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(54) **PROCESS FOR FORMING HOLLOW
COSTUME JEWELRY ARTICLES COATED
WITH A FILM OF PRECIOUS METAL OR
METALLIC ALLOY**

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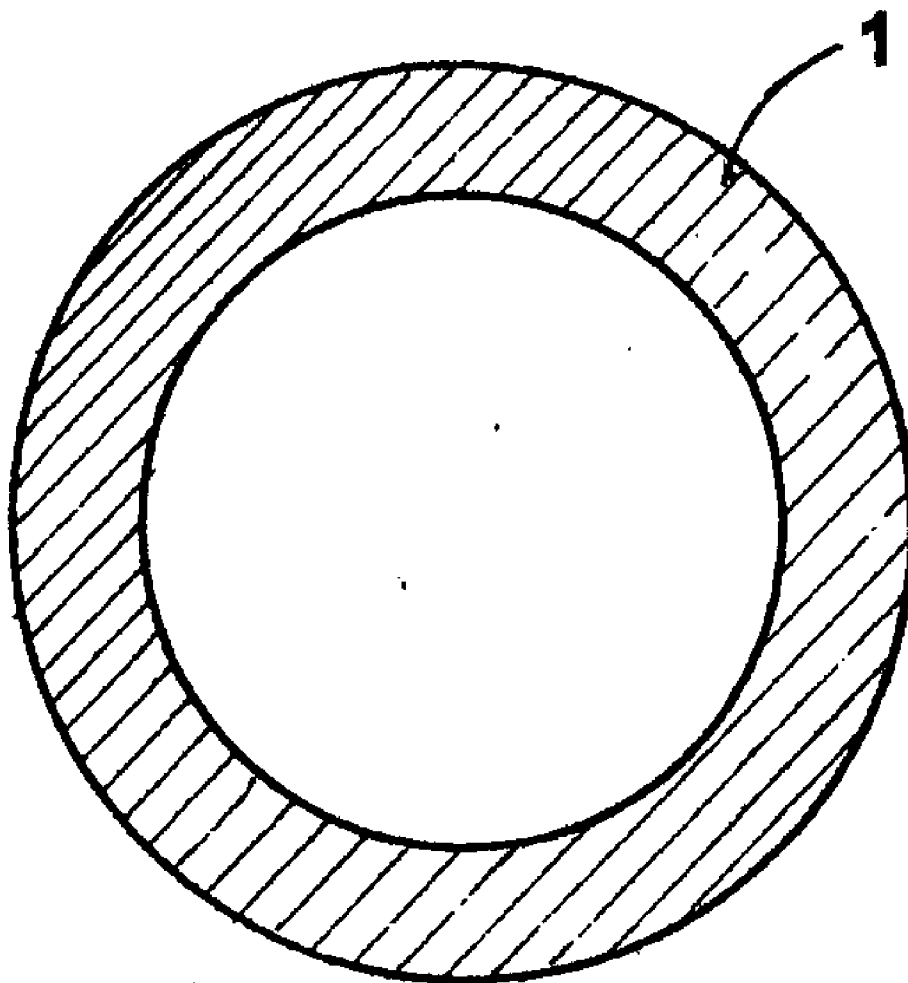
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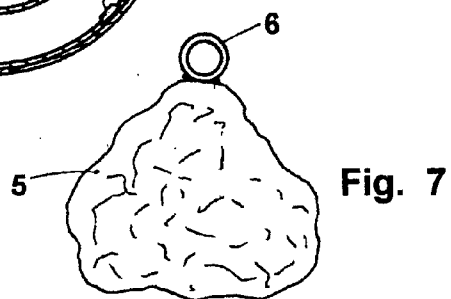
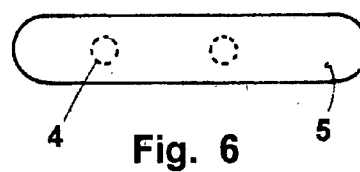
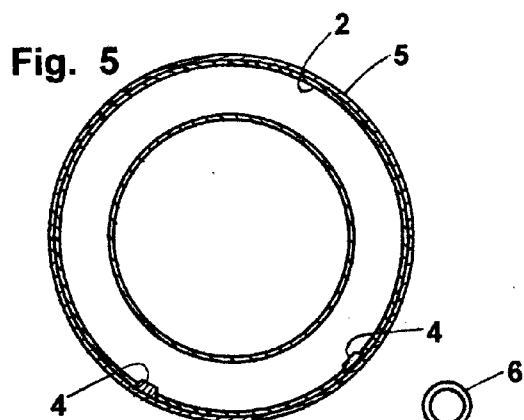
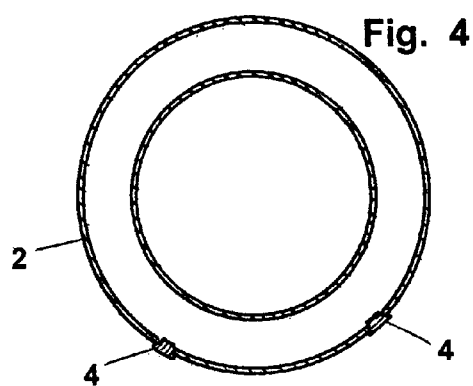
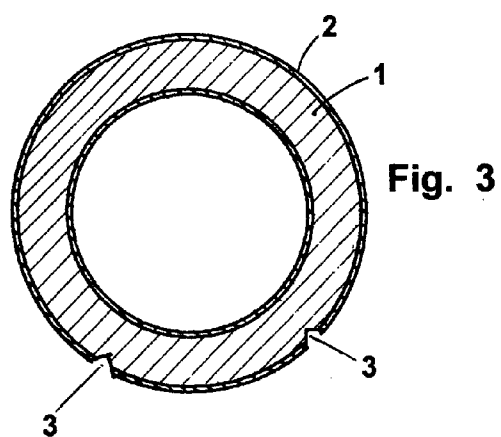
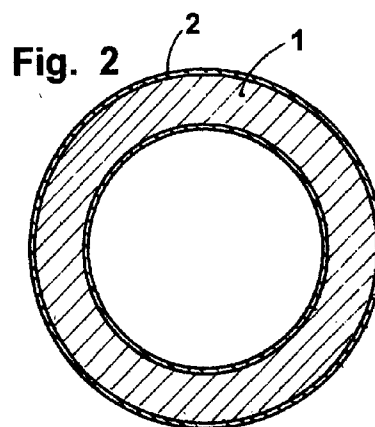
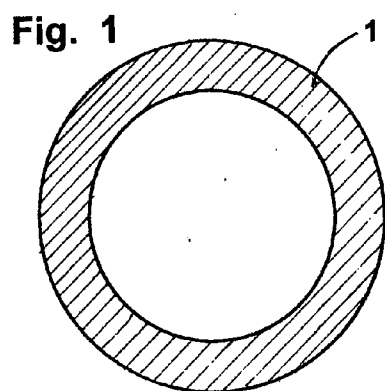
ABSTRACT

A process therewith, with the electro-deposition method, a not precious metal or metallic alloy "shell" (2) is produced, openings (3) are made therethrough the low flux (1) is made to drip outside by melting, then metallic "plugs" (4) are applied by brazing, then the coating is made with galvanic bath with a precious metal or metallic alloy film (5).

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PROCESS FOR FORMING HOLLOW COSTUME JEWELRY ARTICLES COATED WITH A FILM OF PRECIOUS METAL OR METALLIC ALLOY

BACKGROUND OF THE INVENTION

[0001] The invention relates to a process for forming hollow costume jewellery articles coated with a precious metal or metallic alloy, therefore not precious metal articles which are usually bulky, empty and then light, directed to the ornamental and fashion field.

[0002] Ornamental articles made of not precious metal are known, such as for example copper and the alloys thereof, zama and still other metals, usually produced by microcast, therefore full and, if bulky, heavy to be worn. In order to overcome such last inconvenient, due to the fact that the articles are bulky and heavy, they are produced with the casting process therewith, starting from a thin metallic plate, two shells are implemented which are then coupled therebetween and, at last, welded along the seam. In this way the implemented item results to be relatively light.

[0003] The articles produced by microcast and those produced by casting and welding are cleaned and degreased onto the surface, then usually coated with a copper layer, or a layer of different metal, by means of a galvanic bath; at last, they are coated with a precious layer by electrolysis so as to make them to appear brilliant and precious.

[0004] The known procedures in the first case produce heavy articles which can be used then for very small ornamental articles. In the second case, even if they are relatively light, they require expensive moulds and a complex subsequent processing. In one case or in the other one the finished costume jewellery articles result to be relatively expensive and therefore not always easy to be marketed.

[0005] In the precious metal field, gold and silver in particular, the thick articles are usually produced with the electro-deposition process. Such method provides to implement with a current-conducting product having a low melting temperature, hereinafter called "low flux" for brevity, a model reproducing the item to be implemented, then by means of an electrolytical process it is coated with a thick layer of precious metal, then several holes are made therein. The item is then heated at the melting temperature of the low flux therewith the core thereof is made, of about 200-250° C. in order to allow to empty thereof by dipping outside through said holes. The low flux could be then recovered and therefore used again. Once performed the emptying procedure, the low flux traces remained inside the item are removed with a chemical bath suitable to melt it so as not to alter the title of the golden "shell", or any other precious metal therewith the article to be constructed is made. The so-emptied article will be polished and/or subjected to finishing to be then marketed.

[0006] In the so-produced precious metal items the holes are visible, which at first have been used to drip the low flux brought to melting, then to allow to melt into the acid bath, wherein the low flux is dipped, the low flux traces which have remained inside the ornamental article itself, then to remove them so as not to alter the title thereof.

[0007] Such method cannot be performed in the production of costume jewellery articles made of copper alloy since the acid bath therethrough the low flux traces remained

inside the "shell" are removed would corrode them and would bring into solution also the copper and the alloy thereof, thus destroying the "shell" reproducing the article to be implemented.

[0008] Furthermore, the gilding with an electrolytical bath cannot be performed as the low flux remained inside the "shell" would melt into the bath and it would make ugly the obtained gilding which would result to be of spotted type. Furthermore, such galvanic bath could not be used any more to perform the gilding of other precious metal items since the dissolved low flux would hinder the implementation thereof, it would render the surface spotted and it would alter the title of the precious articles subjected to gilding. All this does not make possible the production of items made of copper, or copper alloy, with the electro-deposition process and with final gilding of the surface thereof.

SUMMARY OF THE INVENTION

[0009] An aim of the present invention is to detect the process therethrough the implementation of hollow bulky ornamental articles is made possible, constituted by a not precious metal or metallic alloy shell, without openings, uniformly coated with a layer of precious, or however valuable, metal.

[0010] Another aim of the present invention is the production of items therewith the human body can be adorned, or accessories in the fashion field, implemented with not precious metal or metallic alloy resulting to be hollow and therefore light and be coated with a thin layer of precious, or however valuable, metal which makes them of great value.

[0011] At last, another aim of the present invention is the production of items made of not precious metal or metallic alloy, copper and the alloys thereof in particular, appearing to be without unaesthetic holes onto the surface. The invention which has allowed to achieve such results concretizes in a process constituted by a sequence of steps providing:

[0012] implementing the model in conducting material with low-melting and low-flux temperature;

[0013] coating by electrolysis said low flux model with copper, the alloys thereof or other not precious metal or metallic alloy, to implement a coating "shell" reproducing the shape of the model;

[0014] implementing openings onto the coating "shell" made of not precious metal or metallic alloy until reaching the low flux inner core;

[0015] heating the coating "shell" and emptying the low flux content thereof through said openings;

[0016] filling said openings with conducting metallic members ("plugs"), resorting to brazings, then weldings with low-melting temperature weld metal;

[0017] cleaning-smoothing the "shell" at least in the places wherein the filling members have been applied by brazing;

[0018] coating by electrolysis the metallic "shell" with a layer of golden alloy film or however with a precious metal film.

[0019] Furthermore, the invention relates to the so-obtained product which results to be bulky, light and with uniform surface, without holes, coated with precious, or however valuable, metal or metallic alloy which makes it to appear of high quality.

[0020] Such invention results to be advantageous since it allows implementing costume jewellery ornamental articles with however shaped surfaces, without unaesthetic holes, light and bulky appearing to be made of precious, or however valuable, metal or metallic alloy, therefore high-quality ornaments. It results to be advantageous since the openings or holes made onto the “shell” can also be relatively big, so as to make rapid the emptying process by melting the low flux core, with the almost complete recovery of the same to be used again. It results to be advantageous as it is not provided to resort to any phase with acid coming in contact with the low flux, therefore any risk of polluting with low flux the used acid bath is avoided. It results to be advantageous since the application of “plugs” onto the openings protects the bath, therewith the electrolytical coating is made, from the low flux pollution and the coating obtained onto the produced articles results to be uniform and perfect, like the one performed onto full not precious metal articles or onto those obtained from cast, coupled and then welded shells.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The invention will be described in details herein-after by referring to the preferred embodiment solution and to the schematic drawings illustrating it, wherein:

[0022] FIG. 1 is the front view of a low flux annular structure, sectioned by a median plane;

[0023] FIG. 2 is the front view of the annular structure of FIG. 1, coated with a “shell” obtained by electro-deposition with a not precious metal or metallic alloy, sectioned by a median plane;

[0024] FIG. 3 is the front view of the structure of FIG. 2 whereon two openings or emptying holes have been made, therewith the low flux inner core is reached;

[0025] FIG. 4 is the front view of the structure of FIG. 3 once it has been emptied by melting the inner or low flux core and the emptying openings have been filled with brazed metallic “plugs”;

[0026] FIG. 5 is the front view of the structure of FIG. 4 once the outer portions of the “plugs” have been smoothed, then the product has been coated by electrolysis with a precious metal or alloy film;

[0027] FIG. 6 is the front view of the back of the annular structure of FIG. 5, from the side wherein there are the “plugs” hidden to the sight by the coating film;

[0028] FIG. 7 exemplifies a pendant implemented with the described process and wherein, apart from the “plugs”, the attachment annular structure has been applied before proceeding to coating with the precious film through the electrolytical bath.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

[0029] It is understood that the drawings are of schematic type and they are provided only with the purpose of faci-

tating the comprehension of the invention and in particular the phase sequence therethrough the finished article is obtained, without constituting any limitation therefor.

[0030] Then, the invention substantially relates to the process therethrough the forming of articles which are destined to the costume jewellery and fashion fields is made, which articles are implemented with not precious metals or metallic alloys and copper and the alloys thereof in particular, coated with a precious, or however valuable, metal or metallic alloy film, such as for example gold and the alloys thereof, therethrough said articles are made to have a valuable aspect and to appear as precious, even if they result to have a low cost and to be light, even when they are bulky.

[0031] The subject process provides a step wherein the model 1 is manufactured with low flux, that is electric current conducting material with low melting temperature, therefore passing from the solid state to the liquid state at a temperature usually ranging from 200 and 250° C., such as for example the alloys used in the electro-deposition process in the production of precious metal articles.

[0032] In a subsequent step the coating of said model 1 is made by electrolytical way with not precious metal or metallic alloy, with copper or the alloys thereof in particular, until originating a “shell”2 with a thickness usually comprised between one and five tenths of millimeter.

[0033] Openings 3 are made onto the so-obtained composite item, which openings cross the coating “shell”2 and reach the model 1 or low flux inner core. Such openings 3 are implemented in places preferably with smooth surface and in positions so as to favour the emptying by dripping of the inner core when it is brought in the melt phase. The openings 3 are made, for example, with drills and however preferably with profile section thereof with the trapezoid shape, as exemplified in FIG. 3 in the enclosed drawing.

[0034] Then, a phase follows wherein the model 1 coated by the shell 2 is heated until reaching the low flux melting temperature and it is kept there in a position suitable to allow the outcoming thereof until emptying the “shell”2 itself, in case with shakings or motions aimed at accelerating the emptying process.

[0035] An incomplete emptying process is however tolerated, not altering the quality of the finished product, except for a greater weight thereof and an incomplete recovery of the low flux material to be used in the production of the subsequent models.

[0036] At this point, with the very small filling materials or metallic “plugs”4, the openings 3 in the “shell”2 are filled, stabilized by brazing, that is with melting with low melting temperature weld metal, such as for example tin.

[0037] Therefore, the cleaning-smoothing is made at least of the places wherein the metallic filling materials or “plugs”4 have been applied so as to mask the presence thereof or, however, to not determine any formal variation of the surfaces wherein said “plugs”4 have been inserted and without altering the metallic continuity of the produced article surface.

[0038] Once reached such state, after having made the washing-degreasing of the item, the coating thereof is made with an electrolytical process, by depositing onto the surface of the same a finishing layer 5 of precious, or however

valuable, metal or metallic alloy, with a thickness usually in the order of a micron, until making the product to assume surface uniformity and constant colour and however the wished image.

[0039] Depending upon the article to be implemented, in the phase wherein the metallic “plugs” 4 are applied onto the emptied not precious “shell” 2, at the emptying openings 3, it is possible to apply, still by brazing, one or more applicable members, such as a hooking and/or supporting member in the place wherein the “shell” will have to interact with outer means, for example an attachment annular structure 6, in case the item implements a pendant as exemplified in FIG. 7, a pin therewith implementing the ear-rings’ attachment, a base for the snap-closure or a clip, etc.

[0040] The application of the “plugs” and of the hooking and/or supporting members is usually made by brazing with weld metal melting at low temperature so that there are not considerable thermal stresses onto the “shell” and at the same time without determining a heating of the air contained inside the “shell” itself, so as to cause the arising of pressures which, if relatively high, could bring to deformation or even to the burst of the item itself.

[0041] In case the metal or metallic alloy therewith the “shell” 2 is implemented be not compatible with the precious metal or metallic alloy therewith one wishes to finish the item, said shell 2 is subjected to an electrolytical galvanic bath therewith it is coated by a very thin layer of the metal which makes it compatible with the final coating.

[0042] The ornamental articles implemented with the described process can be however diversified. They could be bracelets, necklaces, ear-rings, brooches, buckles, fanciful pendants and others, and all of them will be characterized by a usually broad volume, lightness, surface uniformity and therefore absence of unaesthetic holes or openings; furthermore, they will have a coating with electro-deposited finishing layer, usually made of precious metal or metallic alloy.

[0043] The described phase sequence could also be subjected to small variations during execution, however without altering the invention logic which has allowed the production of bulky and light articles of costume jewellery and fashion, then said variations being comprised within the protection scope as defined by the following claims.

1. A process for forming hollow costume jewellery articles coated with a layer of precious metal or metallic alloy constituted by:

a step wherein the model (1) is manufactured with a current-conducting material with low melting temperature (low flux);

a step wherein the coating of said model (1) is made by electrolytical way with copper or alloys thereof, or however with a not precious metal or metallic alloy, to implement a “shell” reproducing the shape of the model (1);

a step wherein the openings (3) onto the coating “shell” (2) are made until reaching the model (1) or low flux inner core;

a heating step therewith the coated model (1) is heated until reaching the low flux melting temperature and it is kept there in a position suitable to allow the melt low flux itself to come out through the openings (3) until emptying the “shell” (2),

as well as characterized by:

a step wherein filling materials or metallic “plugs” (4) are applied at least onto the openings (3) in the “shell” (2) and fastened there by brazing;

a step of cleaning-smoothing at least of the places wherein the metallic filling materials (4) and in case the hooking and/or supporting members (6) have been applied, by brazing;

a step wherein the coating of the “shell” (2) is made with electrolytical process, by depositing onto the same a finishing layer (5) of precious, or however valuable, metal or metallic alloy.

2. The process, as claimed in claim 1, characterized by a step wherein apart from the metallic “plugs” (4) at the openings (3) a hooking and/or supporting member (6), or other interaction member, is applied onto the “shell” (2) in the place wherein the “shell” (2) has to interact with outer means.

3. The process, as claimed in claim 1, characterized by a step wherein the application of the metallic “plugs” (4) and of the hooking and/or supporting members (6) is made by brazing with weld metal melting at low temperature.

4. The process, as claimed in claim 1, characterized by a step wherein the “shell” (2) is subjected to an electrolytical process therewith the outer surface thereof is made suitable to receive the finishing layer (5) of precious, or valuable, metal or metallic alloy.

5. Ornamental articles, implemented with the process as claimed in claim 1, characterized by an empty structure or “shell” obtained by electro-deposition, with said “shell” being implemented in copper or the alloys thereof or other not precious metals or metallic alloys, without openings (3) and coated with a finishing layer (5) made of electro-deposited precious metal or metallic alloy.

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