

[54] **METHOD OF MANUFACTURING ORNAMENTAL ELEMENT**

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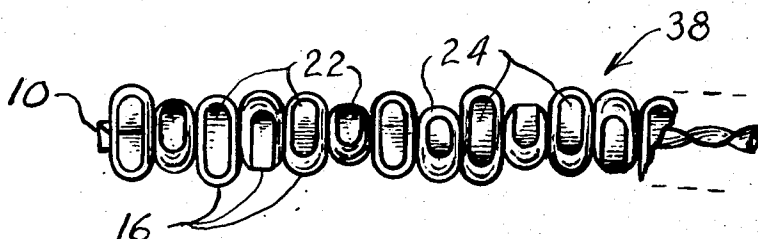
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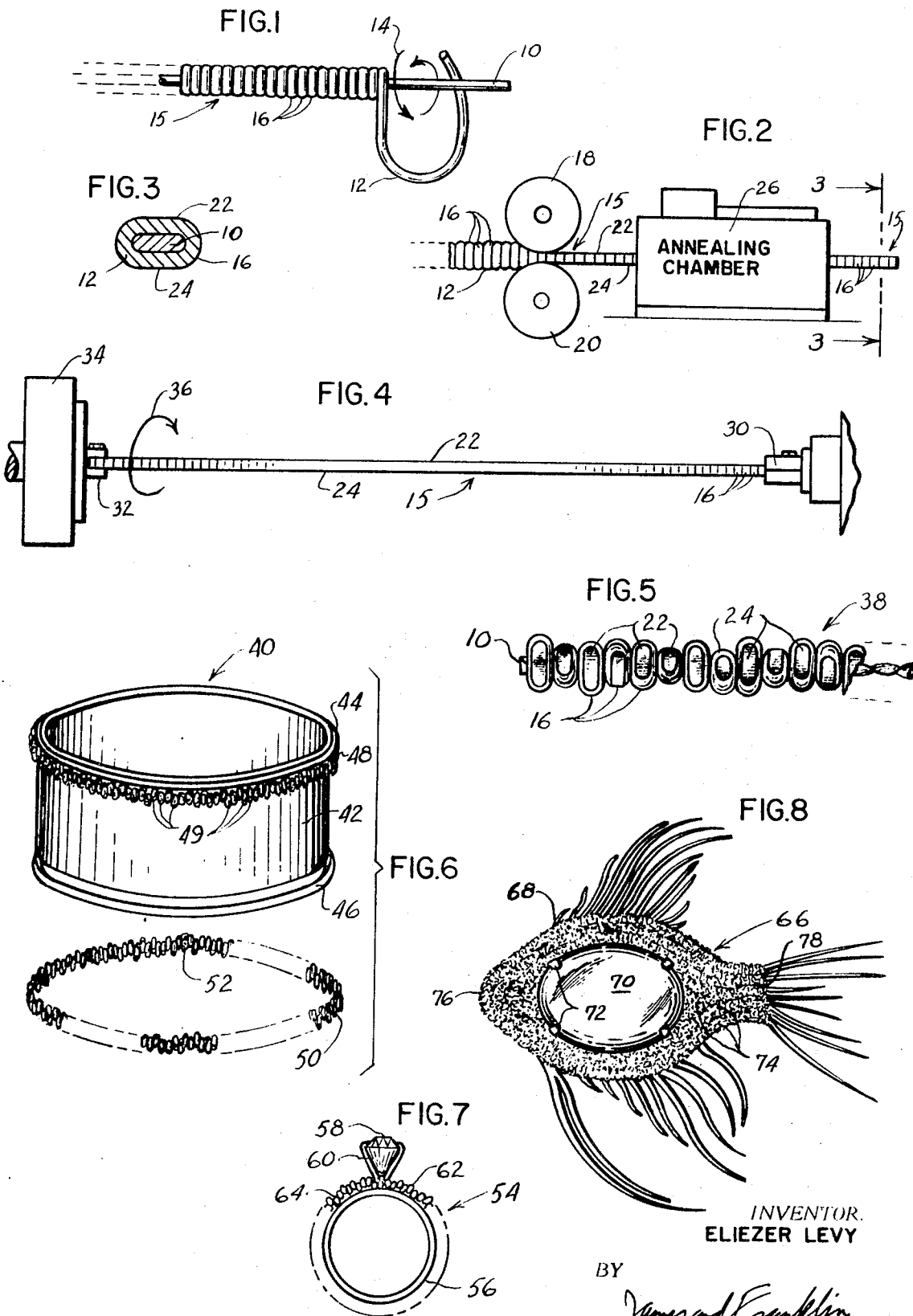
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[57] **ABSTRACT**

An ornamental element for use as a decorative addition to jewelry comprises a strip of material having a plurality of parts integrally formed from the material, each of the parts having a surface exposed at the periphery of the strip. The surface of each part is characterized by a first portion of a given configuration and a second portion of different configuration. The second portions of the parts are randomly positioned about the axis of the integral strip to effect an irregular but attractive profile. The method of manufacturing the element comprises providing a strip of material having a plurality of parts proximately and adjacently arranged along the axis of the strip, compressing the parts to alter the configuration thereof and twisting the strip to rotatably position the altered portions randomly at different locations about the axis of the strip. In the most preferred embodiment, a plurality of strands of metallic material such as gold are combined so as to provide a spirally wound strand extending axially on a core strand. The strip is then flattened, as by passing it between a pair of rollers. The flattened strip is then twisted until the flattened portions are randomly positioned about the axis of the strip.

16 Claims, 8 Drawing Figures





METHOD OF MANUFACTURING ORNAMENTAL ELEMENT

This invention relates to an ornamental article, and more specifically to an ornamental element which is employed as an addition to various kinds of jewelry.

Jewelry products are available to the public in a wide variety of shapes, sizes and degree of ornamentation. Items such as rings, watches, bracelets, pins and the like can be purchased in virtually any form, ranging from a relatively inexpensive type of costume jewelry to expensive precious stones. The inexpensive costume jewelry is necessarily limited with respect to decorative appearance since it must be manufactured at a very low cost if it is to be economically marketed. As a result, the consumer has less of a variety of ornamental designs and arrays available to him, and more importantly, the visual attractiveness of such products is generally quite distinguishable from the more expensive jewelry.

In an effort to minimize the difference between the appearance of the inexpensive and expensive types of jewelry, manufacturers generally attempt to add inexpensive and sometimes colorful elements to a basic jewelry member. Thus, a ring may have certain engraved designs or a bracelet may be provided with certain additions which tend to improve the overall appearance of the device. One such addition has been commonly termed a "filigree" in the jewelry art, and it comprises several metallic strands which are wound together to form a plied strip which is then flattened. The flattened strip is added to a piece of jewelry at some position on the surface thereof to provide additional ornamentation. However, the rather plain appearance of this type of addition detracts to a large extent from the improved appearance which it is intended to provide.

It is the primary object of this invention, therefore, to provide an ornamental element which is inexpensive to manufacture and yet is sufficiently attractive so that when it is added to jewelry a noticeably improved appearance results.

It is another object of this invention to provide a method of manufacturing an ornamental element which is characterized by simplicity and economy.

The aforementioned objects are realized by an ornamental element which comprises a strip of material having a plurality of parts integrally formed from the material, the parts being proximately and adjacently arranged along the axis of said strip. Each of the parts has a surface which is exposed at the periphery of the strip, and which is characterized by a first portion of a given configuration, and a second portion of a different configuration. The second portions of the parts are rotatively positioned at different locations about the longitudinal axis of the strip so as to form an outer surface on the strip which has an irregular and attractive profile. The irregularity occurs as a result of the random placement of the differently configured second portions. A highly attractive appearance is provided when the parts are contiguously arranged axially of the strip.

In the preferred embodiment, the strip of material comprises a first and second strands of metal, the second strand extending substantially axially of the strip. The first strand is wound about the second strand so as to form the aforementioned plurality of parts. The strip is then processed in accordance with the method of the invention to provide parts having first portions which are curved, and second portions which are substantially planar. The planar portions are rotatably positioned about the axis of the strip to achieve the irregular profile which is desired. The ornamental element, when so formed, is attached to or incorporated into a piece of jewelry such as a ring, pin, bracelet, or the like, to enhance the appearance thereof.

Broadly stated, the method of the invention comprises providing a strip of material having a plurality of parts proximately and adjacently arranged along the axis of the strip, compressing the parts to alter the configuration of a portion of the surface thereof, and twisting the strip about its axis to rotatably position the altered portion of the parts at different

locations about the axis of the strip. In the preferred form of the method of the invention, the strip is formed by winding a metallic strand about another strand to form a plied strip of material. The plied strip is then passed between a pair of superposed rollers or the like to compress the outer surface of the outer metallic strand. The compressed strip is then annealed to render it pliable so that it may readily be manipulated in further processing steps. Thereafter, the annealed, compressed strip is twisted as by placing one end in fixed engagement with an anchored member and rotating the other end. The twisting step is preferably carried out in a direction opposite to that in which the second strand is wound about the first strand. As a result of the twisting step, the altered portions of the outer surface of the second strand are randomly positioned about the longitudinal axis of the first strand to provide a plurality of altered portions at various locations about the periphery of the strip thus achieving the effect which is desired. If the strand is twisted tightly after the flattening and annealing step, the final product is characterized by a plurality of parts all of which are contiguous with each other.

To the accomplishment of the above, and to such other objects as may hereinafter appear, the present invention relates to the construction of an ornamental element as defined in the appended claims, and as described in this specification, taken together with the accompanying drawings in which:

FIG. 1 is a pictorial view of a metallic strand as it is wound about a core strand to form a strip of material;

FIG. 2 is a schematic illustration of processing steps employed in the process of the invention, using the strip of FIG. 1;

FIG. 3 is a cross sectional view of the strip of FIG. 1, after it is processed in accordance with the steps shown in FIG. 2;

FIG. 4 is a fragmented side elevational view of the apparatus which may be employed to further process the plied strip of FIG. 2;

FIG. 5 is an idealized pictorial representation of one embodiment of the ornamental element of the invention;

FIG. 6 is an enlarged perspective view of a piece of jewelry during assembly using the ornamental element of FIG. 5;

FIG. 7 is front elevational view of a ring which incorporates as an addition the ornamental element of FIG. 5; and

FIG. 8 is a plan view of an ornamental brooch which incorporates the ornamental element of FIG. 5.

One form of the method of the invention may be observed by reference to FIGS. 1, 2 and 4. Referring to FIG. 1, there is illustrated a core strand 10 about which a second strand 12 is wound in the direction indicated by the arrow 14. The strands 10 and 12 may be in the form of wire having a round cross section, so that the exposed surfaces of the strand 12 are, at this stage in the process, entirely curved. It will be noted that the strand 12 is tightly wound about the strand 10 to provide a strip of material 15 having a plurality of adjacent parts indicated by the numeral 16, those parts 16 in the specific illustrated embodiment being deformed by adjacent turns of the wound strand 12. Preferably, the strands 10 and 12 are composed at least in part of a metallic material such as gold, silver or the like. Obviously the material should be such as to impart an attractive appearance to the finished product, and also should possess the properties necessary for it to be manipulated sufficiently so that the various parts 16 can be readily provided without uneconomical processing steps.

As illustrated in FIG. 2 the plied strip of material 15 comprising strands 10 and 12 is passed between a pair of superposed rollers 18 and 20 which are spaced a distance sufficient to flatten the strip to a desired thickness. As noted, the upper and lower surfaces 22 and 24 of the outer strand 12 are flattened. At this stage of the process the plied strip 15 includes a plurality of parts 16 each of which has exposed curved surface portions and exposed flattened or planar surface portions. In the illustration of FIG. 2, the planar surfaces are on opposite sides of the parts 16, as indicated by the reference numerals 22 and 24. The cross sectional view illustrated in FIG. 3 shows that the surfaces 22 and 24 of the parts 16 are flattened and

the center or core strand 12 is also flattened at least to some extent.

Referring again to FIG. 2, the flattened strip 15 is then passed through an annealing chamber 26. The annealing step is provided for the purposes of softening the metal so that it is readily manipulated after cooling. Typical annealing comprises heating the strip 15 to a temperature of about 1,300°–1,400° F. for about 15 minutes. Generally, annealing is carried out with larger strips since these strips may be too brittle and may shear during subsequent twisting. Smaller strips of material need not be processed through the annealing chamber 26 in FIG. 2.

FIG. 4 illustrates in a fragmented view part of the apparatus which may be employed for the next step of the process. The annealed strip 15 which emerges from the annealing chamber 26 in FIG. 2 is shown connected at one end to an anchored pin 30, and at the other end to a chuck 32. The chuck 32 is driven by a motor means 34, and is rotated in a direction indicated by the arrow 36. The rotation is carried out until a substantial number of the parts 16 have been rotated about the axis of the strip. It will be noted that the twisting as indicated by the arrow 36 is in a direction opposite to that of winding the outer strand 12 on the core strand 10. This opposite twisting has been discovered to be important to provide an ornamental element with a well defined profile. Twisting in the same direction as the winding of the strand 12 is also successful but since the tendency in this direction is to further tighten the strands, a greater torsional force is required to randomly position the flattened surfaces 22 and 24 about the axis of the strip 15. Moreover, the visual effect provided in this manner is not as distinctive as when the strip is twisted in the opposite direction.

FIG. 5 illustrates in idealized form the ornamental element which is produced by the process of FIGS. 1, 2 and 4. As shown in FIG. 5, the element designated by the numeral 38 comprises the several parts 16 which were shown in FIG. 1 as being the windings of the spirally wound strand 12. In FIG. 5, however, these windings have undergone an alteration in configuration. As noted, the flattened portions 22 and 24 of the several parts 16 are located at different positions about the periphery of the core strand 10. The random location of these flattened or planar portions of the parts 16 results from the twisting step shown in FIG. 4. Obviously variation in the orientation of the several parts can be effected by twisting the strip to a desired extent.

After the element illustrated in FIG. 5 is produced, it may be attached to or incorporated into a basic jewelry member such as those shown in FIGS. 6 through 8. As an example, FIG. 6 illustrates in an enlarged view a ring such as a wedding band 40, which is provided with a plain outer surface 42 and flanged sections 44 and 46. An ornamental element 48 of the type herein disclosed, that is, comprising a plurality of differently configured parts 49, is positioned directly below the upper flange 44 on the surface 42. The element 48 may be attached to the surface 42 by any of the well known methods applied in the jewelry trade, such as by welding or soldering. A second element 50 is shown in position just prior to being placed over the surface 42. As noted, the element 50 is itself welded at the joint 52. The welding at the joint 52 may be carried out prior to or preferably, after placement about the surface 42 of the ring 40. A desired number of such elements may be placed on the surface 42, and the result is a highly decorative jewelry item. Other ornaments or jewels may be interposed between the elements 48 and 50 to further enhance the appearance of the final product.

In FIG. 7 another item of jewelry, a diamond ring 54, is illustrated and includes an annular band 56 and a diamond 58 placed in a pronged holder 60. Ornamental elements 62 and 64 such as that shown in FIG. 5 are positioned on the band 56 on two sides of the pronged holder 60, and provide highly attractive ornamentation.

Similarly, FIG. 8 illustrates a brooch or pin 66 in the form of a fish which comprises a base element 68, a jewel 70 attached

to the base element 68 by prongs 72, and a plurality of ornamental elements typical of the invention, designated by the numeral 74. The ornamental elements are shown to be positioned in a side-by-side arrangement and extend from the tip or front portion 76 to the tail 78.

The jewelry items illustrated in FIGS. 6 through 8 are merely illustrative of many types of jewelry that may be employed with the ornamental element of the invention. The addition of the element is readily achieved in most jewelry items by simply affixing it in one manner or another to a base part of the jewelry items. Thus, additional items of jewelry such as earrings, watchbands, cufflinks and the like may also be decorated and their appearance improved by the addition of the ornamental element of the invention.

It has been discovered that excellent results are obtained if the strands 10 and 12 in FIG. 1 have a diameter ranging from about 0.005 inch to about 0.030 inch. Smaller diameters for these strands generally will cause the strip to shear when it is flattened. Thicker diameters than 0.030 inch generally detract from the pleasant appearance of the finished product since thick strands are not manipulated as easily and the product is therefore not as attractive. In one example, a core strand 10 was provided with a diameter of 0.020 inch and the outer strand (12 in FIG. 1) had a diameter of 0.015 inch. The resultant product was highly attractive. When strands of these dimensions are employed, it has been found desirable that the compression step illustrated in FIG. 2 results in a thickness between flattened surfaces 22 and 24 of about 0.015 inch to about 0.045 inch. This thickness range has proven to be excellent for obtaining the well defined ornamental element illustrated in FIG. 5.

While the invention has herein been described with reference to the use of several strands of metallic material wound about each other, and thereafter compressed and twisted, a wide variety of modifications may be included. For example, the portions 22 and 24 of the parts 16 illustrated in the drawing, may be provided with any configuration which differs from the configuration of the remainder of the parts 16. Flattening the curved surface of the strand 12 is a simple manner of altering the configuration of the part. However, other attractive elements may also be provided by other techniques, such as by crimping the surface of the parts so as to provide a small projection. Subsequent twisting of the strip will then cause the projections to be located at different positions about the axis of the strip with an attractive appearance comparable to that shown with reference to the element of FIG. 5. In addition, a single coiled wire properly configured may also be similarly processed to provide an attractive element. Furthermore, any manner of pressure application to alter the configuration of the surface of the several parts may be employed and superposed rollers or crimping tools are merely indicative of several types of pressure application which are successful. The twisting of the strip may be effected in several ways; manual twisting of the strip has also been found successful. Materials typically employed in the jewelry trade such as gold, silver, platinum and the like are generally easily manipulated, particularly when provided with the dimensions above set forth. Large scale production of ornamental elements typical of the invention using these materials is therefore readily achieved.

While but a limited number of embodiments of the present invention have been here specifically disclosed, it will be apparent that many other variations may be made therein without departing from the spirit of the invention.

I claim:

1. A method of forming an ornamental element comprising the steps of:

- providing an axially extending strip of material comprising a plurality of connected parts proximately and adjacently arranged along the axis of said strip;
- altering the configuration of portions of the surfaces of said parts at predetermined and generally similar locations about the periphery of said strip; and

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c. twisting said strip about its axis to rotatably position the altered surface portions of said parts at different locations about the periphery of said strip, thereby to impart an irregular and attractive profile thereto.

2. The method of claim 1, in which step (a) comprises winding a first strand of metallic material about a second strand of metallic material which extends axially of said strip, said parts thereby comprising the windings of said first strand.

3. The method of claim 2, in which said distorting step comprises flattening a portion of the outer surface of said first strand of metallic material along the length of said strip, thereby to alter part of the peripheral configurations of the windings of said first strand.

4. The method of claim 3, in which the twisting of said strip is in a direction opposite to the direction of winding said first strand about said second strand.

5. The method of claim 3, in which the flattening of the windings of said first strand is effected on opposite surfaces thereof.

6. In the method of claim 2, annealing said strip prior to twisting.

7. The method of claim 5, in which the flattening of said strip is continued until a strip thickness of between 0.015 inch and about 0.030 inch is obtained.

6

8. The method of claim 2, in which each of said metallic strands has a diameter of between 0.005 inch and 0.030 inch.

9. The method of claim 8, in which said metallic strands comprise gold.

10. The method of claim 8, in which the flattening of said strip is continued until a strip thickness of between about 0.015 inch and about 0.030 inch is obtained.

11. In the method of claim 1, attaching said ornamental element to an article of jewelry.

12. The method of claim 2, winding said first strand tightly around said second strand to provide a plurality of contiguous windings thereabout.

13. The method of claim 1, in which said configuration of portions of the surfaces of said parts are altered by flattening a portion of the outer surface of said strip along the length of said strip.

14. The method of claim 13, in which the flattening of said strip is effected on opposite surfaces thereof.

15. In the method of claim 13, annealing said strip prior to twisting.

16. In the method of claim 13, attaching said ornamental element to an article of jewelry.

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