

**MAGNETIC JEWELLERY****FIELD OF INVENTION**

- 5 The present invention relates to items of adornment and to personal accessories, and particularly to jewellery, such as watches, rings, bracelets, bangles, pendants and the like, which provide a magnetic field. The invention also relates to the wearing of at least a pair of such jewellery items.

**10 BACKGROUND**

The invention has application to the wearing of personal accessories incorporating magnetic materials.

- 15 Japanese Patent Abstract JP 60214517 describes a permanent magnet made of cobalt samarium powder with an elastomer, and which rolled into a closed ring or cylinder. The outer circumference exhibits one pole, while the inner circumference exhibits the opposite pole.

- 20 Japanese Patent Abstract JP 08308941 describes a decorative and therapeutic ring with one or more permanent magnets embedded in recesses at a thick inner circumference part of the ring. The abstract does not discuss the direction or polarity of the magnetic fields.

- Japanese Patent Abstract JP 11244015 describes a ring of decorative metal (such as gold, silver, white gold, platinum, and their alloys, and also red brass), embedded with a long magnet placed along a circumferential direction. The abstract does not discuss the direction or polarity of any magnetic field.
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- Japanese Patent Abstract JP 2000334049 describes a decorative and therapeutic ring with one or more magnets arranged along the axial direction of the ring. The magnets are covered with a decorative metal. The abstract does not discuss the direction or polarity of the magnetic fields.
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United States Patent No. 5,989,178 describes a therapeutic finger ring with a pair of magnets extending outwardly from the ring. The poles of the magnets are similarly aligned along a common diameter of the ring. The ring does not present a common magnetic polarity outwardly of the ring.

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United States Patent No. 6,101,843 describes double-ring finger accessory. A circular outer ring is supported on a circular inner ring. The rings are relatively rotatable co-axially about one another. The rings may be made from a noble metal such as gold, silver, or platinum, or from an inexpensive metal or a synthetic resin. A number of permanent magnets are spaced around, and embedded into, the outer circumferential region of the inner ring. A like number of magnets are similarly spaced around and mounted on the outer ring. The orientations of the magnet poles are arranged so that relative rotation of the rings is accompanied by a perceptible attraction or repulsion effect when the respective magnets of the inner and outer rings are in the vicinity of rotational alignment.

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United States Patent No. 6,544,164 describes magnetic materials of different shapes and colours which are arranged with natural crystals and ceramic beads on an elastic string to provide therapeutic benefits for a wearer.

European Patent Application No. 519,169 describes several magnetic ring-shaped elements for therapeutic applications. In particular, an embodiment described and shown in the Figure 1 of that application has a radial magnetisation with a south pole on the inner circumference and a north pole on the outer circumference.

## 25 SUMMARY OF INVENTION

In this specification, references to items of jewellery include, but are not limited to, items of personal adornment such as watches, rings, bracelets, bangles, brooches, cameos, earrings, lockets, pendants, and the like.

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It is one object of the present invention to provide a jewellery item with a magnetic arrangement such that, when worn, and when in proximity to another complementary

jewellery item, the two jewellery items are magnetically attractive to one another, or to at least provide the public with a useful choice.

5 It is a second object of the present invention to provide a method of providing an attractive force between a pair of complementary jewellery items worn by respective wearers, or to at least to provide the public with a useful choice.

10 A first aspect of the current invention may be broadly said to be an item of jewellery incorporating a plurality of permanent magnets in an annular arrangement, wherein the magnetic poles of one polarity are distributed over at least a major sector of the annular arrangement at its radially-outward circumference, and the magnetic poles of the opposite polarity are presented at the radially-inward circumference of the annular arrangement.

15 Preferably the magnets are arranged in a substantially continuous series along at least the major sector of the annular arrangement.

The series of magnets may extend over substantially 360 degrees of the annular arrangement.

20 Each magnet may be at least partially surrounded or completely enclosed by decorative metal.

Each magnet may be housed in a respective cavity in the metal.

25 The magnets may be separated from one another by a portion of the metal.

The item of jewellery may be a ring for wearing on a finger or other digit.

The ring may be a wedding band, a bracelet, or a bangle.

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Preferably the item has four or more permanent magnets in the annular arrangement.

A second aspect of the current invention may be broadly said to be a pair of jewellery items providing an attractive force between the two items when any part of the outer peripheries of the jewellery items are in sufficiently close proximity to one another, wherein a first item of the pair incorporates a plurality of permanent magnets in an annular arrangement with the magnetic north poles distributed over at least a major sector of the radially-outward circumference of the annular arrangement of the first item and with magnetic south poles presented at the radially-inward circumference of the annular arrangement of the first item, and the second item of the pair incorporates a plurality of permanent magnets in an annular arrangement with the magnetic south poles distributed over at least a major sector of the radially-outward circumference of the annular arrangement of the second item and with magnetic north poles presented at the radially-inward circumference of the annular arrangement of the second item, and wherein the jewellery items are in sufficiently close proximity to one another so that magnetic forces provide an attractive force that draws the two items toward one another regardless of the physical orientation of the worn items.

A third aspect of the current invention may be broadly said to be a method of providing a mutually attractive force between a pair of jewellery items when any part of the outer peripheries of the jewellery items are in sufficiently close proximity to one another, the method including the steps of:

- (a) incorporating a plurality of permanent magnets in an annular arrangement in the first item of the pair with magnetic north poles distributed over at least a major sector of the annular arrangement of the first item at the radially-outward circumference of the annular arrangement of the first item and with magnetic south poles presented at the radially-inward circumference of the annular arrangement of the first item,
- (b) incorporating a plurality of permanent magnets in an annular arrangement in the second item of the pair with the magnetic south poles distributed over at least a major sector of the annular arrangement of the second item at the radially-outward circumference of the annular arrangement of the second item and with magnetic north poles presented at the radially-inward circumference of the annular arrangement of the second item, , and

(c) bringing any part of the outer peripheries of the jewellery items into a sufficiently close proximity to one another, the magnets thereby providing a mutually attractive force between the two items.

5 In the second or third aspects of the invention, at least one of the items of jewellery may be worn by a respective wearer, and preferably the item is annular and worn to encircle a respective body part of the respective wearer. The pair of jewellery items may be a pair of rings, and preferably a pair of wedding bands. Furthermore, the annular arrangement of at least one item may have four or more permanent magnets.

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The invention may further be said to consist in any alternative combination of parts or features mentioned herein or shown in the accompanying drawings. Known equivalents of these parts or features which are not expressly set out are nevertheless deemed to be included.

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#### BRIEF DESCRIPTION OF DRAWINGS

It will be appreciated that jewellery items according to the current invention may be implemented in various forms. Preferred embodiments of the invention will now be described, by way of example only and without intending to be limiting, with reference to the accompanying drawings of which:

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Figure 1 shows a plan view of a first annular arrangement of magnets in an item of jewellery,

Figure 2 shows a cross-sectional side view as seen at line A-A of Figure 1,

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Figure 3 shows a plan view of a second annular arrangement of magnets in an item of jewellery,

Figure 4 shows a cross-sectional side view as seen at line B-B of Figure 3,

Figure 5 shows a plan view of an annular magnet in an item of jewellery, and

Figure 6 shows a cross-sectional side view as seen at line C-C of Figure 5.

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#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figures 1 and 2 show a first item of jewellery according to an aspect of the current invention. As already noted above, references in this specification to items of jewellery include, but are not limited to, items of personal adornment such as watches, rings, bracelets, bangles, brooches, cameos, ear-rings, lockets, pendants, and the like.

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A series of 16 permanent magnets 1 are arranged in an annular arrangement indicated by the dotted outline 2. Although the magnets may be of any suitable shape and material, in this embodiment the magnets are cuboid and preferably made of rare earth materials, for example sintered Nd-Fe-B (Neodymium-Iron-Boron).

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Each magnet has opposite poles at opposite large faces. The magnets are annularly arranged with like poles similarly oriented, i.e. all poles of one polarity are directed radially outwardly, and all poles of the opposite polarity are directed radially inwardly. In the arrangement shown in Figures 1 and 2, all south poles are directed outwardly and all north poles are directed inwardly, as is indicated by the labels S and N in Figure 1.

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The magnets are arranged over 360 degrees of the annular arrangement (as shown), or at least a major sector of it, in a substantially continuous series. Adjacent magnets abut one another or, as shown in Figures 1 and 2, adjacent magnets are spaced slightly apart from one another. One or more of the spaces between adjacent magnets may be made large enough to accommodate another element of the item of jewellery, for example a gemstone or other decorative feature; or in the case of a wrist watch, the magnets may be distributed around the wrist strap or band, leaving a gap to accommodate the timepiece or watch bezel.

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Figures 3 and 4 show a second item of jewellery according to an aspect of the current invention. In this embodiment two permanent magnets 3 are arranged in an annular arrangement indicated by the dotted outline 4. In this embodiment the magnets are semi-circular arc-shapes. Other numbers of magnets having other arcuate shapes may be used. For example, four quadrant-shaped magnets or a larger number of smaller arc-shaped magnets may be used.

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Each magnet has opposite poles at opposite, inward and outward, circumferential faces. The magnets are annularly arranged with like poles similarly oriented, i.e. poles of one polarity are directed radially outwardly, and poles of the opposite polarity are directed radially inwardly. In the arrangement shown in Figures 3 and 4, the south poles are  
5 directed outwardly and the north poles are directed inwardly, as is indicated by the labels S and N in Figure 3.

The magnets may abut one another or, as shown in Figures 3 and 4, may be spaced slightly apart from one another. One or both of the spaces may be made large enough to  
10 accommodate another element of the item of jewellery, for example a gemstone or other decorative feature; or in the case of a wrist watch, the magnets may be distributed around the wrist strap or band, leaving a gap to accommodate the timepiece or watch bezel.

Figures 5 and 6 show a third item of jewellery which has a single annularly-shaped  
15 permanent magnet 5.

The magnet has opposite poles at opposite, inward and outward, circumferential faces. In the case of multiple north and south poles, the magnet has like poles similarly oriented, i.e. poles of one polarity are directed radially outwardly, and poles of the opposite polarity are  
20 directed radially inwardly. In the arrangement shown in Figures 5 and 6, the south pole or poles is or are directed outwardly and the north pole or poles is or are directed inwardly, as is indicated by the labels S and N in Figure 3. These labels indicate either multiple north and south poles, or a circumferential distribution of single north and south poles.

25 The items of jewellery described above preferably take an annular shape as indicated by the dotted outlines 2, 4 and 6 in Figures 1 to 6. Examples of such annular items of jewellery include a ring (for example for wearing on a finger or other digit such as a thumb or toe), or a bracelet or bangle, or a watch having a wrist strap or band. Particularly preferred items of jewellery according to aspects of the current invention include  
30 engagement rings, wedding bands and wrist watches.

Each of the magnet or magnets in the jewellery item is at least partially surrounded, or totally enclosed, by a decorative metal, for example a noble metal such as gold, silver, platinum, or alloys of these. Other metals or alloys, for example, pewter or brass, may be used. The metal is preferably shaped in an annulus as shown schematically by the dotted  
5 outlines 2, 4 and 6. Of course variations accommodating aesthetic design features into the jewellery may be incorporated without departing from the scope of the invention as defined by the accompanying claims.

The magnets in the embodiments described above may be secured in place by any suitable  
10 method, for example by using an adhesive, or by claws as would be well known by one skilled in the manufacture of jewellery.

In one mode, the decorative metal is shaped into an annulus, and one or more cavities are formed to house respective magnets. In one arrangement, adjacent magnets are separated  
15 from one another by a wall of decorative metal between adjacent cavities.

The magnets may be magnetised either before or after incorporating into the item of jewellery.

20 Although only one magnetic orientation has been shown in the arrangements described above and shown in the Figures, i.e. with the south pole or poles directed outwardly and the north pole or poles directed inwardly, it is to be appreciated that the magnet or magnets may be arranged with the magnetic polarity in the opposite orientation, i.e. with the north pole or poles directed outwardly and the south pole or poles directed inwardly.

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The aspect of the invention as described above has particular application when used in conjunction with a similar item of jewellery. Preferably, two people each wear similar items of jewellery as described above. The two jewellery items have opposite orientations of the magnetic poles but are otherwise functionally, if not aesthetically, similar.

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By way of example the following description relates to a pair of wedding bands or rings to be worn by a couple. One wedding band has north poles facing outward and south poles

facing inward and is worn by one person, whereas the other wedding band has south poles facing outward and north poles facing inward and is worn by the other person. When the rings are brought into a sufficiently close proximity, such as when the couple holds hands, or are about to hold hands, the rings are magnetically attracted to one another and the couple feel an attractive force which tends to pull the rings, and the couple's hands, closer together.

It is to be understood that each of the rings only presents poles of one polarity radially outwardly, and the outwardly presented poles of the pair of rings are of opposite polarity. The rings, when worn and in sufficiently close proximity to one another, will therefore always attract and not repel one another, regardless of their orientation on the fingers.

It will be appreciated that an attractive force can be created between a couple wearing items of jewellery as described above and claimed herein, when the items of jewellery have complementary magnetic polarities.

It is envisaged that jewellery having one magnetic polarity orientation will be marketed for one group of people, e.g. females, or more particularly heterosexual females, while jewellery having an opposite magnetic polarity orientation will be marketed for another group of people, e.g. males, or more particularly heterosexual males. It is further envisaged that a complementary pair of jewellery items having opposite orientation of magnetic polarities will be marketed to couples, and particularly to engaged or married couples.

It will also be understood that although the jewellery described is generally to be worn about a part of the body, the current invention is not limited to annular items of jewellery. That is, the annular magnetic arrangement does not necessarily need to be housed in an annularly shaped item of jewellery. For example, the jewellery does not need to have an aperture which extends through the annular magnetic arrangement. The magnets may be arranged annularly as a border or rim about a locket, medallion or other ornamental adornment, for example.

The foregoing describes the invention including preferred forms and methods thereof. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope of the invention as defined in the accompanying claims.

- 5 It is to be noted that the alphanumeric characters appearing in parentheses in claim 1 are references to features so labelled in the drawings and are not to be interpreted as limiting the invention claimed to any particular arrangement or to any particular polarity of the magnetic poles.

**CLAIMS**

1. An item of jewellery incorporating a plurality of permanent magnets (1) in an annular arrangement (2), wherein the magnetic poles of one polarity (e.g. S) are distributed  
5 over at least a major sector of the annular arrangement at its radially-outward circumference, and the magnetic poles of the opposite polarity (e.g. N) are presented at the radially-inward circumference of the annular arrangement.
2. An item of jewellery as claimed in claim 1, wherein the magnets are arranged in a  
10 substantially continuous series along at least the major sector of the annular arrangement.
3. An item of jewellery as claimed in claim 2, wherein the series of magnets extends over substantially 360 degrees of the annular arrangement.
- 15 4. An item of jewellery as claimed in any one of the preceding claims, wherein each magnet is at least partially surrounded by decorative metal.
5. An item of jewellery as claimed in claim 4, wherein each magnet is completely enclosed by the metal.  
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6. An item of jewellery as claimed in claim 4 or claim 5, wherein each magnet is housed in a respective cavity in the metal.
7. An item of jewellery as claimed in claim 4, wherein the magnets are separated from  
25 one another by a portion of the metal.
8. An item of jewellery as claimed in any one of the preceding claims, wherein the item is a ring for wearing on a finger or other digit.
- 30 9. An item of jewellery as claimed in claim 8, wherein the ring is a wedding band.

10. An item of jewellery as claimed in any one of claims 1 to 9, wherein the item is a bracelet.
11. An item of jewellery as claimed in any one of claims 1 to 9, wherein the item is a  
5 bangle.
12. An item of jewellery as claimed in any one of claims 1 to 9, wherein the item is a watch.
- 10 13. An item of jewellery as claimed in claim 12, wherein the watch is a wristwatch.
14. An item of jewellery as claimed in any one of the preceding claims, wherein the item has four or more permanent magnets in the annular arrangement.
- 15 15. A pair of jewellery items providing an attractive force between the two items when any part of the outer peripheries of the jewellery items are in sufficiently close proximity to one another, wherein a first item of the pair incorporates a plurality of permanent magnets in an annular arrangement with magnetic north poles distributed over at least a major sector of the radially-outward circumference of the annular arrangement of the first  
20 item at and with magnetic south poles presented at the radially-inward circumference of the annular arrangement of the first item, and the second item of the pair incorporates a plurality of permanent magnets in an annular arrangement with the magnetic south poles distributed over at least a major sector of the radially-outward circumference of the annular arrangement of the second item and with magnetic north poles presented at the radially-  
25 inward circumference of the annular arrangement of the second item, and wherein the jewellery items are in sufficiently close proximity to one another so that magnetic forces provide an attractive force that draws the two items toward one another regardless of the physical orientation of the worn items.
- 30 16. A pair of jewellery items as claimed in claim 15, wherein at least one item of the pair is worn by a respective wearer.

17. A pair of jewellery items as claimed in claim 16, wherein the jewellery items are annular and at least one item of the pair is worn to encircle a body part of the respective wearer.

5 18. A pair of jewellery items as claimed in claim 15, 16 or 17, wherein the pair of items is a pair of rings.

19. A pair of jewellery items as claimed in claim 18, wherein the pair of rings is a pair of wedding bands.

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20. A pair of jewellery items as claimed in any one of claims 15 to 19, wherein the annular arrangement of at least one item has four or more permanent magnets.

21. A method of providing a mutually attractive force between a pair of jewellery items when any part of the outer peripheries of the jewellery items are in sufficiently close proximity to one another, the method including the steps of:

(a) incorporating a plurality of permanent magnets in an annular arrangement in the first item of the pair with magnetic north poles distributed over at least a major sector of the annular arrangement of the first item at the radially-outward circumference of the annular arrangement of the first item and with magnetic south poles presented at the radially-inward circumference of the annular arrangement of the first item,

(b) incorporating a plurality of permanent magnets in an annular arrangement in the second item of the pair with the magnetic south poles distributed over at least a major sector of the annular arrangement of the second item at the radially-outward circumference of the annular arrangement of the second item and with magnetic north poles presented at the radially-inward circumference of the annular arrangement of the second item, (c), and

(c) bringing any part of the outer peripheries of the jewellery items into a sufficiently close proximity to one another 22. A method of providing an attractive force as claimed in claim 21, wherein at least one of said items of jewellery is worn by a respective wearer.

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23. A method of providing an attractive force as claimed in claim 22, wherein the jewellery items are annular and at least one item is worn to encircle a respective body part of the respective wearer.

5 24. A method of providing an attractive force as claimed in claim 21, 22 or 23, wherein the pair of jewellery items is a pair of rings.

25. A method of providing an attractive force as claimed in claim 24, wherein the pair of rings is a pair of wedding bands.

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26. A method of providing an attractive force as claimed in any one of claims 21 to 25, wherein the annular arrangement of at least one item has four or more permanent magnets.

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