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(54) **ILLUMINATED MOUTH AND TONGUE STUD**

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ABSTRACT

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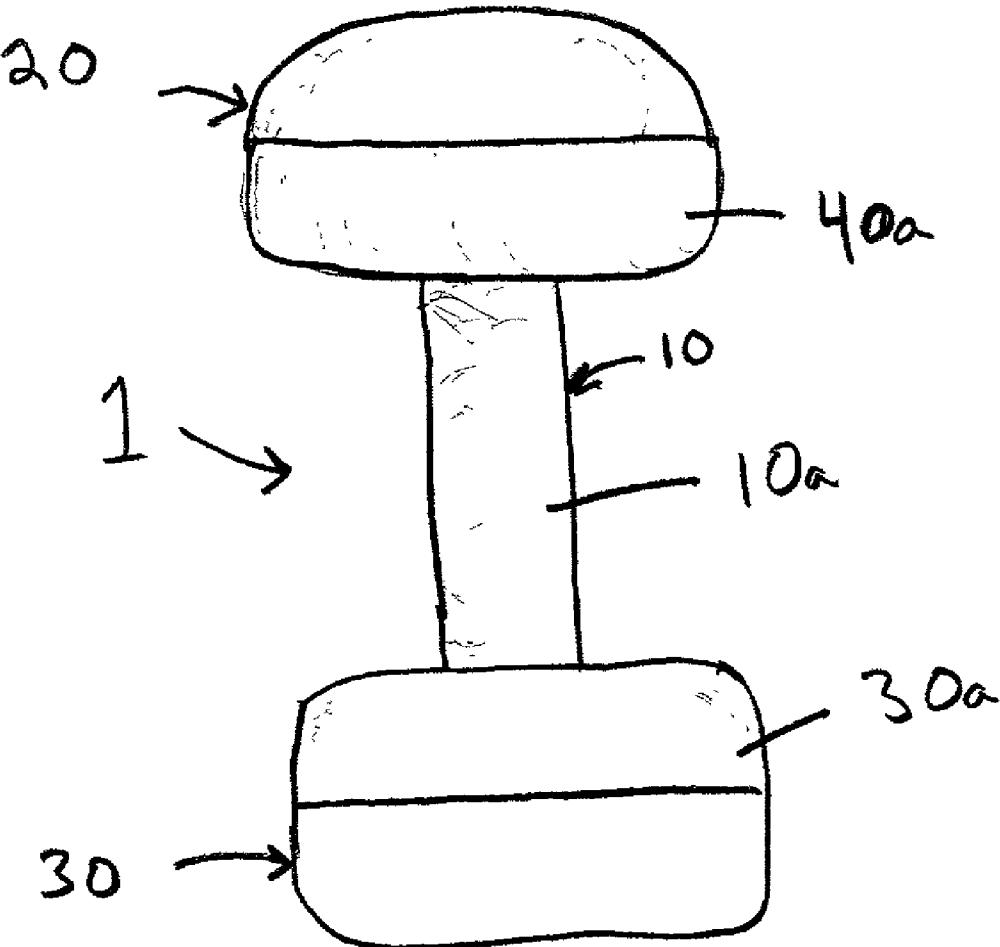
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The present invention discloses a hollow tongue and mouth stud that includes an electrical circuit. In the preferred embodiment of the present invention, the electrical circuit is an illumination circuit including a power source, an electrical sub-circuit electrically connected to the power source, and a light source such as an LED electrically connected to the electrical circuit. In one embodiment, the electrical circuit operates to power the light source in a constant fashion. In another embodiment, the electrical sub-circuit is a flasher circuit so that the electrical circuit operates to power the light source in an intermittent flashing manner.



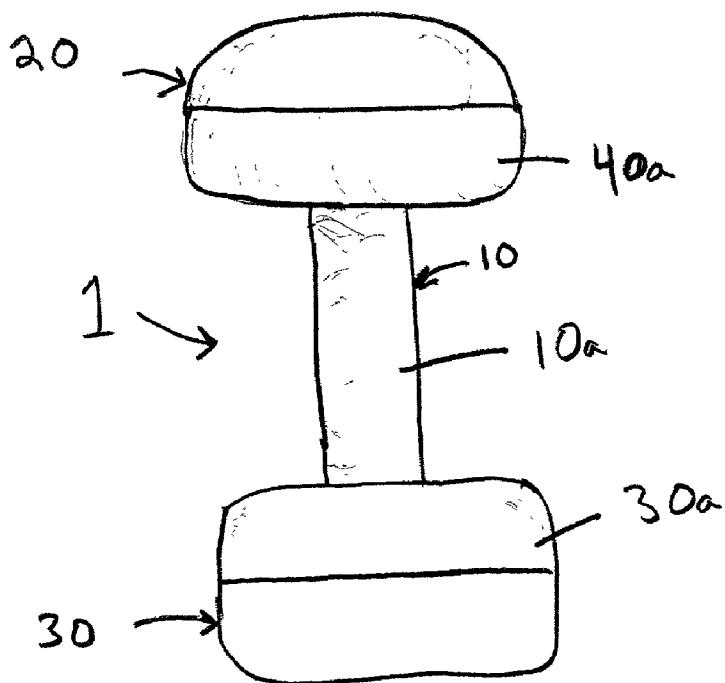


Figure 1

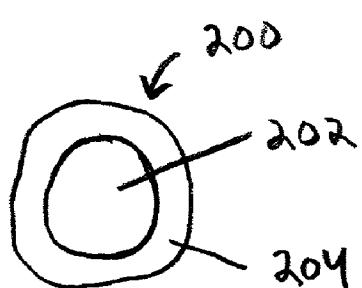


Figure 3a

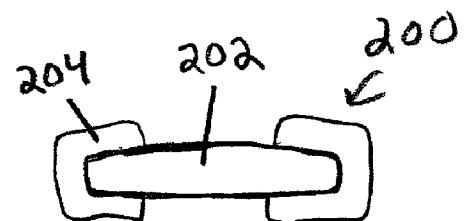


Figure 3b

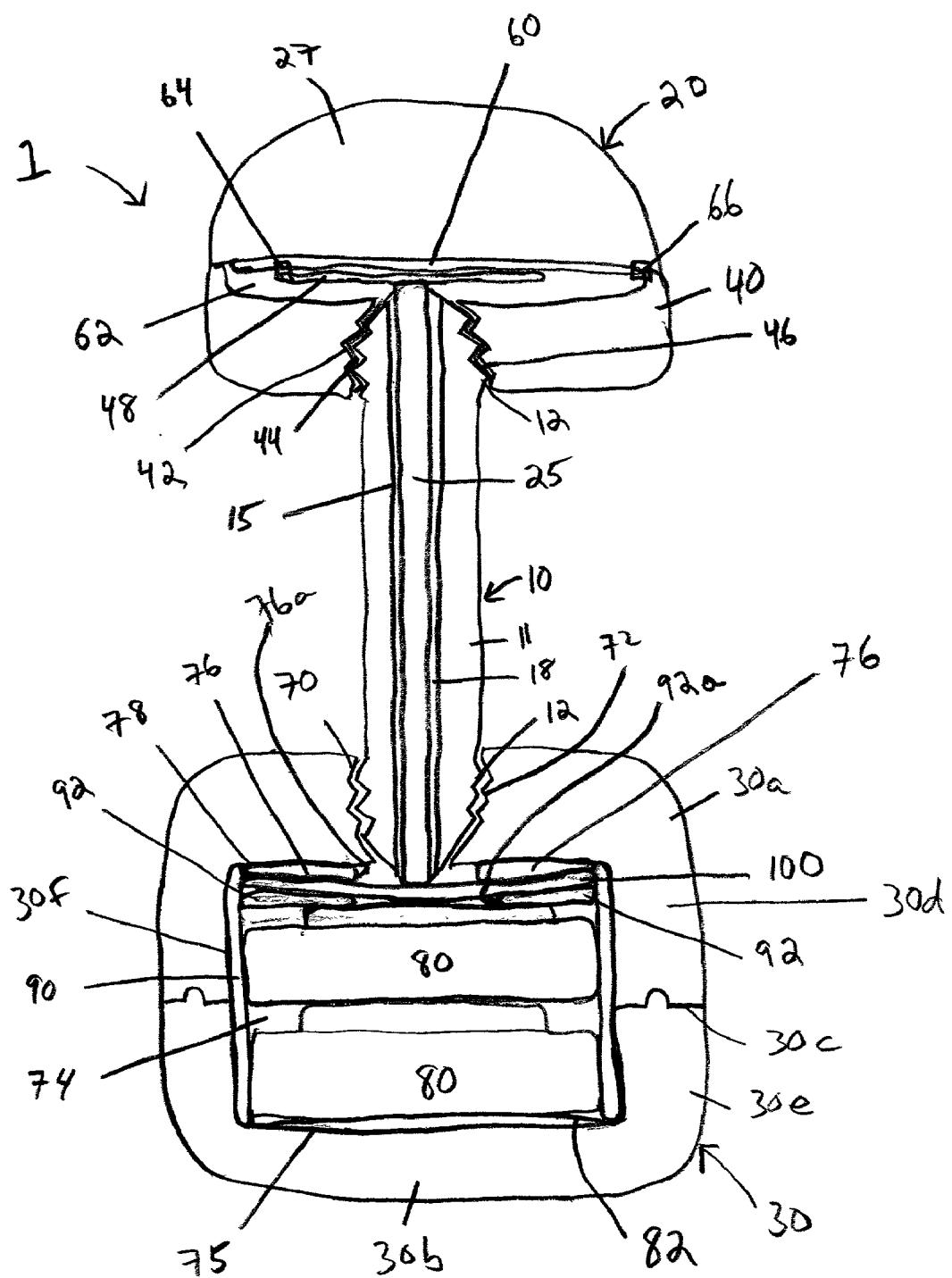
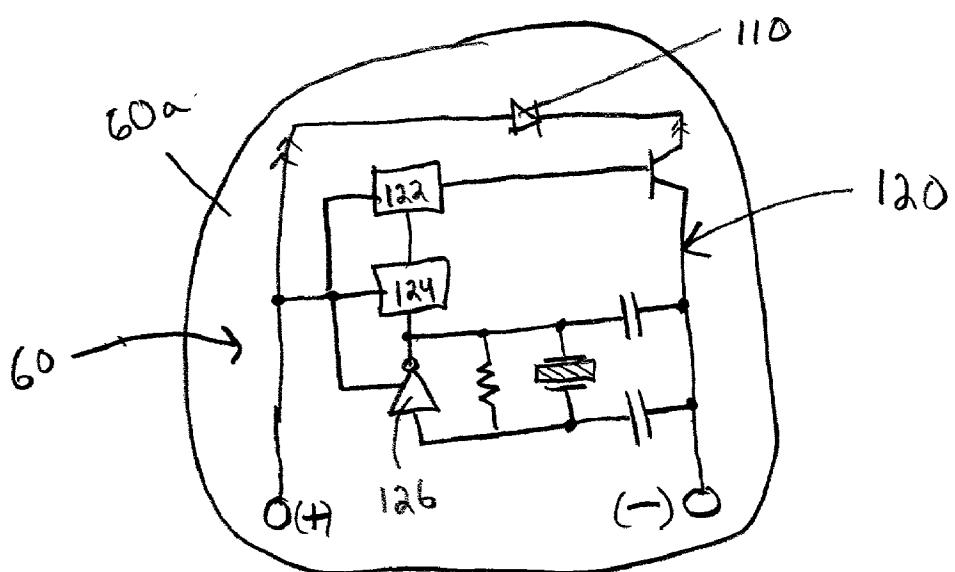
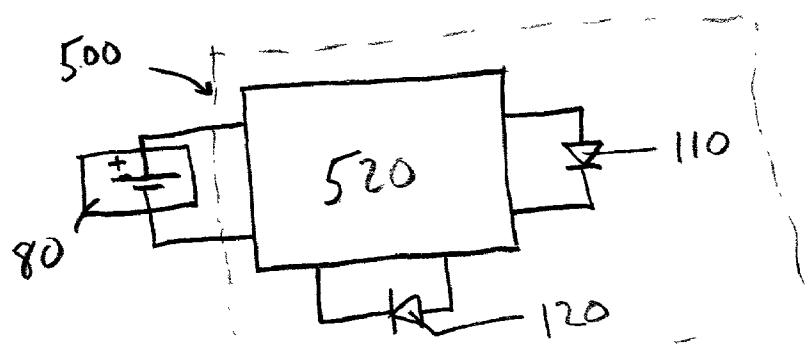
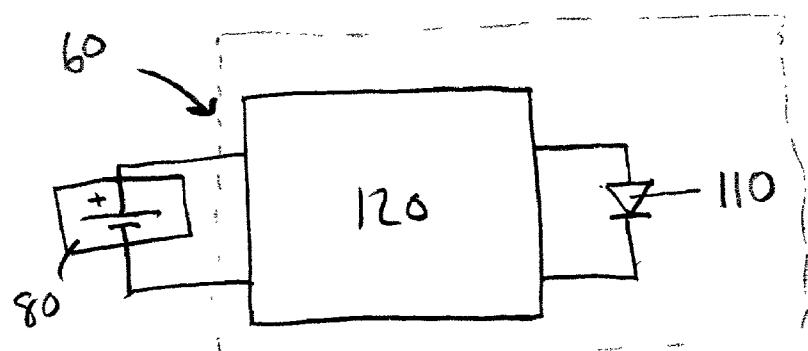


Figure 2



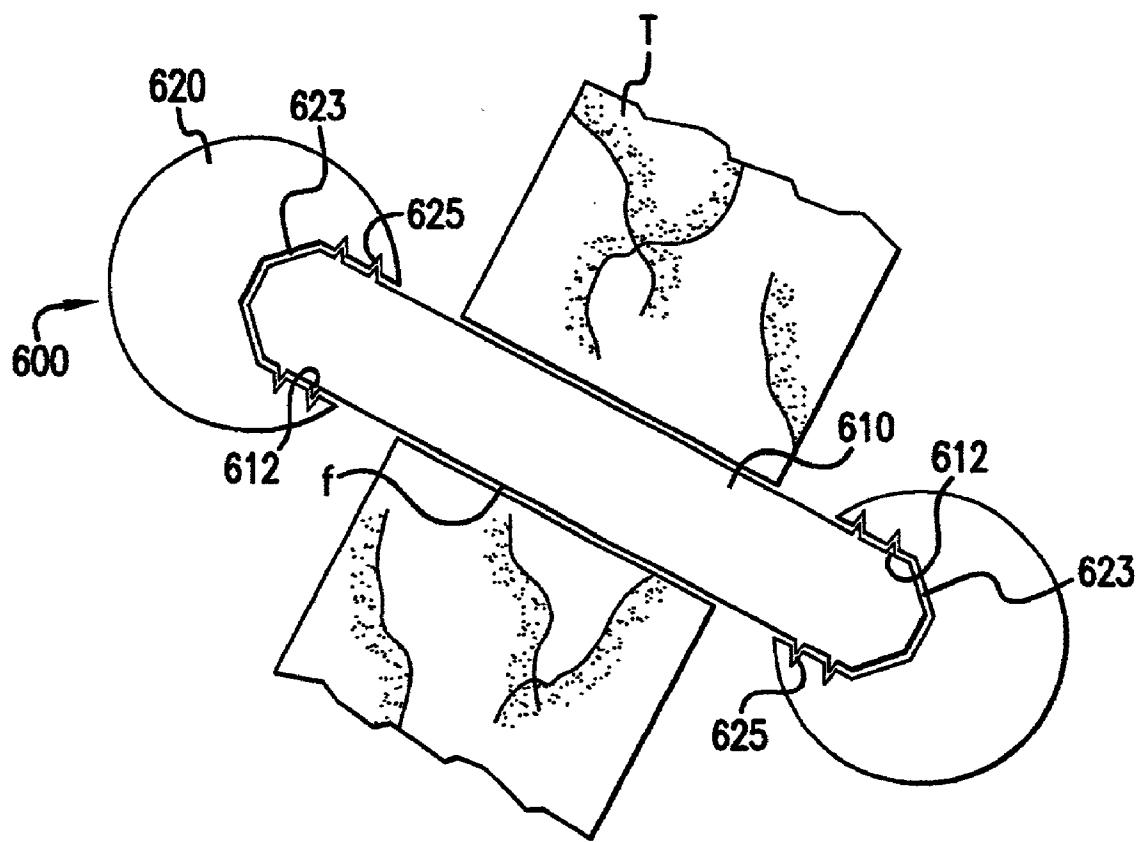


FIG.11
PRIOR ART

ILLUMINATED MOUTH AND TONGUE STUD

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention pertains generally to ornamental jewelry inserted and worn by a person after body piercing. More specifically, the present invention pertains to tongue studs, a type of ornamental jewelry comprised of a metal or plastic bar with removable caps at the ends that can be inserted into an artificially formed fistulous tract previously created in the mouth or tongue of the wearer. The present invention specifically improves upon the prior art tongue stud by providing a light source so that the device is an illuminated tongue stud.

[0003] 2. Description of the Prior Art

[0004] Body piercing is a longstanding human tradition and for years many people have worn jewelry such as earrings that are inserted into an artificially created fistulous tract. In recent years, the popularity of other kinds of body pierced jewelry has grown to include nose rings, belly button rings, and tongue studs. The conventional tongue stud (600) as shown in FIG. 7 consists of a simple solid bar (610), made of metal or plastic that attaches via male threads (612) to female threads (625) of a recess (623) in solid ball (620) at each end of the tongue stud (600). Each solid ball (620) is also made of metal or plastic. The shape of solid ball (620) is generally spherical although other shapes such as pyramids and square box shapes have been employed. Furthermore, the bar (610) may be straight, curved, or corkscrew in shape. When in use, the bar (610) rests in a fistulous tract (f) in the wearers tongue (T). It is noted that tongue studs may be mounted in other parts of the wearer's mouth such as the front lower lip, so a tongue stud is legitimately considered a "mouth and tongue stud" because the device can be placed elsewhere in the mouth besides the tongue. Typically, bar (610) is held in place in the wearers tongue or in a wearer's lip by the solid balls (620). To place or remove the tongue stud (600), at least one of the solid balls (620) must be screwed off of the bar (610) so that the bar (610) may slide out of the fistulous tract (f). The main function of the prior art tongue stud is ornamentation. Another function of the prior art tongue stud is to enhance tactile stimulation during human sexual activities.

[0005] The prior art tongue stud is limited in its ornamental appeal because the solid ball's aesthetic effect depends on light reflected off the surface of the top ball. Because the mouth of a wearer provides a dark environment, the full aesthetic effect of the tongue stud is not readily appreciated. The present invention endeavors to improve the aesthetic appeal of the prior art tongue stud by providing a light source in the upper ball.

SUMMARY OF THE INVENTION

[0006] It is a primary object of the present invention to overcome the limitations of the prior art tongue studs as previously described.

[0007] It is a primary object of the present invention to provide a tongue stud that provides a housing for an electrical circuit.

[0008] It is a primary object of the present invention to provide an ornamental illuminated mouth and tongue stud

that produces an enhanced visual effect for the wearer as a result of an electrical circuit housed by the mouth and tongue stud.

[0009] It is a primary object of the present invention to provide an illuminated mouth and tongue stud for enhancing human sexual activities.

[0010] The specific feature of the mouth and tongue stud of the present invention for achieving the desired objectives in the first preferred embodiment is a hollow frame formed out of a portion of the mouth and tongue stud, an electrical circuit with power source disposed in the hollow frame, and a light source electrically connected to the electrical circuit.

[0011] In a second preferred embodiment of the invention, the electrical circuit is a flasher circuit for operating the light source in a flashing manner.

[0012] In a third preferred embodiment of the invention, the mouth and tongue stud is illuminated by several light sources being operated in a flashing manner by a flasher circuit.

DESCRIPTION OF THE DRAWINGS OF THE INVENTION

[0013] FIG. 1 illustrates a perspective view of one preferred embodiment of the mouth and tongue stud of the present invention.

[0014] FIG. 2 illustrates a cross sectional view of the tongue stud embodiment of the present invention shown in FIG. 1.

[0015] FIG. 3a illustrates a plan view of the conducting diaphragm in accordance with a preferred embodiment of the present invention.

[0016] FIG. 3b illustrates a cross-sectional view of the conducting diaphragm in accordance with a preferred embodiment of the present invention shown in FIG. 3a.

[0017] FIG. 4 illustrates a schematic circuit diagram in accordance with a preferred embodiment of the present invention including one LED.

[0018] FIG. 5 illustrates another schematic circuit diagram in accordance with a preferred embodiment of the present invention including multiple LEDs.

[0019] FIG. 6 illustrates a schematic view of a preferred embodiment of the illumination circuit in accordance with the present invention.

[0020] FIG. 7 illustrates a cross sectional view of the prior art tongue stud in place in a wearer's tongue.

DESCRIPTION OF THE PREFERRED INVENTION AND EMBODIMENTS

[0021] Referring now to the drawings where like numerals indicate like parts, FIGS. 1 and 2 illustrate one preferred embodiment of the present invention, which is generally a tongue and mouth stud (1) comprising a central bar (10), illumination ball (20) and power ball (30). The illumination ball is attached to one end of the central bar (10) and the power ball is removably attached to the other end of the central bar (10).

[0022] Although the word “ball” is used to describe the illumination ball (20) and the power ball (30), these structures are not meant to be limited to spherical structures. In this context, the word “ball” defines an end piece or cap that may be spherical or non-spherical in shape. The non-spherical shapes include cylindrical shapes, disk shapes, box shapes, pyramid shapes, and spiked or star shapes, but this list is merely exemplary and non-limiting so that other non-spherical shapes can be used to practice the end caps or “balls” (20) and (30) the invention.

[0023] Specifically, central bar (10) has a central axial cavity (15) formed along the central axial axis by the cylindrical wall (11). Disposed inside the axial cavity (15) is conducting rod (25) that is made of a conducting metal. Wall (11) is also made of conducting metal, preferentially stainless steel although other metals can be used. A non-conducting epoxy resin or insulating material (18) is disposed between the conducting rod (25) and the wall (11) so as to electrically insulate the rod (25) from the wall (11). Central bar (10) has male threads (12) disposed at each end as shown in FIG. 2 for attaching to the balls.

[0024] Illumination ball (20) has a base (40) made of the same material as wall (11). Base (40) has a threaded hole (42) formed through the center. Threads (44) of base (40) threadingly engage the threads (12) of one end of bar (10). Preferably, bar (10) is fixedly attached to the base (40) by means of binder (46) so that bar (10) can not be removed from base (40). The purpose for the binder is so that the tongue stud (1) will ultimately have a minimum of removable parts, thereby decreasing the risk of detachment and aspiration of the stud or any of its parts. However, it is possible to practice the invention without the binder (46). Preferably, binder (46) is a conducting solder or weld because the attachment surface between base (40) and bar (10) must be an electrically conducting attachment surface.

[0025] Base (40) provides the platform for supporting integrated circuit board (60) that is disposed thereon. In one preferred embodiment of the invention, a conducting plate (48) is positioned between the base (40) and circuit board (60). As shown, an insulating epoxy resin (62) is used to both secure conducting plate (48) and the circuit board (60) to the base (40). This second insulating resin (62) may be the same material as the first non-conducting resin or material (18), or it may be different. Insulating resin (62) insulates the conducting plate (48) from direct electrical contact with base (40). As shown, conducting rod (25) is in contact with the conducting plate (48) to form an electrical connection. Preferably, when binder (46) is used to secure the base (40) to central bar (10), the conducting rod (25) is welded or soldered to conducting plate (48). However, the invention can be practiced without the conducting plate (48). In such a case, the conducting rod (25) is electrically connected by soldering or a weld directly to a conducting pad (60n) of the circuit board (60).

[0026] When the plate (48) is practiced in the invention, the plate (48) is electrically connected to the circuit board (60) by an electrical connection (64), such as by an electrically conducting solder or weld connection, to a conducting pad (60n) of the circuit board (60). Circuit board (60) is also electrically connected via conducting pad (60p) to the base (40) by an electrical connection (66) that is likewise an electrically connecting solder or weld.

[0027] Lastly, illumination ball (20) includes a transparent dome (27) formed of a non-toxic, transparent epoxy resin for transmitting light. Circuit board (60) is embedded in the dome (27) so that a light emitting diode (LED), such as LED (110), disposed on the top surface (60a) of circuit board (60) may emit light through the dome (27) and provide illumination, as evident from FIGS. 2 and 6.

[0028] Power ball (30) is formed by two half portions (30a) and (30b) that are soldered or welded together at seam (30c) to form an irreversible attachment between the portions. Portion (30a) includes a threaded hole (70) formed through the center. Threads (72) of portion (30a) threadingly engage the threads (12) of one end of bar (10). Preferably, portions (30a) and (30b) are made of the same material as wall (11) and are shaped to form an internal cavity (74) in the power ball (30). Portion (30b) includes a flat surface (75) that provides a conducting surface on which power sources (80) are disposed. Preferably, each power source (80) is a 1.5 V lithium battery, although other suitable batteries can be used. FIG. 2 shows that cavity (74) is preferably dimensioned to snuggly accomodate two power sources (80); however, in one alternate preferred embodiment of the invention, the cavity (74) is dimensioned to snuggly accomodate only a singel power source (80). In another alternate preferred embodiment of the invention, the cavity (74) is dimensioned to snuggly accomodate three power sources (80). Optionally, the present invention can be practiced with a conducting metallic spring (82) disposed between a power source (80) and the flat conducting surface (75).

[0029] Besides the power sources (80), the cavity (74) accomodates an insulating seal (76) that is a disk with a central hole (76a) formed therethrough. As evident from FIGS. 1, 2 and 3a, cavity (74) is cylindrical shape. The wall (30f), formed by side portion (30d) of portion (30a) and side portion (30e) of portion (30b), is contiguous with surface (75) that provides the floor to cavity (74). The roof of cavity (74) is provided by flat surface (78) of portion (30a). The wall (30f) is covered by insulator (90). Inside of insulator (90) is disposed a second insulating seal (92) and the first insulating seal (76). Both seals (76) and (92) are made of rubber, synthetic rubber, or silicon rubber, which provides electrical insulation and a seal to prevent secretions from a wearer's mouth from entering into the cavity (74), thereby protecting the power sources (80) from saliva. As shown in FIG. 2, seals (76) and (92) are compressible. Seals (76) and (92) are donut shaped and have central openings (76a) and (92a) respectively.

[0030] A flexible conducting diaphragm or plate (100) is disposed between seals (76) and (92), and is made of a flexible conducting metal. When the threads (12) of one end of central bar (10) are threadedly engaged to the threads (72) of portion (30a), rod (25) engages plate (100) and displaces diaphragm (100) to the extent that diaphragm (100) engages the anode of one of the power sources (80). In this manner, diaphragm (100) serves as the electrical switch for activating the circuit board (60) when the power ball (30) is threadedly secured to the bar (10).

[0031] In another embodiment of the invention, the seals (76) and (92) and diaphragm (100) are incorporated into one structure, being diaphragm (200) as shown in FIGS. 3a and 3b. Diaphragm (200) includes central conducting plate (202)

and insulation (204). In this embodiment, diaphragm (200) provides both an electrically connecting switch and a fluid tight seal.

[0032] It is emphasized that tongue stud (1) includes axial cavity (25) and cavity (74), and that illumination ball (20) houses circuit board (60) so that the tongue stud provides a hollow frame in which an electrical circuit is contained. The present invention preferably utilizes an electrical circuit for illuminating a portion of the tongue stud (1) to provide an entertaining visual effect; however, the present invention is not limited to any particular electrical circuit. In fact, the tongue stud in accordance with the present invention provides a frame and housing for an electrical circuit, but the electrical circuit is not limited to illuminating electrical circuits. The tongue stud frame and housing for an electrical circuit can be practiced with other electrical circuits, even electrical circuits that do not include a light source.

[0033] At this point, several exemplary preferred electrical circuits for practicing the present invention will be detailed; however, as will be understood by one skilled in the art other electrical circuits can be used to practice the invention.

[0034] In one embodiment of the invention, a circuit as schematically shown in **FIG. 4** includes an LED (110) of circuit board (60) connected to one or more power sources (80). Circuit board (60) includes a sub-circuit (120) that in one preferred embodiment can be a single resistor in series with LED (110). This would be the simplest circuit, but other circuits suitable for practicing the invention exist. For example, U.S. Pat. No. 4,459,645 to Glatter discloses an illuminating earring that includes several electrical circuits suitable for controlling the lighting pattern of LED (110) of the present invention. The electrical circuits of U.S. Pat. No. 4,459,645 are incorporated herein by reference. Other electrical circuits suitable for practicing the LED lighting circuit of the present invention are disclosed in U.S. Pat. No. 4,296,459 to DeLuca, which is also incorporated herein by reference in its entirety.

[0035] In another preferred embodiment of the present invention as shown in **FIG. 6**, sub-circuit (120) of circuit board (60) is a flasher circuit for causing the LED (110) to blink or flash intermittently at a given frequency. Flasher circuit (120) includes, in a preferred embodiment of the invention, an oscillator (126), frequency divider (124) and a drive circuit chip (122). Although **FIG. 6** illustrates one preferred embodiment of the circuit board (60), one skilled in the art would understand that other flasher circuits would be suitable for practicing the present invention without deviating from the scope and spirit of the invention.

[0036] In yet another preferred embodiment of the present invention, integrated circuit board (500), schematically illustrated in **FIG. 5**, can be substituted for circuit board (60). Circuit board (500) includes sub-circuit (520) and LEDs (110) and (120) that illuminate in the same color, or that may be selected to illuminate in different colors such as LED (110) being a blue light generating LED and LED (120) being a yellow light generating LED. Of course, one skilled in the art would appreciate that other color LEDs may be used and that the present invention is not limited to any particular LED color combination. In its simplest form, sub-circuit (520) can be a single resistor in series with both LEDs (110) and (120); however, other circuits suitable for practicing sub-circuit (520) of the present invention include

flasher circuits for operating two LEDs, such as the flasher circuit used to illuminate "flashing ear lights" jewelry marketed under the name "Headlights™" (www.Flipo.com, Flipo Group, LTD). Headlights™ are constructed to sit in the ear canal or in the belly button orifice (umbilical recess). One of these Headlights™ includes a blue LED and a yellow LED that flash separately at different frequencies to provide an interesting visual effect.

[0037] In another preferred embodiment of the invention, the external surface (40a) of base (40), the external surface (10a) of bar (10), and the external surface (30a) of power ball (30) are coated with a non-toxic biocompatible coating of high resistivity. One such commercially available coating is CASIDIAM™, which is a material for forming coating films that is a composition including hydrogen, carbon, and doping elements. The structure of the composition includes a mixture of sp^3 (tetrahedral diamond type bonds) and sp^2 (trigonal graphitic type bonds), as disclosed in U.S. Pat. No. 5,826,628, which is incorporated herein by reference. CASIDIAM™ is available from Anatech LTD (6621-F Electronic Drive, Springfield, Va., 22151). The non-toxic coating is applied only to the external surfaces of the tongue stud metallic components and is not applied to the threads (12) of bar (10) or to the threads (44) and (72) of the balls (20) and (30) respectively. The non-toxic coating decreases the risk of allergic reaction to the device, is chemically inert, and further insulates and protects the tongue stud from the wearer's mouth.

[0038] It is asserted that the embodiments of the mouth and tongue stud evinced herein in the drawings and the specification are merely illustrations of the preferred embodiments of the invention and its principal variations, and are not meant to be limiting or restrictive. The major preferred embodiment of the present invention being a mouth and tongue stud having a bar connected to two end caps, wherein the mouth and tongue stud provides a hollow frame for housing an electrical circuit. In one preferred variation of the preferred embodiment of the present invention, the electrical circuit powers a light source so that the mouth and tongue stud is an illuminated mouth and tongue stud. However, one skilled in the art would appreciate that the present invention could be constructed to include no LEDs and the electrical circuit could be adapted to provide any number of alternate functions. For example, the circuit could be constructed to include a transmitter for sending out a signal. Or the circuit could be constructed to deliver small amounts of electricity to the wearer's mouth to stimulate salivation as is desirable for those with xerostomia. One skilled in the art will appreciate that additions, deletions, substitutions and modifications can be made without departing from the full spirit and scope of the invention as defined by the appended claims.

The invention claimed is:

1. A mouth and tongue stud comprising:
 - a bar;
 - a first end piece connected to one end of the bar;
 - a second end piece connected to an other end of the bar;
 - and
- an electrical circuit housed by the mouth and tongue stud.
2. A mouth and tongue stud as recited in claim 1, wherein the electrical circuit includes a power source, an electrical

sub-circuit electrically connected to the power source, and a first light source electrically connected to the electrical sub-circuit.

3. A mouth and tongue stud as recited in claim 2, wherein the power source is housed within the second end piece, the first light source is housed within the first end piece, and the bar provides an electrical connection between the power source and the first light source.

4. A mouth and tongue stud as recited in claim 3, wherein the second ball houses the power source in a cavity, and a flexible conducting diaphragm electrically connects the power source to the bar and provides a seal to protect the power source from saliva.

5. A mouth and tongue stud as recited in claim 2, wherein the electrical sub-circuit is a flasher circuit that operates to intermittantly flash the first light source when electrically connected to the power source.

6. A mouth and tongue stud as recited in claim 2, wherein the electrical sub-circuit is a circuit that operates to constantly light the first light source when electrically connected to the power source.

7. A mouth and tongue stud as recited in claim 2, wherein the electrical circuit includes a second light source electrically connected to the electrical sub-circuit and the electrical sub-circuit is a flasher circuit that operates to intermittantly flash both the first light source and the second light source when electrically connected to the power source.

8. A mouth and tongue stud as recited in claim 2, wherein the first light source is an LED.

9. A mouth and tongue stud as recited in claim 7, wherein the first light source is a first color generating LED and the second light source is a second color generating LED.

10. A mouth and tongue stud as recited in claim 9, wherein the first color generating LED generates light of a different color from the light generated by the second color generating LED.

11. A mouth and tongue stud as recited in claim 2, wherein the first end piece includes a transparent portion and contains the first light source so that light from the first light source is transmitted through the transparent portion when the first light source is lit.

12. A mouth and tongue stud as recited in claim 1, wherein either the first end piece or the second end piece are spherical in shape.

13. A mouth and tongue stud as recited in claim 1, wherein either the first end piece or the second end piece are non-spherical in shape.

14. A mouth and tongue stud including a hollow portion, the mouth and tongue stud comprising:

a bar having male threads at each end;

a first end piece having female threads for engaging the male threads of one end of the bar;

a second end piece having female threads for engaging the male threads of the other end of the bar; and

an electrical circuit contained within the hollow portion of the mouth and tongue stud.

15. An illuminated mouth and tongue stud comprising:

a bar;

a first end piece connected to one end of the bar;

a second end piece connected to an other end of the bar; and

an electrical circuit housed by the mouth and tongue stud, wherein the electrical circuit comprises a power source, an electrical sub-circuit electrically connected to the power source, and at least one light source electrically connected to and operated by the electrical sub-circuit.

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