A jewelry includes a body made from a metal and having a hollow interior. The body has a seamless exterior wall substantially enclosing the hollow interior. The wall includes at least one opening which extends completely through the wall so as to define a design formed directly in the wall.
BALL-SHAPED JEWELRY AND METHOD OF MAKING SAME

FIELD OF THE INVENTION

[0001] The present invention relates to a jewelry and, more specifically, to a ball-shaped jewelry and a method of making same.

BACKGROUND OF THE INVENTION

[0002] In the jewelry industry, there is a constant need to make a jewelry having a new and unique design or features. It is believed that the prior art is devoid of a jewelry including a ball-shaped exterior wall which has a hollow interior therein and which is provided with a plurality of slots or openings arranged and formed therethrough for forming a complex design directly in the curved wall.

SUMMARY OF THE INVENTION

[0003] The present invention overcomes the disadvantages and shortcomings of the prior art discussed above by providing a new and improved jewelry including a body which is made from a metal and which has a hollow interior. The body has a seamless exterior wall substantially enclosing the hollow interior. The wall includes at least one opening which extends completely through the wall so as to define a design directly in the wall.

[0004] In accordance with a feature of the present invention, a method for making the foregoing jewelry is provided. More particularly, the method includes the steps of designing the body with the use of a computer and making an expendable model of the body with the use of a three-dimensional model forming machine. A mold is then formed using the model. A molten metal is thereafter poured into the mold so as to form the body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] For a more complete understanding of the present invention, reference is made to the following detailed description of an exemplary embodiment considered in conjunction with the accompanying drawings, in which:

[0006] FIG. 1 is a perspective view of a pendant constructed in accordance with the present invention;

[0007] FIG. 2 is a top plan view of the pendant shown in FIG. 1;

[0008] FIG. 3 is a bottom plan view of the pendant shown in FIG. 1;

[0009] FIG. 4 is a right side elevational view of the pendant shown in FIG. 1;

[0010] FIG. 5 is a left side elevational view of the pendant shown in FIG. 1;

[0011] FIG. 6 is a front elevational view of the pendant shown in FIG. 1;

[0012] FIG. 7 is a rear elevational view of the pendant shown in FIG. 1;

[0013] FIG. 8 is a cross-sectional view, taken along section line 8-8 and looking in the direction of the arrows, of the pendant shown in FIG. 4;

[0014] FIG. 9 is a perspective view of a plurality of wax models mounted on a sprue structure to form a mold;

[0015] FIG. 10 is a cross-sectional view of a cylinder with the wax models of FIG. 9 positioned therein;

[0016] FIG. 11 is a view similar to FIG. 10, except that investment has been poured into the cylinder;

[0017] FIG. 12 is a perspective view of a mold formed in accordance with the present invention;

[0018] FIG. 13 is a cross-sectional view, taken along section line 13-13 and looking in the direction of the arrows, of a section of the mold shown in FIG. 12; and

[0019] FIG. 14 is a view similar to FIG. 13, except that molten metal has been poured into the mold.

DETAILED DESCRIPTION OF THE INVENTION

[0020] Although the present invention can be used in conjunction with any type of jewelry, it is particularly suitable for use in connection with a pendant. Accordingly, the present invention will be described hereinafter in connection with a pendant. It should be understood, however, that the following description is only meant to be illustrative of the present invention and is not meant to limit the scope of the present invention, which has applicability to other types of jewels.

[0021] FIG. 1 shows a pendant 10 constructed in accordance with the present invention. More particularly, the pendant 10 includes a body 12 having a generally spherical or spheroidal shape. The body 12 includes an outer wall 14 defining the body's overall spherical or spheroidal shape, as well as a hollow interior 16 (see FIG. 8) enclosed by the wall 14. The wall 14 has an outer surface 18 and an inner surface 20 (see FIG. 8) which substantially corresponds, in shape, to the outer surface 18 and hence has a spherical or spheroidal shape. The wall 14 is provided with a substantially uniform thickness (i.e., the distance between the outer and inner surfaces 18, 20) along the entire inner and/or outer surfaces 18, 20. The body 12 in its entirety is formed monolithically such that it is seamless substantially along the entire inner and outer surfaces 18, 20 (i.e., the body 12 is formed as a single, monolithic piece and is not therefore formed by a plurality of sections or pieces welded, soldered or otherwise joined together).

[0022] With reference to FIGS. 1-8, slots or openings 22 are formed in the wall 14. More particularly, the slots 22 extend completely through the wall 14 in a generally radial direction so as to define a predetermined design, such as a person's name, a logo and other indicia. For instance, the slots 22 can be sized, shaped and arranged so as to form the name “JENNIFER”, each one or set of the slots 22 corresponding to one of the letters of the name “JENNIFER”.

[0023] Referring to FIGS. 1 and 8, the body 12 includes holes 24, 26 extending completely through the wall 14 between the inner and outer surfaces 18, 20. The holes 24, 26 are sized and shaped so as to permit a necklace, loop or other flexible wire 28 to extend through the body 12, thereby allowing the pendant 10 to be removably mounted to the necklace 28 such that it can be worn by a wearer. Portions 30, 32 of the wall 14 define the holes 24, 26, respectively, of the body 12. Annular reinforcement projections 34, 36
extend radially inwardly from the portions 30, 32, respectively, such that they circumscribe the holes 24, 26, respectively. The reinforcement projections 34, 36 function to reinforce the portions 30, 32, respectively, of the wall 14 and thereby inhibit the wall 14 from being damaged (e.g., wrinkled or crimped) by the necklace 28 extending through the body 12. Each of the reinforcement projections 34, 36 is formed monolithically with the rest of the body 12.

[0024] A method for making the pendant 10 in accordance with the present invention will be discussed hereinafter. The three dimensional (3-D) design of the pendant 10 is formed using a conventional computer and a conventional three dimensional (3-D) modeling software, such as those sold by TLM, Inc. DBA Robert McNeel & Associates, Seattle, Wash., under the trademark “RHINOCEROS”. The design formed with the use of the computer and software is then fed to a conventional three-dimensional printer (i.e., a 3-D wax-structure making device), such as 3-D printers sold by 3D Systems, Inc. under model no. “INVISION HR 3-D”. In response, the printer forms a wax model 38 (see FIG. 9) from a conventional wax material. When formed by the printer, the wax model 38 is supported on a support material (not shown) which is removed from the wax model 38. The wax model 38 formed in the foregoing manner has a structure corresponding to the design of the pendant 10.

[0025] After multiple wax models 38 have been made, they are used for constructing a mold or molds in a conventional manner so as to make corresponding jewelry products. More particularly, each of the models 38 is attached to a support structure 40 (see FIG. 9), which is made from a conventional expendable material, such as wax. The support structure 40 includes a plate 42, a support column 44, which depends from the plate 42, and a plurality of wax rods or spires 46, each of which is mounted to the support column 44. After each of the models 38 has been attached to a corresponding one of the spires 46, the support structure 40 is turned upside down, and a cylinder 48 is placed around the models 38 such that the plate 42 defines the base of the cylinder 48 (see FIG. 10). Investment 50 in slurry form having a conventional composition (e.g., a ceramic material, plaster, etc.) is poured into the cylinder 48 through an open end thereof so as to fill voids in the cylinder 48, including voids contained in the wax models 38 (see FIG. 11). Once dried, the investment 50 contained in the cylinder 48 is subjected to low to moderate heat so as to melt away the support structure 40 (i.e., the plate 42, the support column 44 and the spires 46) and the models 38 and to thereby remove same from the investment 50, forming a mold 52 having channels 54, 56 and mold cavities 58 (see FIGS. 12 and 13). More particularly, the channels 54, 56 are formed by the displacement of the support column 44 and the spires 46, respectively, while the mold cavities 58 are formed by the displacement of the models 38. The mold 52 is then flipped such that the channels 56 are angled downwardly (see FIGS. 12 and 13), and molten metal 60 (e.g., gold, silver, etc.) is poured into the channel 54 of the mold 52 such that it flows into the channels 56 and then into the mold cavities 58 (see FIG. 14). Once each of the mold cavities 58 is filled with the molten metal 60 and the metal 60 solidifies, the mold 52 is dipped in water and is allowed to disintegrate, leaving a metal structure (not shown) having a hollow metal balls. The metal balls are cut from the rest of the metal structure and undergo a conventional finishing process (e.g., filing and polishing). Each of the finished balls corresponds to the pendant 10 illustrated in FIGS. 1-8.

[0026] It should be appreciated that the present invention provides numerous advantages over the prior art discussed above. For instance, the present invention provides a jewelry having a ball-shaped body which includes a hollow interior enclosed therein. The slots 22 formed in the wall 14 cooperate to provide a design having a “floating” appearance (i.e. the letters formed by the slots 22 appear to be “floating” on the curved surface of the wall 14). Moreover, the method of the present invention makes it relatively simple and efficient to manufacture a jewelry having a complicated three-dimensional design.

[0027] It should be noted that the present invention can have numerous modifications and variations. For instance, the present invention can be used in conjunction with other types of jewelry, such as earrings. Moreover, the pendant 10 can be provided with a shape other than the spherical or hemispherical shape shown in FIGS. 1-8 (e.g., an oval, cube, pyramid, cone, cylinder, etc.). In addition, the slots 22 can be modified such that they form different words, phrases or design (e.g., other names, such as “SAMANTHA”, “KATHERINE”, etc.). The models 38 can also be made from any conventional materials. Further, the method for forming a mold from wax models can be modified and/or replaced with other conventional methods for making a mold from a wax model.

[0028] It will be understood that the embodiment described herein is merely exemplary and that a person skilled in the art may make many variations and modifications without departing from the spirit and scope of the invention. All such variations and modifications, including those discussed above, are intended to be included within the scope of the invention as defined in the appended claims.

We claim:

1. A jewelry comprising a body made from a metal and having a hollow interior, said body having a seamless exterior wall substantially enclosing said hollow interior, said wall including at least one opening which extends completely through said wall so as to define a design formed directly in said wall.

2. The jewelry of claim 1, wherein said wall has a generally spherical shape.

3. The jewelry of claim 2, wherein said wall has a hole for allowing a wire to extend therethrough so as to mount said body to the wire.

4. The jewelry of claim 3, wherein said wall includes an annular projection extending substantially radially inwardly from said wall and surrounding said hole for reinforcing a portion of said wall defining said hole.

5. The jewelry of claim 4, wherein said annular projection is formed monolithically with said wall.

6. The jewelry of claim 5, wherein at least one opening includes a plurality of openings, each of which extends completely through said wall, said plurality of openings defining a person's name.

7. The jewelry of claim 2, wherein said at least one opening includes a plurality of openings, each of which extends completely through said wall, said plurality of openings defining a person's name.

8. A method for making a jewelry which has a substantially enclosed body made from a metal and having a hollow
interior, the body having a seamless exterior wall substantially enclosing the hollow interior, the wall including at least one opening which extends completely through the wall so as to define a design pattern formed directly in the wall, said method comprising the steps of:

forming a design corresponding to the body with the use of a computer;

making an expendable model corresponding to the design with the use of a three-dimensional model forming machine;

forming a mold with the use of the model; and

pouring molten metal into the mold so as to form the body.

9. The method of claim 8, wherein the wall has a generally spheroidal shape.

10. The method of claim 9, wherein the wall has a hole for allowing a wire to extend therethrough so as to mount the body to the wire.

11. The method of claim 10, wherein the wall includes an annular projection extending substantially radially inwardly from the wall and surrounding the hole for reinforcing a portion of the wall defining the hole.

12. The method of claim 11, wherein the annular projection is formed monolithically with the wall.

13. The method of claim 12, wherein said at least one opening includes a plurality of openings, each of which extends completely through the wall, the plurality of openings defining a person's name.

14. The method of claim 9, wherein said at least one opening includes a plurality of openings, each of which extends completely through the wall, the plurality of openings defining a person's name.

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