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(54) **Chain-like structure to manufacture precious or non-precious metal ornamental products and production method thereof**

(57) A chain-like structure for the production of necklaces, bracelets and similar articles made of precious or non-precious metal formed by a succession of axially hollow members (1) connected to one another by

at least a pair of rod-shaped members (2, 3), the ends of which are fastened with play in respective seats (6, 7) formed in end members (4, 5) fixed to the hollow members (1).

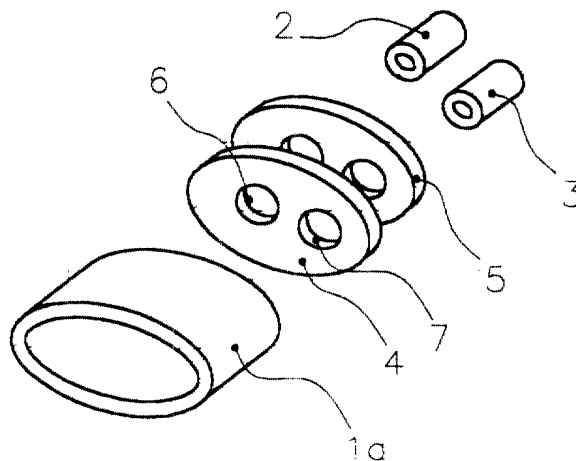


Fig. 1

Description

[0001] The present invention relates to a chain-like structure, made in particular, but not exclusively, of precious metal, intended for use in the manufacture of ornamental articles in the field of jewelry and costume jewelry.

[0002] The invention also relates to a method for the production of the chain-like structure.

[0003] A large number of chain-like structures, or chains, are known in the above mentioned field. They are commonly used to manufacture necklaces, bracelets, earrings and similar goods. In most cases, the chain structure is achieved through the mutual engagement of annular members or links, having various configuration and size of the wire which they are formed of. The links are engaged in the most different ways, allowing in any case a sufficient degree of articulation and assuring a suitable softness and flexibility to the assembly.

[0004] There are also known ornamental chain-like structures wherein the constituent metal members have a shape different from the annular one and therefore must be connected to each other through means for allowing their mutual articulation. As an example, a chain-like structure of this second type is formed by a sequence of ball, oval, barrel or otherwise shaped bodies mutually connected by a metallic wire-like or tubular members having enlarged ends engaging within two adjacent bodies.

[0005] The mutual articulation is allowed by the clearance existing in the connection between the ball members, or the like, and the enlarged ends of the rigid wire-like or tubular member.

[0006] A chain-like structure of the above mentioned type can be developed into a limited number only of design variations because of the shape of its components.

[0007] On the other side, jewelry designers are constantly looking for new shapes of chain-like structures, which, beside being attractive as far as their appearance is concerned, have the lowest number of structural constraints which result in a hindrance to the free creative activity of the designer.

[0008] The object of the present invention is to satisfy the above mentioned need by providing a chain-like structure to manufacture precious or non-precious metal ornamental articles of a novel and original conception characterized in that it comprises a sequence of axially hollow members connected to one another by means of at least two rod-like members the ends of which are fastened with play to respective seats formed within end members fixed to the hollow members.

[0009] Preferably the rod-like members are pins or small tubes with enlarged ends and of any section.

[0010] Another object of the present invention is to provide a method for the manufacture of the above mentioned chain-like structure, the main features of which are set forth in claim 7.

[0011] Further features and advantages of the chain-like structure for manufacturing ornamental articles made of precious or non-precious metal and the relevant production method will be apparent from the following description of an exemplifying, non-limiting embodiment thereof made with reference to the attached drawing, in which:

- Figure 1 is an exploded view of an hollow member and relevant connection means of the chain-like structure according to the invention;
- Figure 2 shows a connection group as assembled featuring the chain-like structure according to the invention;
- Figure 3 is an axially exploded view of a length of chain-like structure according to the invention.

[0012] With reference to the above mentioned figures, and in particular Figure 4, the chain-like structure according to the invention comprises a succession of completely hollow, and hence tubular, members indicated at 1 of any cross section (an oval section, in the case shown in the figures). Each hollow member 1 is connected to the adjacent hollow member through a pair of tubular pins 2 and 3 extending between two opposite ends of two adjacent hollow members 1. Pins 2 and 3 are connected with play to said ends and are secured to them in such a way to allow both the relative sliding and the mutual inclination of the two adjacent hollow members with respect to each other.

[0013] As shown in particular in Figure 1, each tubular member 1 is formed by a length l_a of an open tubular section, the ends of which are closed by respective end members which, in the preferred embodiment, are made in the shape of plates 4 (only one plate is shown in Figure 1), formed by shearing. Each plate 4 forms with an equal plate 5, intended to be applied to the adjacent tubular member, the articulated connection of the chain-like structure, the plates 4 and 5 being connected to one another by pins 2 and 3.

[0014] Through holes 6 and 7 are formed on each of plates 4 and 5, in particular aligned along the major axis of the oval section, with which pins 2 and 3 are engaged for the mutual connection of plates 3 and 4.

[0015] In order to provide the required axial and radial play, the diameter of holes 6 and 7 is greater than that of pins 2 and 3. In this way the relative axial sliding of pins 2, 3 with respect to plates 3, 4 is allowed, as well as a certain degree of misalignment between pins 2, 3 and holes 6, 7 to an extent varying according to the available play. In order to prevent pins 2 and 3 from disengaging from plates 4 and 5, their ends are riveted after they are positioned in holes 6 and 7.

[0016] When the connection group formed by a pair of plates 4 and 5 and relevant pins 2 and 3 joined as shown in figure 2 is assembled, plates 4 and 5 are fixed by welding to the relevant ends of two adjacent tubular members 1a.

[0017] The chain-like structure produced in the way described above can be used for manufacturing of necklaces, bracelets earrings and other products of goldsmithery and costume jewelry by using precious and non-precious metal or combinations of precious metals or combinations of different colors of a same precious metal, for example yellow gold for the tubular members and white gold for the pins.

[0018] The main advantage of the chain-like structure according to the invention consists in that it is suitable of being embodied in a large number of different variations. As a matter of fact, hollow members can have any other section besides the oval one as shown in the drawing. For example, their section can be circular, square, rectangular, triangular, polygonal and variously rounded-off and faceted. Besides the section, the length of hollow members can be varied as well, and in particular an article with hollow members of different length can be assembled.

[0019] Moreover the connection between two adjacent hollow members can be made not only by means of two pins as shown in the drawing, but also by a greater number of pins.

[0020] The surfaces of the components (hollow members and pins) forming the chain-like structure according to the invention can be submitted to various surface treatments according to the common techniques used in the field, for example glazing, knurling, scoring, enameling and any decoration with moldings, drawings or inscriptions.

[0021] Even though in the description of the embodiment of the invention reference has been made to hollow, tubular members, it is clear that the technical effect of the invention is also obtained when said members are formed with end recesses of a depth sufficient to house the riveted ends of the connection pins.

[0022] Variations and/or modifications can be brought to the chain-like structure and its production method according to the present invention, without departing from the scope of the invention as set forth in the appended claims.

Claims

1. Chain-like structure for the manufacture of ornamental products of precious or non-precious metal characterized in that it comprises a succession of axially hollow members (1) connected to one another by at least two rod-shaped members (2, 3) the ends of said rod-shaped members being fastened with play in respective seats (6, 7) formed in end members (4, 5) applied to said hollow members (1).
2. The chain-like structure according to claim 1, wherein said end members consist of end plates (4, 5) on which said seats (6, 7) are formed.

3. The chain-like structure, according to claim 1, wherein said rod-shaped members are formed by tubular pins (2, 3).

4. The chain-like structure according to anyone of the previous claims, wherein the diameter of said pins (2, 3) is lower than that of said seats (6, 7) whereby they are engaged therewithin in a freely pivotally and slidably way, said pins having enlarged ends to prevent them from disengaging from said plates (4, 5)

5. The chain-like structure according to anyone of the previous claims, wherein said axially hollow members (1) are tubular members of any section.

6. The chain-like structure according to anyone of the previous claims, wherein said rod-shaped members (2, 3) are of any section.

7. Method for the production of a chain-like structure to manufacture ornamental products made of precious or non-precious metal comprising a succession of axially hollow members (1) connected to one another by at least two rod-shaped members (2, 3) the ends of said rod-shaped members being fastened with play in respective seats (6, 7) formed in end members (4, 5) applied to said hollow members (1), characterized in that it comprises the following steps:

- providing a plurality of said axially hollow members (1) and for each of them, a pair of end members in the form of sheared plates (4, 5) of equal section and provided with at least two seats in the form of through holes (6, 7);
- providing at least two rod-shaped members (2, 3) of lower diameter than that of said holes for each pair of plates and engaging said rod-shaped members within the corresponding holes of said plates (4, 5);
- riveting the ends of said at least two rod-shaped members to fasten them to said pair of plates;
- welding said pair of plates (4, 5) to respective opposite ends of two hollow members (1).

8. The method according to claim 7, wherein said rod-shaped members are tubular pins.

9. The method according to claim 7, wherein said axially hollow members are tubular members.

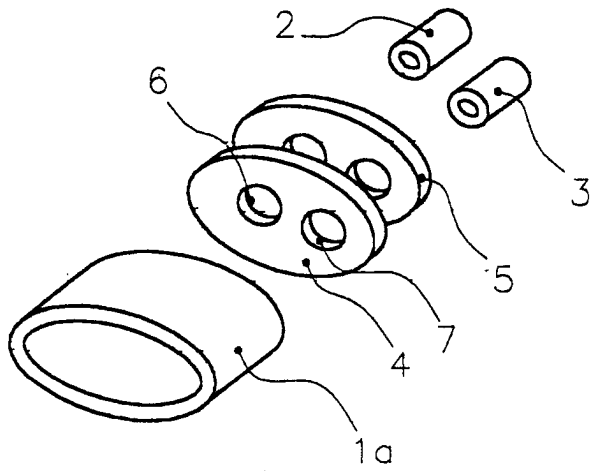


Fig.1

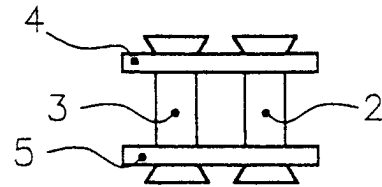


Fig.2

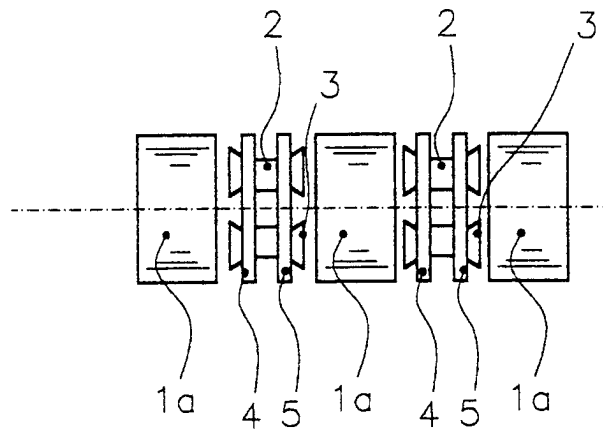


Fig.3

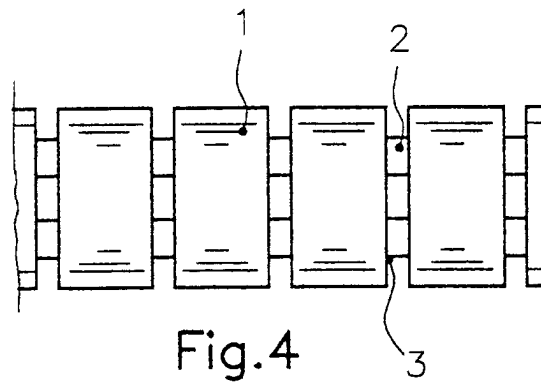


Fig.4



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0010

DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
MUNICH		24 April 2001	Kock, S
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 01 83 0010

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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24-04-2001

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