METHOD OF FORMING A JEWELRY CHAIN AND CHAIN FORMED THEREFROM

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ABSTRACT

A method of forming a decorative chain includes joining a first and second material in a layered relationship, each material having a different appearance, and forming such joined material into a spiral. A core is introduced into the spiral and then the core plus spiral are shaped into a desired configuration. Thereafter a portion of the first material along the outer surface is removed to reveal or expose a portion of the sublayer of second material along the outer surface.
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FIELD OF THE INVENTION

[0001] The present invention relates to a method of forming a jewelry chain generally, and more particularly to a method of forming a reversible "Avolto" chain.

BACKGROUND

[0002] "Avolto" is traditionally understood as a jewelry style that uses a wire to form a chain into a round shape. Typically a strip of one color metal made from a wire is rolled into a strip and this strip is wrapped on a mandrel to make a spiral. An internal section made from cloth, metal or the like is then introduced along a central axis of the spiral. Then, to obtain an "Avolto" product, a pressure operation is applied so the spiral wraps the cloth or central section and compacts one over another. This operation typically defines two sides of the same color which may be equal or different in surface configuration but opposite relative to each other. Then, to make a "reversible" Avolto, the traditional way is to "paint" one side using a galvanic process that plates another color metal onto one side of the chain so that one side is formed from the original metal and the other side is formed from the plated metal.

[0003] However, one disadvantage of the traditional "reversible" Avolto is that the integrity of the plating of the additional color can degrade over time, whereby the plated material loses its color and/or adhesion to the original chain material. Another disadvantage is that the galvanic process itself requires additional processing, energy and time, and is thereby more costly to produce. Accordingly, there is a need for a better way to make a reversible Avolto without the stated disadvantages.

SUMMARY

[0004] A method of forming a decorative chain includes joining a first and second material in a layered relationship, each material having a different appearance, and forming such joined material into a spiral. A core is introduced into the spiral and then the core plus spiral are shaped into a desired configuration. Thereafter a portion of the first material along the outer surface is removed to reveal or expose a portion of the sub-layer of second material along the outer surface. In one embodiment, the first and second materials are different sheets of material that are joined in a soldering operation or the like to form a joined strip of composite material, which joined strip is then wrapped around a mandrel or support into a spiral.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 illustrates one embodiment of the joining of two materials in accordance with a method of forming a jewelry chain in accordance with the present invention.
[0006] FIG. 2 illustrates the two materials of FIG. 1 joined together.
[0007] FIG. 3 illustrates one embodiment of a processing of the joined material of FIG. 2.
[0008] FIG. 4 illustrates one embodiment of a resultant strip formed from the processing illustrated in FIG. 3.
[0009] FIG. 5 illustrates one embodiment of a cutting process used to obtain smaller strips of material.
[0010] FIG. 6 illustrates one embodiment of a formation of a spiral from the resultant strip of FIG. 5.
[0011] FIG. 7 illustrates the introduction of a core within the spiral formed in FIG. 6.
[0012] FIG. 8A illustrates the core within the spiral of FIG. 7.
[0013] FIG. 8B is a cross-section of the spiral with core of FIG. 8A.
[0014] FIG. 9A illustrates a pressing or shaping operation applied to the spiral and core shown in FIGS. 8A and 8B.
[0015] FIGS. 9B-9E illustrate different shapes obtain through the pressing or shaping operation of FIG. 9A.
[0016] FIG. 10 illustrates one embodiment of the removal of a portion of the outer surface of a jewelry section to reveal the sub-layer of material below the outer surface.
[0017] FIG. 11 illustrates one embodiment of a jewelry chain formed in accordance with the above.
[0018] FIG. 12 illustrates one embodiment of the detailed removal of a portion of the outer surface of a jewelry section to reveal the sub-layer of material below the outer surface.
[0019] FIG. 13 illustrates one embodiment of a method of forming a strip into chain links.
[0020] FIG. 14 illustrates one embodiment of a method of forming the chain links of FIG. 14 into a string of chain links.
[0021] FIG. 15 illustrates one embodiment of the removal of a portion of the outer surface of chain links on a string of chain links to form a decorated jewelry chain.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] This disclosure describes the best mode or modes of practicing the invention as presently contemplated. This description is not intended to be understood in a limiting sense, but provides an example of the invention presented solely for illustrative purposes by reference to the accompanying drawings to advise one of ordinary skill in the art of the advantages and construction of the invention. In the various views of the drawings, like reference characters designate like or similar parts.

[0023] FIGS. 1-12 illustrate one embodiment of a method of forming a jewelry chain in accordance with the present invention. While the present discussion refers to a jewelry "chain" per se, it will be understood that the chain could be a portion of a chain, a necklace, a loop used for earrings, a bracelet, a pin, pendant, etc. and the like. It will also be understood that the jewelry chain could be a chain designed to be worn by a user, or a spool of chain material typically used by a wholesaler to create separate length chains. In addition, the method of the present invention could be used to create links that are formed into earrings for example, or that are woven or intertwined to form various chain designs such as box chain (see FIGS. 13-15), ball chain, Forza tina chain, rope chain and others.

[0024] One embodiment of the method starts with FIG. 1 with the provision of a first material 100 and a second material 200, typically in strip or sheet form, where the first and second materials 100, 200 are preferably precious metals such as gold, silver, platinum, etc., and more preferably where the first and second materials are different precious metals having different appearances. For example, one material could be yellow gold and the other material could be silver. In addition, the materials could be the same metal but have different colors, such as with gold that is yellow, white or rose in color.
It should be appreciated that while it is preferred to use precious metals, other types of materials may be used, such as non-precious metals or non-metals, and the like. It should also be appreciated that the materials described herein can have any structural composition and configuration, size, shape, cross-section, length, width, thickness, hardness, etc., to be determined by the manufacturer and/or the user's liking and budget.

Returning to FIG. 1, the first and second materials 100, 200 are joined together preferably in a layered relationship, one material on top of the other, using a joining medium 150 such as solder or the like, to form a joined material 300 shown in FIG. 2 having opposing surfaces formed from the first and second materials 100, 200. While a welding process using a solder material is shown and described, it will be appreciated that other joining processes may be used as desired. The joined material 300 is then processed to form a predetermined dimension. For example, the thickness of the material can be reduced (therby increasing the length) by passing the joined material 300 through rollers 350 or the like to form a processed material 400 as shown, for example, in FIG. 4.

FIG. 5 illustrates further processing of the processed material 400 using cutters 450 or the like, to form separate strips of 500 of material (FIG. 6) that can be stored on spools 550 or the like for the next step in the process. In the embodiment shown, it is preferred that the strip 500 comprises the first material 100 of one appearance or color welded on top of the second material 200 of a different appearance or color, processed so that both materials 100, 200 are the same width. Of course, while FIGS. 3-5 illustrate certain processing steps and end results, it will be appreciated that such processing steps may be optional, or other processing steps may be suggested, depending on the desired outcome. For example, it may be preferred to facet, bevel or otherwise re-design certain portions of the material 100, 200, 300, 400 and/or 500 during one or more stages of processing. The type and extent of processing is dependent on the user and should not be limited in scope by what is shown or not shown in the present disclosure.

FIG. 6 illustrates the winding of the material 500 on a support or mandrel 575 to form a spiral 600 having a central axis 625, with the first material 100 exposed along an exterior surface 610 of the spiral 600 and the second material 200 positioned adjacent the support 575. Heat 580 or other processing may be applied to make the spiral into a continuous chain of non-separable strand portions. Of course, the positioning of the first material 100 versus the second material 200 along the exterior surface 610 of the spiral 600 is arbitrary, although depending on the final processing to be discussed below, the material positioned along the exterior surface 610 of the spiral may be the predominant material shown in the finished product, which will be discussed in more detail below, and therefore one appearance from one material may be preferred over another appearance from another material.

After the spiral 600 is formed, the spiral 600 is removed from the mandrel or support 575 and a third material 700 is introduced into the spiral along the central axis of the spiral 600 as shown in FIG. 7 to form a core of the spiral 600 as shown in FIG. 8A, such that a cross-section (FIG. 8B) shows an outer surface 610 formed from the first material 100, a sub-layer formed from the second material 200, and then the third material 700 forming the core of the spiral 600. The third material 700 is preferably a mesh or other loosely-assembled material formed from a precious metal that can be the same or different from the first or second materials 100, 200. This core material gives the resultant chain a certain amount of thickness and flexibility. Of course, other materials and configurations can be used for the third material 700 as desired.

Then, to obtain an “Avolto” product, a pressure operation is performed so that spiral 600 wraps the core section 700 and both the spiral 600 and core 700 are compacted one over another as shown in FIG. 9A to form a shaped product 900. More specifically, in one embodiment, the spiral 600 and core 700 are placed in a die or a mold 800 having a first shaping element 810 having a first shaping profile 820 and a second shaping element 830 having a second shaping profile 840, where the profiles 820 and 840 can be the same or different as the case may be. In FIG. 9A, the first shaping profile 820 is rounded, while the second shaping profile 840 is planar to form a shaped profile having a cross section 910 shown in FIG. 9B. Of course, other cross-sectional configurations are possible such as, but not limited to, the configurations shown in FIGS. 9C-9E, and others. An endless variety of cross-sectional configurations are possible, limited only by the configurations of the shaping profiles 820, 840. Furthermore, ornamental features may be applied to the shaping profiles surfaces to impart ornamental designs, embossings or the like to the outer surface of the spiral 600.

The shaped product 900 resulting from the process shown in FIG. 9A comprises an outer surface that, in accordance with the embodiment described above, has an appearance of the first material 100. To create a “reversible Avolto”, where one side of a chain is one color or appearance and another side is another color or appearance, or in this case where one side has the appearance of the first material 100 and another side has the appearance of the second material 200, a removing operation 1000 is applied to the outer surface of the shaped product 900 to remove the first material 100 from a portion of the outer surface to thereby expose the sub-layer of second material 200. More specifically, the first material or a portion thereof can be removed by polishing, grinding, cutting, burnishing, faceting or the combination of the same. The resultant product 1100 shown in FIG. 11 comprises one side having the appearance of the first material 100 and an opposite side having the appearance of the second material 200.

While FIG. 10 shows the removal of material from an entire side, it will be appreciated that specific style effects can be imparted by removing only specific portions of outer material to reveal the contrasting appearance from the sub-layer of material as shown for example in the chain 1200 of FIG. 12. Whereas FIG. 10 shows a configuration of a polishing or grinding wheel 1050, FIG. 12 shows a pen-like faceting structure 1080 for imparting detailed removal of outer surface material for revealing detailed design features of contrasting first and second materials.

According to the above mentioned process, and due to a large increase in the value of gold for example, the reversible Avolto chains may be manufactured using, for example, gold with silver combination for having the most accessible price, as compared with other manufactured only with gold, and to create a product that can be worn in a reversible fashion and with a variety of different clothing combinations.
FIGS. 13-15 show one example or embodiment of making a jewelry chain, and in this case a box chain, using the principles of the present disclosure. For ease of explanation, strip 500 of FIG. 13 is similar to strip 500 from FIG. 5, which strip 500 is typically stored on spools 550 (FIG. 5) or the like. Strip 500, which comprises the joiner of first and second materials 100, 200, is fed into a processing machine 1300 that cuts the strip 500 into links 510. The processing machine 1300 comprises a strip support 1310 for supporting the strip 500 during feeding, and a cutting press 1320 and support 1330 for cutting the strip 500 and forming the cut strip into a shaped link 510. The shaped link 510 is then automatically delivered to another processing machine 1400 (FIG. 14) that comprises a further press 1410 and support 1420 that forms the links 510 into shaped links 520, such as box-shaped links 520 for example, that are then woven after the other to form a string of intertwined links 530. This string of links 530 is then soldered together in a belt furnace with solder powder, for example, to arrive at a continuous final chain 1500 (FIG. 15). Thereafter, the final chain 1500 may be placed on a support or mandrel 1510 and subject to further processing where the first material 100 or a portion thereof can be removed from portions of individual links 520 by a variety of means to expose the second material 200 as discussed above. While FIG. 15 illustrates the engagement of a faceting blade 1520 or the like along the outer surface of the chain 1500 for imparting a decorative appearance to the chain 1500 to form a resultant chain 1530, it will be understood that a variety of decorating methods can be used, such as, but not limited to, polishing, grinding, cutting, burning, or a combination of the same, or others. The resultant chain 1530, comprising in the embodiment of FIG. 15 a box chain having faceted links, is then removed from the support or mandrel 1510 and stored on a spool (not shown) and/or cut into chain segments (not shown) for sale to customers or the like.

It should be appreciated that the processing machines 1300, 1400, etc., represent one embodiment of machines typically used to automatically create jewelry chains from chain links that are cut from strips or the like. Thus, a variety of different types of jewelry chains from a variety of different types of links can be formed using the methods described herein, such as, for example, box chain, ball chain, Forza chain, rope chain, and others. Furthermore, it also possible to form jewelry chains from varieties of different links, or from pre-formed links formed by means other than as described herein, as the case may be. Thus, the links and chains shown and described herein are not intended to be limiting in any fashion.

While the present invention has been described at some length and with some particularity with respect to the several described embodiments, it is not intended that it should be limited to any such particulars or embodiments or any particular embodiment, but it is to be construed with references to the appended claims so as to provide the broadest possible interpretation of such claims in view of the prior art and, therefore, to effectively encompass the intended scope of the invention. Furthermore, the foregoing describes the invention in terms of embodiments foreseen by the inventor for which an enabling description was available, notwithstanding that insubstantial modifications of the invention, not presently foreseen, may nonetheless represent equivalents thereto.

What is claimed is:
1. A method of forming a jewelry chain comprising:
   a) providing a first material and a second material;
   b) joining the first and second materials in a layered relationship to form a joined material so that the first material is on top of or exterior to the second material;
   c) processing the joined material to a predetermined dimension;
   d) wrapping the joined material around a support to form a spiral of joined material with the second material being adjacent the support, the spiral having a central axis;
   e) removing the spiral from the support and inserting a core of third material along the central axis of the spiral;
   f) shaping the spiral around the core to form a shaped material with an interior including the core and an exterior, the second material being adjacent the core within the interior; and
   g) removing a portion of the first material to expose the second material along the exterior.
2. The method of claim 1, the first and second materials each having a different appearance.
3. The method of claim 2, at least one of the first and second materials comprising a precious metal.
4. The method of claim 3, each of the first and second materials comprising a different precious metal.
5. The method of claim 4, wherein the first and second materials comprise different colors.
6. The method of claim 1, the processing further comprising reducing the thickness and extending the length of the joined material.
7. The method of claim 6, the processing further comprising simultaneously cutting the joined material into a plurality of separate strips of joined material.
8. The method of claim 1, the core being formed from a precious metal.
9. The method of claim 1, the shaping further comprising compressing the spiral between a first shaping element having a first profile and a second shaping element having a second profile.
10. The method of claim 9, wherein the first and second profiles are the same.
11. The method of claim 9, wherein the first and second profiles are different.
12. The method of claim 11, wherein at least one profile is rounded and one profile is not rounded.
13. The method of claim 1, wherein a portion of the first material is removed by polishing, grinding, cutting, burning, faceting or a combination of the same.
14. The method of claim 1, further comprising removing an entirety of the first material from one side of the shaped material so that the exterior of the shaped material has a first side formed from the first material and a second side formed from the second material.
15. The method of claim 14, wherein the first and second sides are on opposite sides of the shaped material.
16. A decorative chain comprising:
   a) a first and second material joined together in a layered relationship and formed into a spiral having a central axis, an interior and an exterior;
   b) an outer surface of the exterior further comprising the first material, the second material forming a sub-layer to the first material; and
   c) a third material disposed along the central axis of the spiral to form a core of the chain;
d) wherein a portion of the first material is removed from
the outer surface to expose a portion of the sub-layer of
second material along the outer surface.

17. The decorative chain of claim 16, the first and second
materials each having a different appearance.

18. The decorative chain of claim 16, the chain further
comprising a first side and a second side, the first side com-
prising the first material and the second side comprising the
sub-layer of second material.

19. The decorative chain of claim 16, wherein the second
material is positioned adjacent the core.

20. A method of forming a jewelry chain comprising:
a) providing a strip of first material and a strip of second
material;
b) joining the first and second materials to formed a joined
strip comprising the first material on one side of the
joined strip and the second material on an opposite side
of the joined strip;
c) creating chain links from the joined strip and joining the
chain links together to form a string of links having an
exterior; and

d) removing a portion of the first material from the exterior
of the string of links to expose the second material to
form a jewelry chain.

21. The method of claim 20, further comprising, prior to
removing, wrapping the string of links around a support.

22. The method of claim 20, wherein the jewelry chain
comprises a box chain, ball chain, Forzatina chain, or rope
chain.