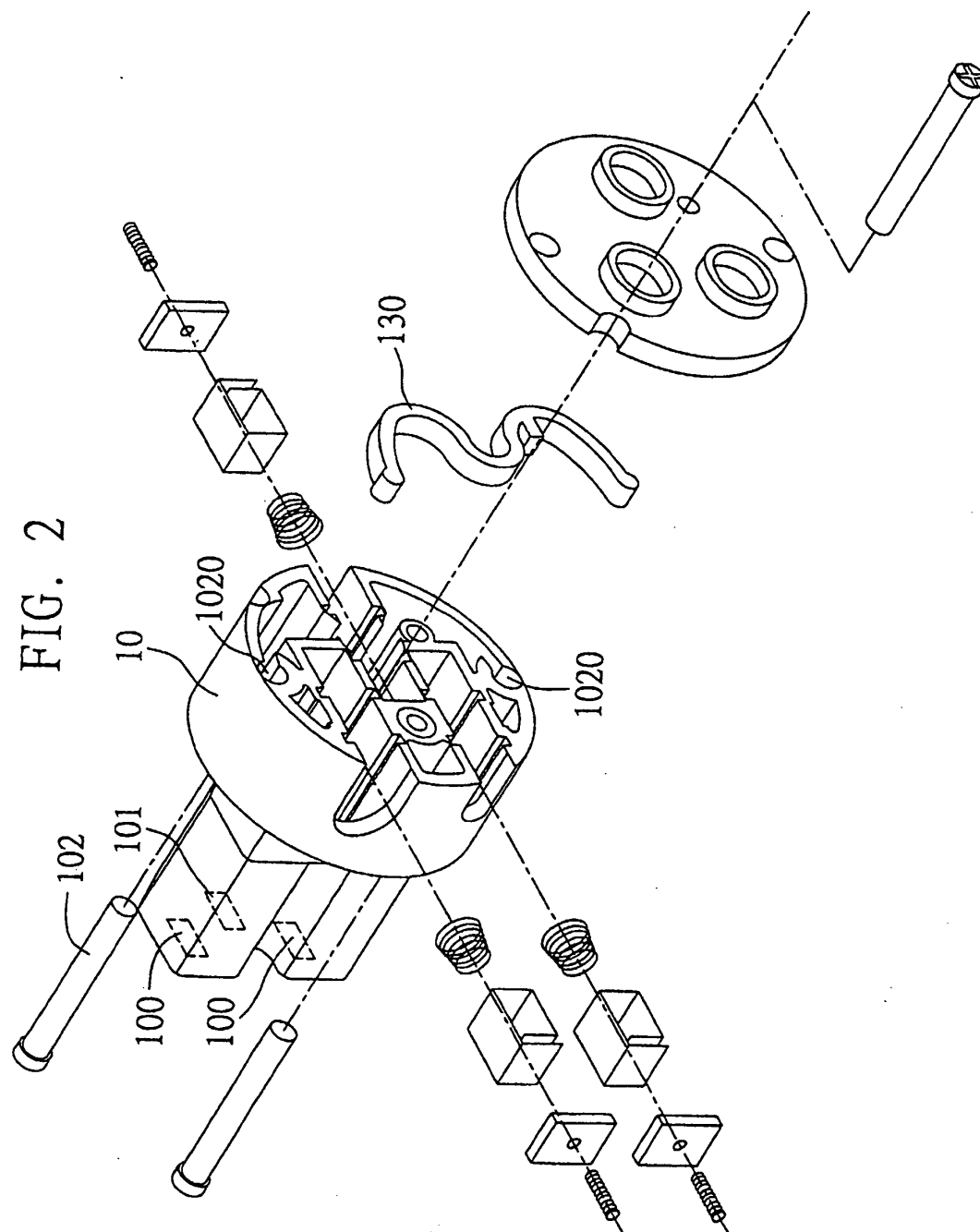


FIG. 3

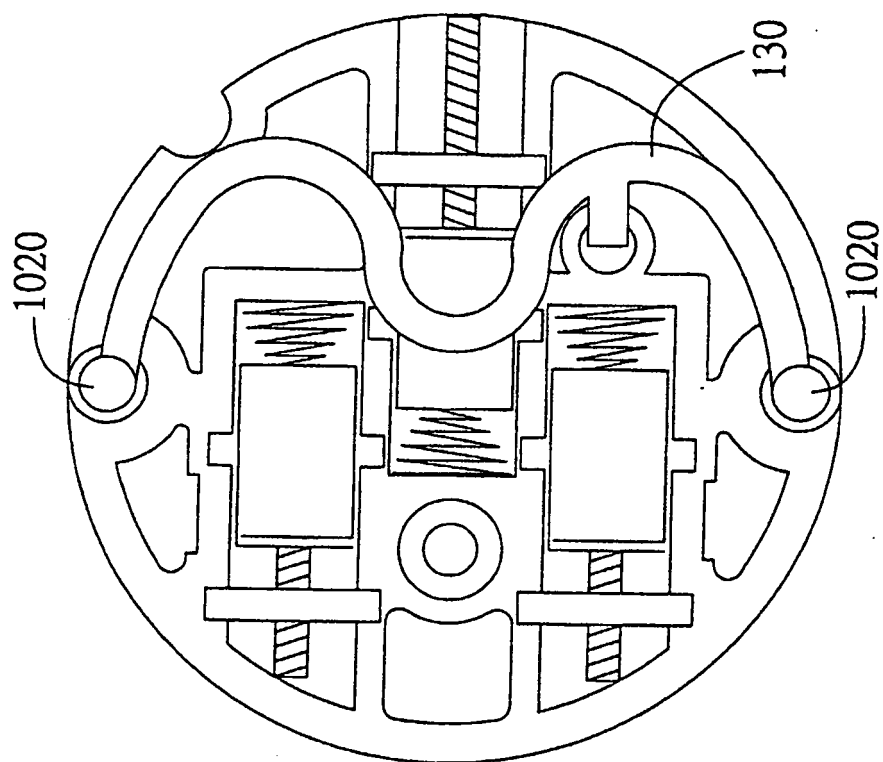


FIG. 4

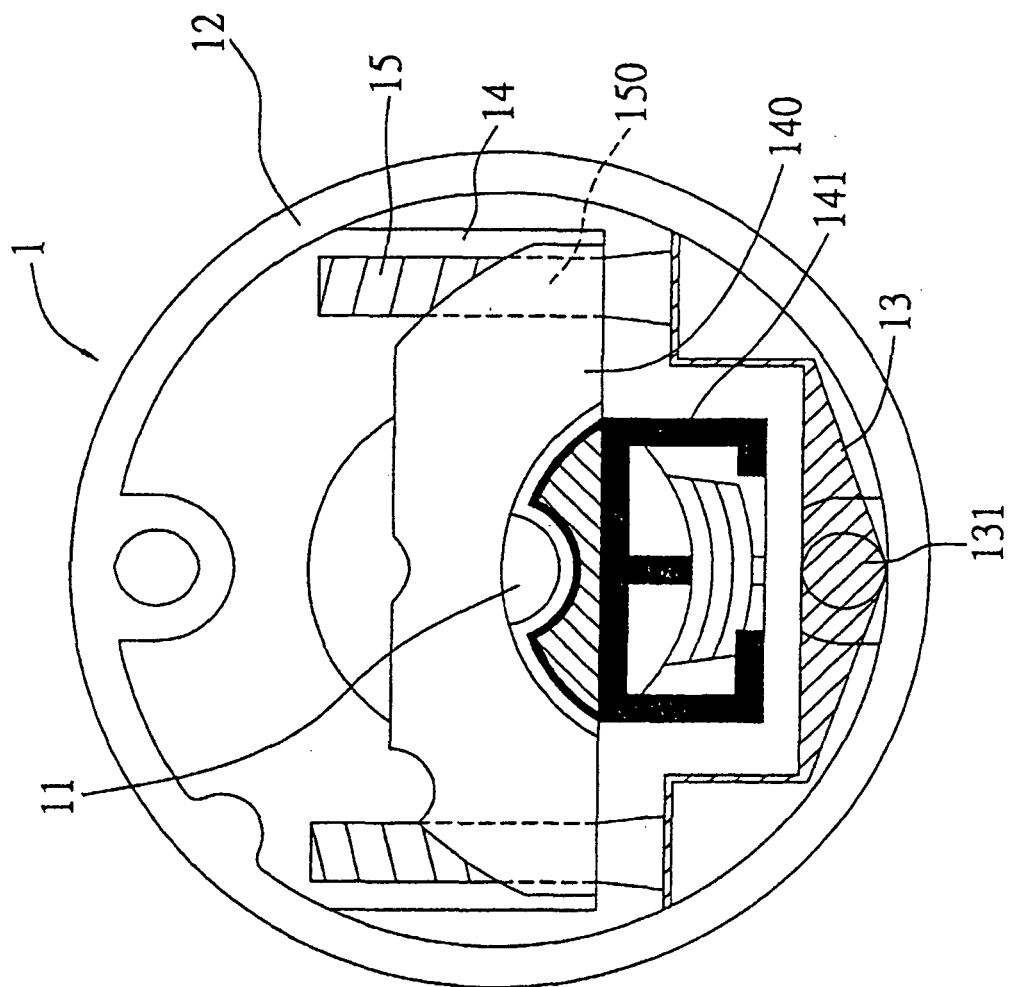


FIG. 5

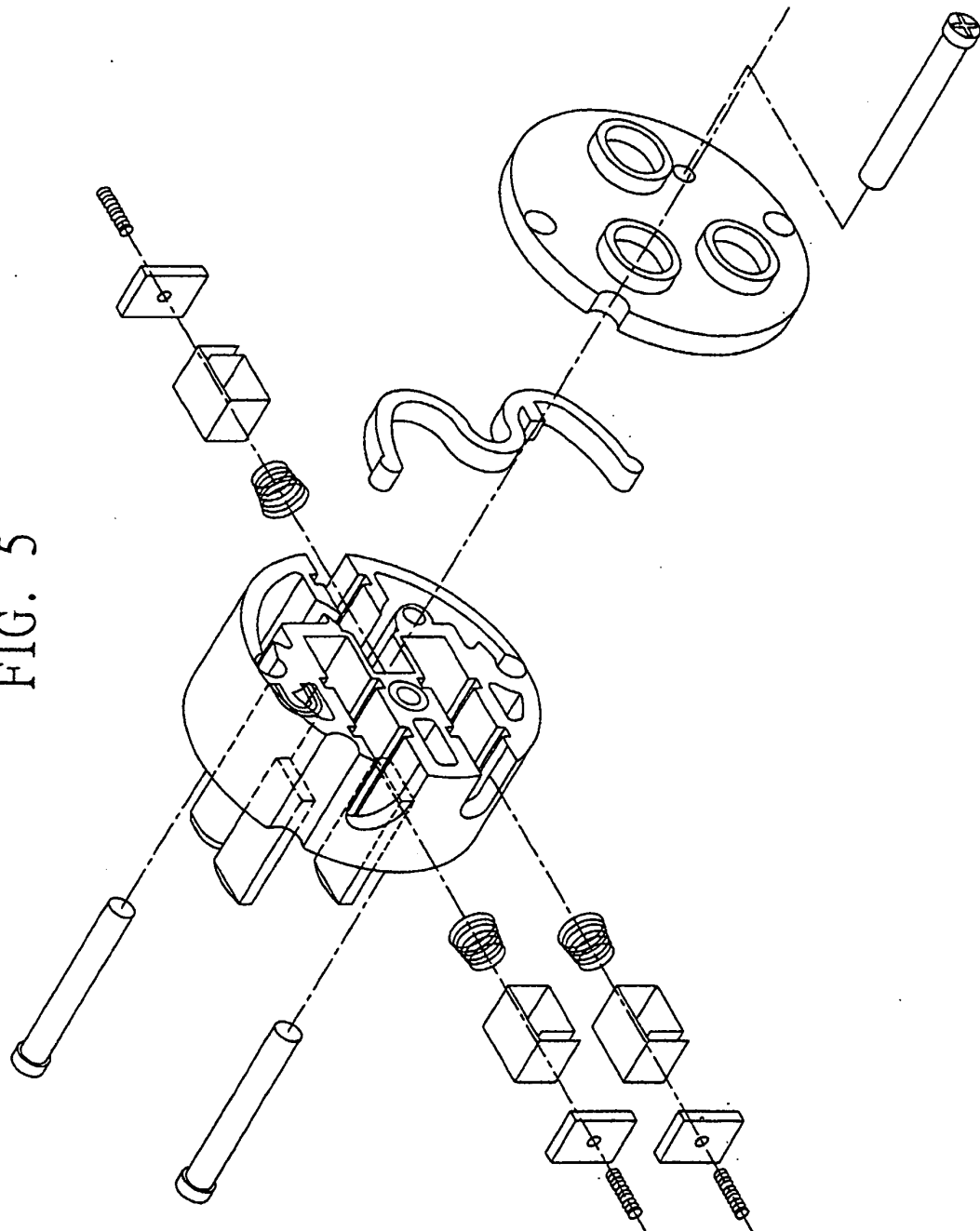


FIG. 6

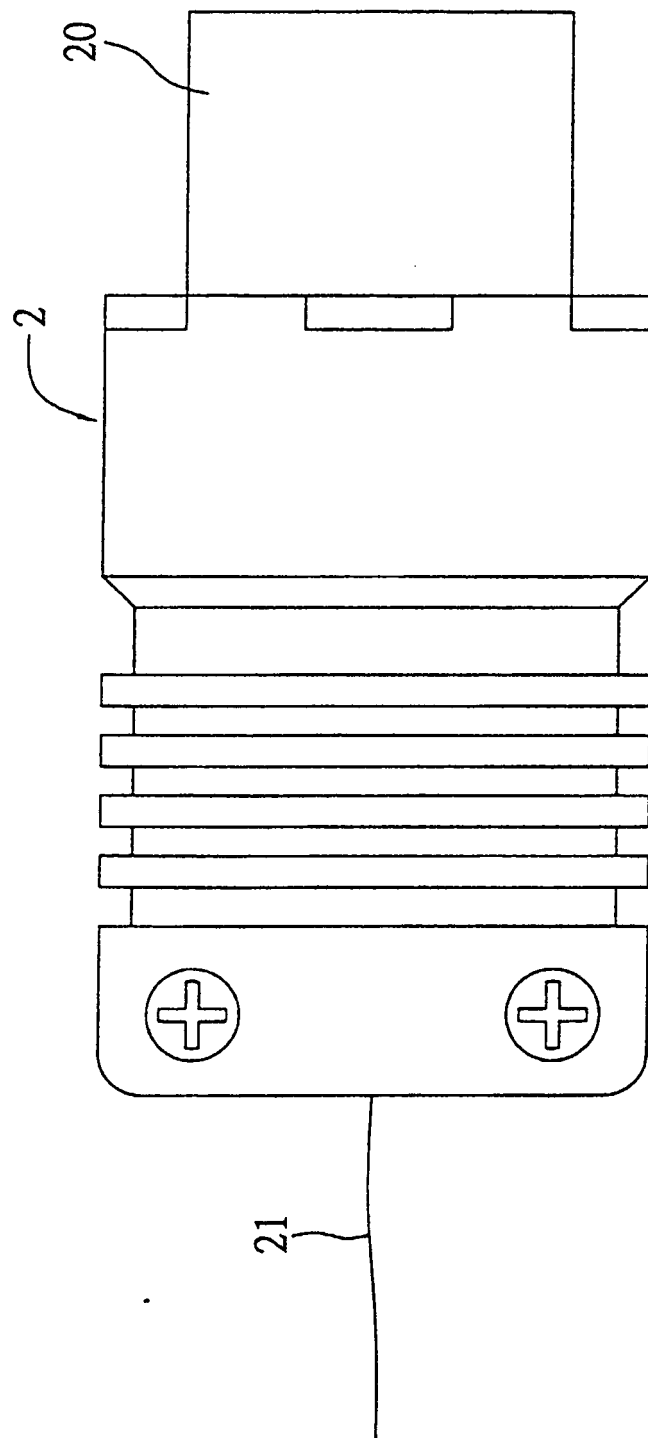


FIG. 7

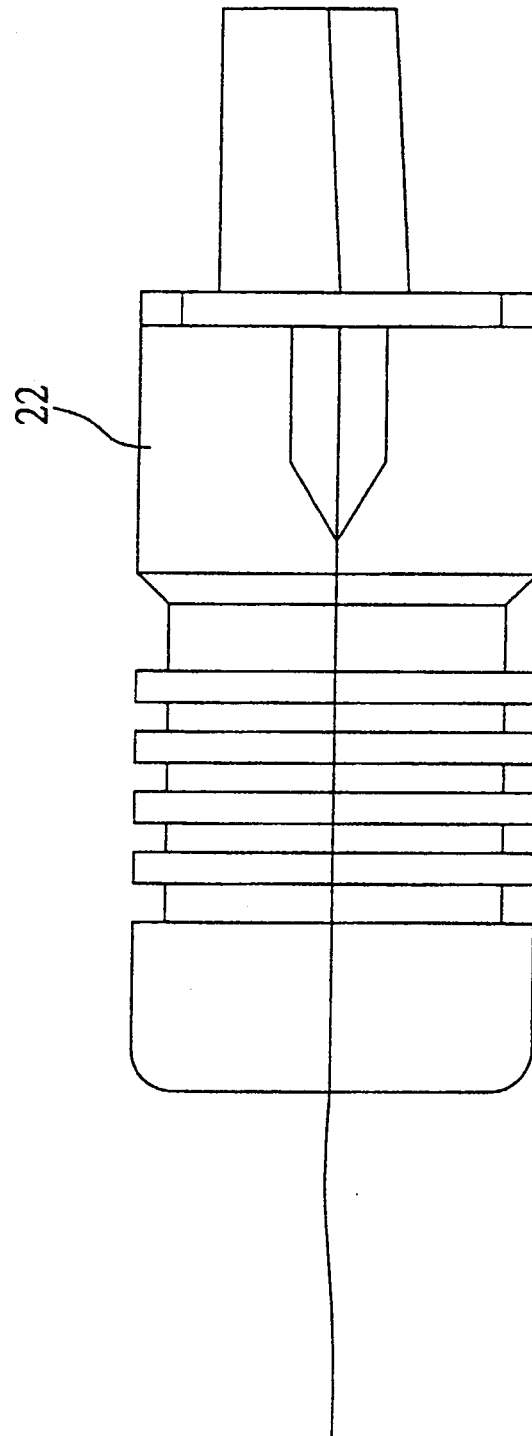
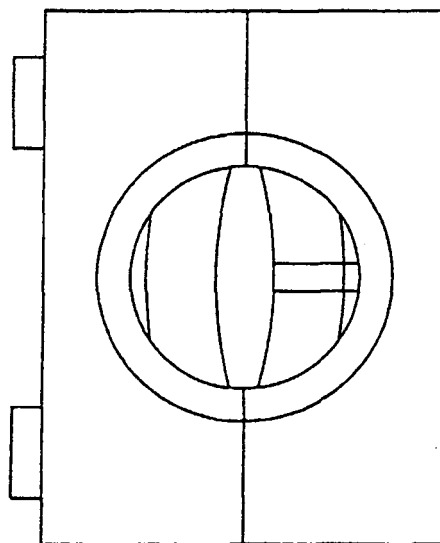


FIG. 8



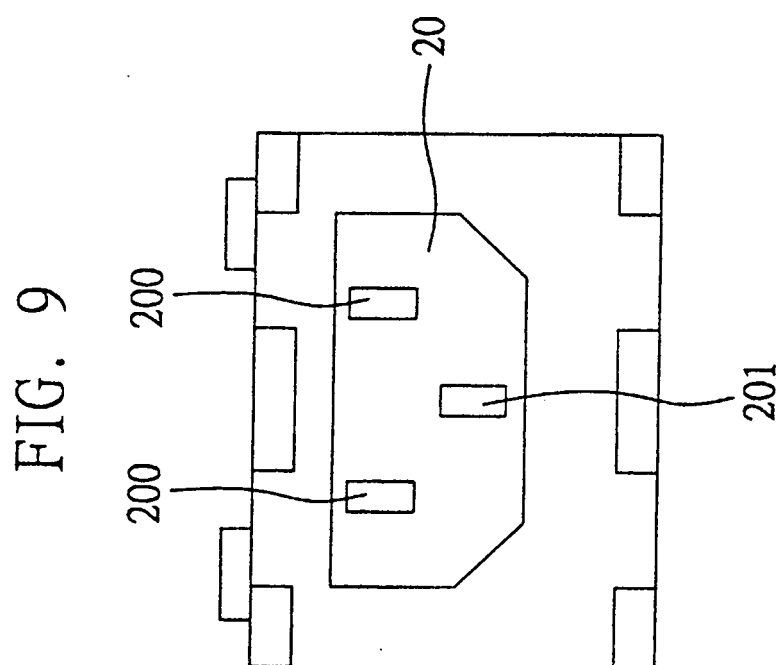


FIG. 10

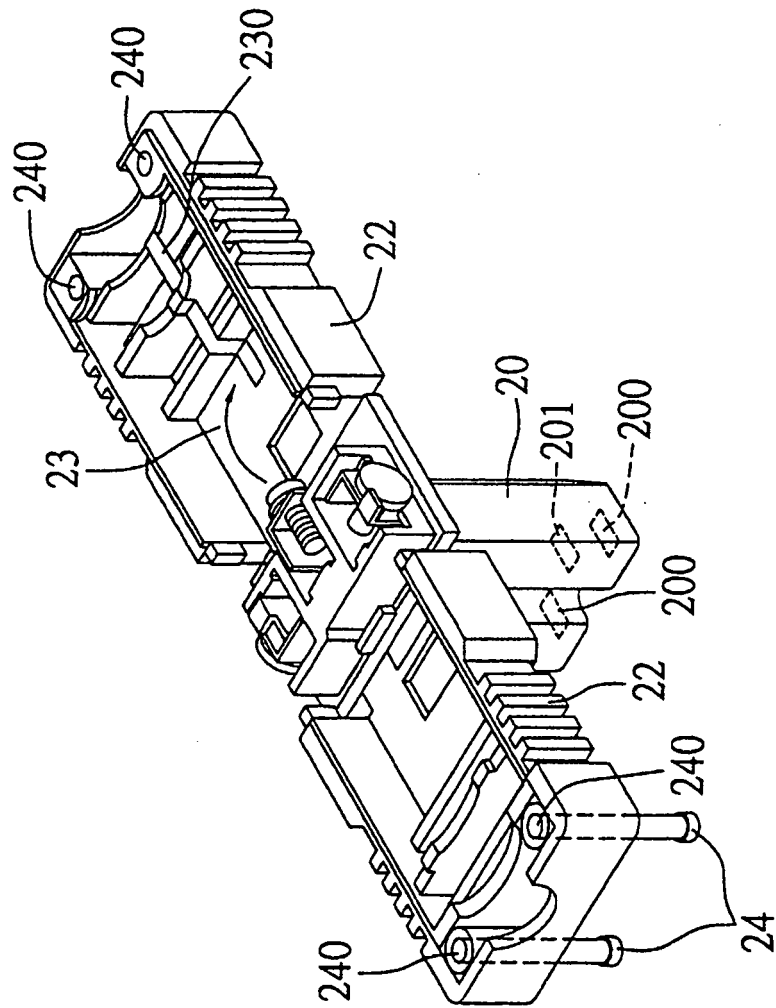


FIG. 11

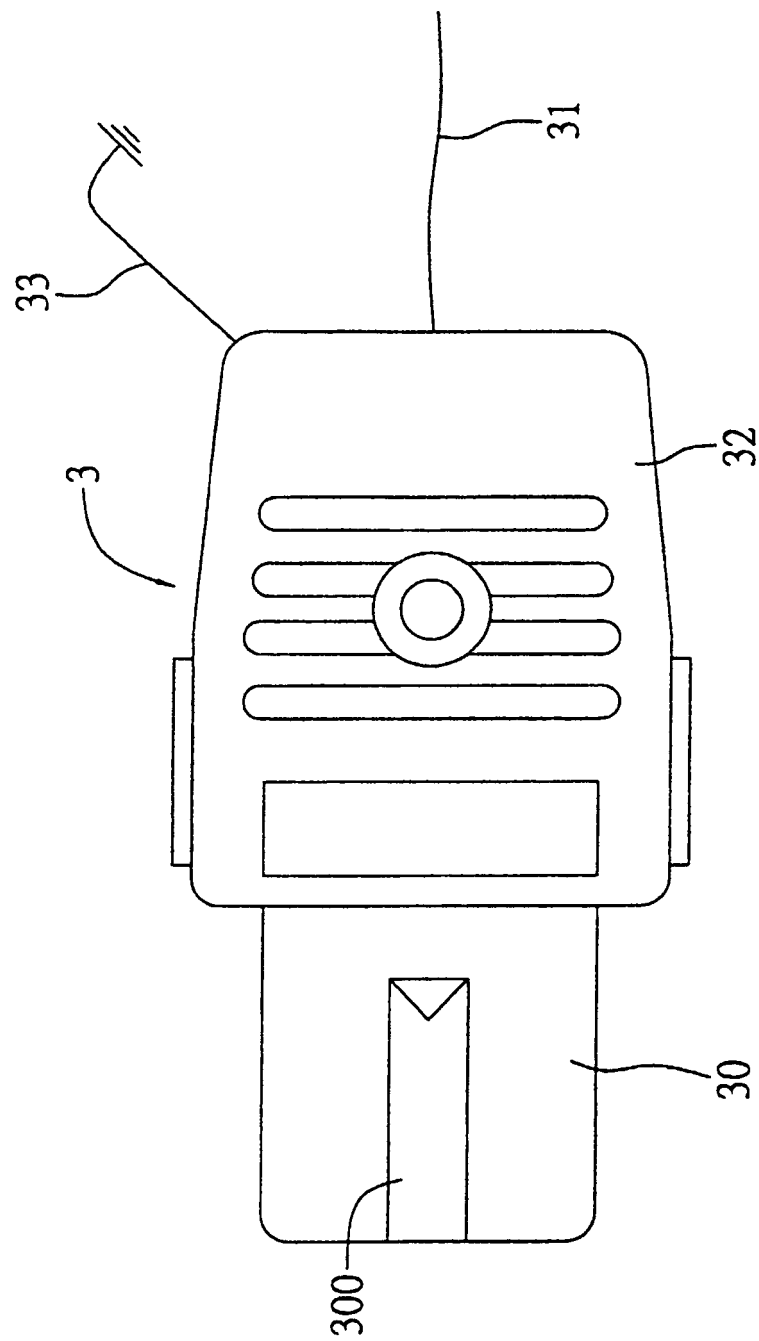
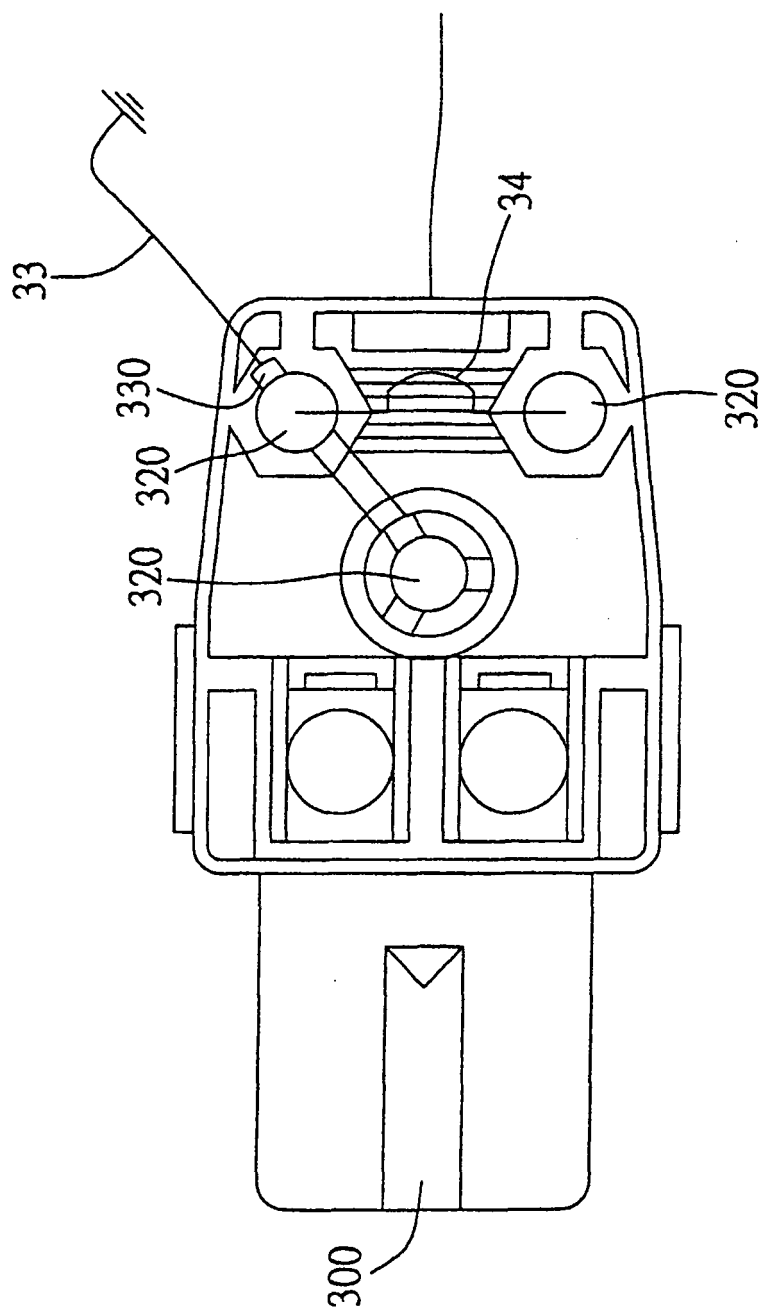


FIG. 12



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4402565 A [0006]